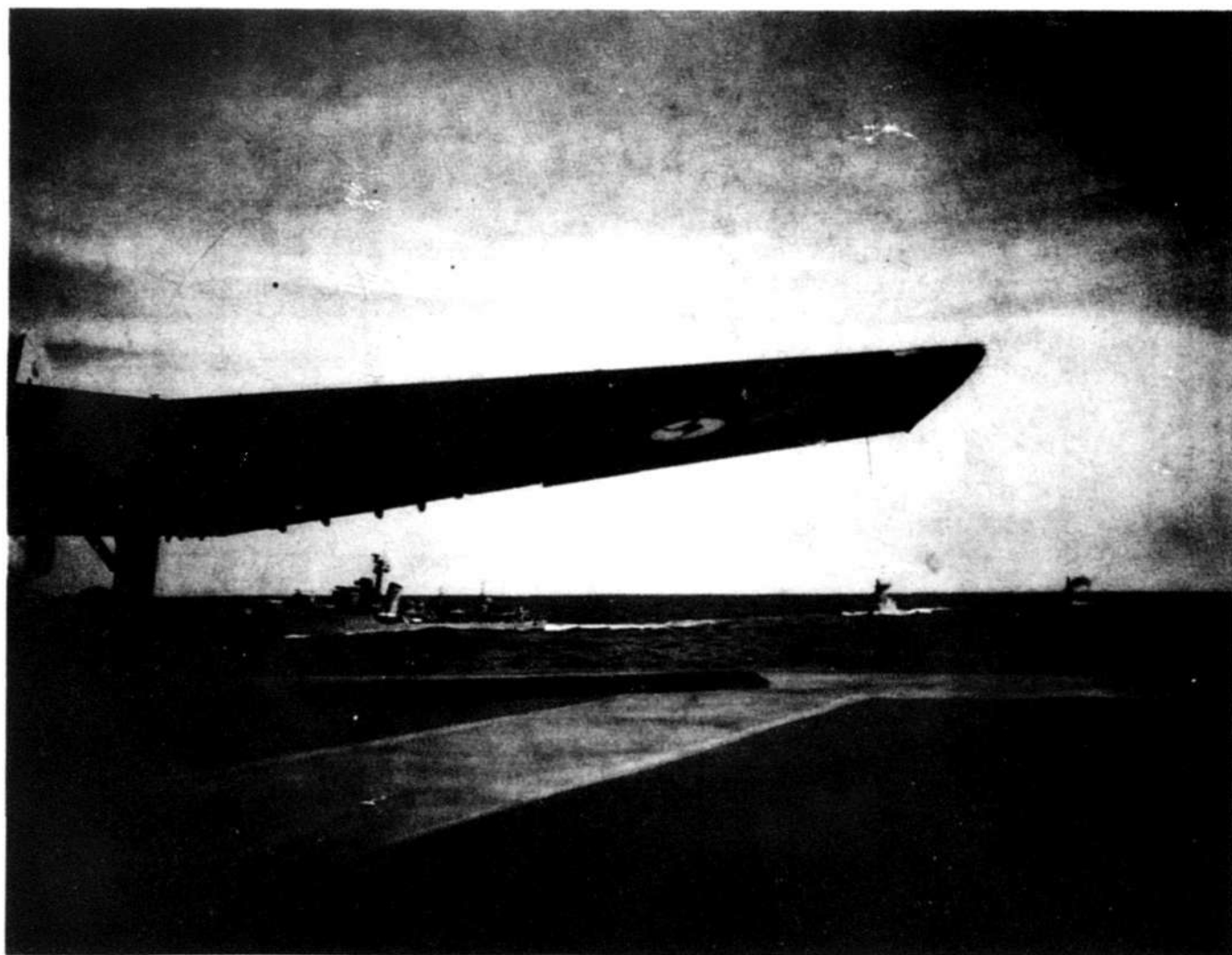


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THE NAVY

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NAVY MINISTER'S MESSAGE

The R.A.N. keeps Abreast of the Times

By Senator J. G. Gorton, Minister for the Navy

LIKE all other efficient organisations in this scientific age the Royal Australian Navy keeps abreast of the times. It would even keep ahead of them if that were possible.

People who visit the Garden Island Dockyard and H.M.A.S. "Watson" during the Waratah Festival Week will realise how well those responsible for administering and maintaining our Navy at modern standards have fulfilled their task and how adequately its officers and men have carried out their many and varied duties.

Besides making tours of Garden Island and H.M.A.S. "Watson" the visitors will be able to go on board ships of the Australian Fleet and see some of the highly-specialised weapons and equipment with which they are fitted. Much of this material is of the most up-to-date type and incorporates electronic and other features which had not even been dreamed of a comparatively few years ago.

The spectacular displays to be presented by various branches will give visitors further ideas still of the Navy's activities and capabilities.

After they have been through the engineering and other workshops at Garden Island



Senator J. G. Gorton

they will be convinced of the vital part that highly-trained civilian technicians and artisans play in keeping the Navy at sea in peace and war, and of the fact that these technicians and artisans are provided with the best machinery and tools that it is possible to obtain.

The importance of the Navy to our Commonwealth and her Allies should be impressed upon the public mind at every opportunity. The celebration of Waratah Festival Week, in which the R.A.N. is co-operating, presents one of those opportunities and I wish it every success.

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THE NAVY

Vol. 22

OCTOBER

No. 10

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COVER: A Gannet aircraft stands in readiness for action on the flight deck of H.M.A.S. "Melbourne".

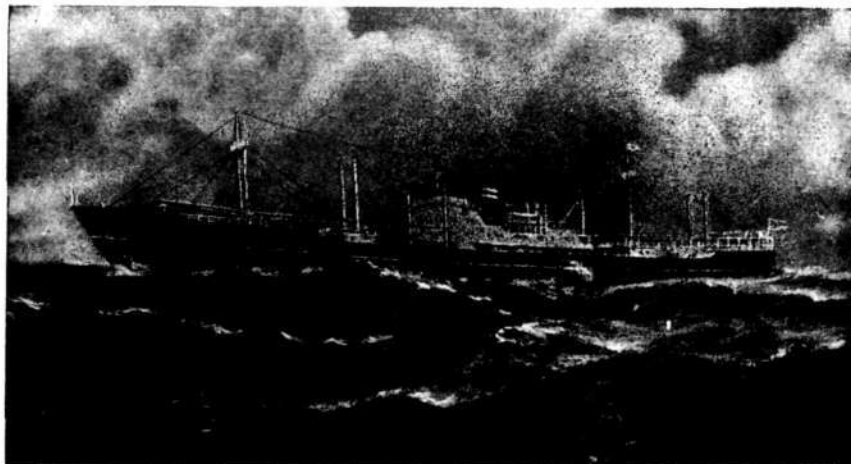
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A NATION DEPENDENT UPON SEA POWER

By Rear Admiral H. A. Showers, C.B.E.

President of the Australian Navy League.

ALL Australians, who take pride in the nationhood of their country, are justifiably proud of its achievements, and intensely jealous of their freedom.

Unfortunately, however, the great majority simply accept these blessings as a natural sequence, giving little or no thought to what is a governing factor that has made and still keeps these wonderful conditions available to us. Surely it is worthy of deep thought and some definite action by all of us to ensure that this factor is provided with the maximum of safeguards.

That governing factor is SEA POWER.

Sea power has kept our mainland free from invasion and allowed our trade to move freely over the seven seas ever since the arrival of the first British settlers in 1788, thus enabling the national development to proceed uninterrupted for more than 170 years.

The extent of our overseas trade is a measure of that development. Expressed roundly in millions, the value of Australia's exports last financial year was £815 million and that of

imports was £800 million, leaving a trade balance of £15 million. Yet despite this surplus, together with the record receipt of £180 million in overseas capital investment, it remained necessary to deplete the country's limited overseas capital reserves by £10 million to meet the cost of "invisible" imports, mainly shipping freights. For how long can this country afford to disperse over £200 million per annum for such services when we should be capable of performing a portion of them ourselves?

Six elements essential to exercise sea power are:—a strong mercantile marine, men-o'-war both surface and submersible, naval aviation, bases, the industrial potential to maintain those elements and finally, but paramount, trained experienced personnel to keep the sea-going services manned. Since not one of these elements can be produced over-night, or even quickly, it is essential that they exist in peace, not only for the benefit of the national economy but also, to be available immediately in a time of national emergency.

(Continued on page 9)



Physical training is an important part of the curriculum at the Royal Naval College. Cadet-midshipmen are engaged in a rope-climbing race.

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A NATION DEPENDENT (Continued)

Why then this national apathy in so vital a matter?

Australia, with no international borders, is an island continent separating the Indian and Pacific Oceans and enjoying a most equable climate varying from tropical to temperate. The majority of its population, however, lives either on or near the coast within the temperate zone and, in consequence, to them the huge comparatively dry interior provides a permanent challenge to discover and develop its potential wealth. Is it this challenge that causes Australians generally to turn their backs to the sea—their only international border over which all trade, friends or foes must pass?

For over one hundred years whilst our Motherland, Great Britain, was the undisputed Mistress of the Seas, this attitude involved no great danger to us beyond that of becoming too complacent. The losses suffered and the sacrifices made by Great Britain in two World Wars have weakened that sure shield and shifted part of the burden of responsibility on to our own shoulders, yet we in Australia still keep looking inland and neglect the responsibility.

It was in British ships that our fighting men proceeded overseas to the First World War where their epic deeds won recognition for Australia as a nation within the councils of the great nations of the world. It was in Allied ships that our fighting men of the Second World War proceeded overseas and returned. But in July, 1959—this year of grace the Minister for the Army announced that the Federal Government had chartered a foreign ship, Italian, to convey the 3rd Battalion, Royal Australian Regiment, to Malaya and return with the relieved 1st Battalion. What a tragedy we could not supply our own ship or ships.

Sea power ensures to Australia the maximum of security, but are we entitled to rely almost wholly upon friendly nations to provide that safeguard? In today's unsettled world, with all its complications of economic interdependence, the answer must be a very definite "No".

Of the previously mentioned six essential elements to exercise sea power, the three pertaining to the combatant Naval Forces are the sole responsibility of the elected Federal Government of the day and, for the remaining three the onus to develop them, either with or without Government aid, rests squarely upon us, the citizens.

On examining these three, we find:—

- (1) **Our Mercantile Marine**, which is not inconsiderable but confined mainly to coastal trade, is not growing in step with the general development of the nation. During the past twenty years the volume of cargoes transported, instead of expanding, has dropped from 30 million to 20 million tons, also the general cargo and passenger ships are not being replaced. Bulk carriers for special cargoes such as coal, ores and sugar are almost the sole replacements. A stimulant, and a strong one, is required to induce greater use to be made of our sea lanes which, unlike roads, require no maintenance.
- (2) **Our Industrial Potential**, which continues to develop rapidly in face of much early pessimism, has so grown that many secondary industries today can export against keen world competition. Our dockyard section however is waning, in parallel with the diminishing Mercantile Marine, and so requires the same stimulant for survival.
- (3) **Personnel** always will be forthcoming if reasonable security in employment can be seen. Volunteers, with a spirit of adventure and inherent love of the sea, can be trained in shore establishments. The Australian Sea Cadet Corps—which is a youth movement sponsored by the Navy League of Australia and jointly administered with the Commonwealth Naval Board—is doing this today in every State throughout the Commonwealth. To continue and to expand this work the Corps requires more instructors and the League needs more members.

When enjoying the prosperity of peace it is all too easy to become complacent, putting aside all thoughts of the consequences of war but to us Australians such an attitude could well prove very costly if not fatal.

Australia, having no oil fields, last year imported 2,522 million gallons of crude petroleum products which, by value, was 13 per cent. of the total imports. No reliable estimate can be given of the proportion of the population whose employment depends either directly or indirectly upon the safe and timely arrival of this commodity. It is certain however that the impact of the non arrival of these products would be felt in every household.

Sea Power is effectively exercised by a nation when, in times of peril, it is able to keep the sea communications open for its own uses and, at the same time, substantially deny them to

(Continued on page 27)

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CAPTAIN COOK DOCK

THE building of a Capital Ship Graving Dock in Australia was proposed in 1938, and the present site was recommended in January, 1940, by Sir Leopold Saville of Sir Alexander Gibb & Partners, who later supervised the construction to the requirements of the British Admiralty. Preliminary work was commenced in July, 1940, and by the end of that year construction work was in hand.

To conform with the design of the dock, an area of 33 acres between Garden Island and the mainland at Potts Point was reclaimed. 170,000 feet of sheet piling and approximately 800,000 cubic yards of stone and core filling were used for the purpose of forming a huge cofferdam from which was pumped leaving a large basin in which the dock was built.

This work was completed in February, 1942, after which construction of the dock proper was commenced.

Most of the permanent machinery and plant required was manufactured in the United Kingdom and imported without loss despite the then existing sea hazards.

The project was proclaimed an absolute priority and the demands on Australian manpower were very severe in order to progress the work as expeditiously as possible. Concrete was poured at the rate of 2,000 cubic yards per day, and in all, over 330,000 cubic yards were used in the construction of the dock and its associate galleries for pipes, electric cable runs, culverts, alters and valves.

The dock floor which is built of rows of reinforced concrete

blocks 22 ft. square, varies in thickness in accordance with the nature of the original harbour bed.

The two floating type caissons were built within the cofferdam concurrently with the dock construction in a position adjacent to the dock ready to be floated to their designed positions when the dock itself was completed.

The caissons are fitted with controlled ballast tanks and tidal chambers to enable them to be sunk into position or raised as required in the sealing grooves provided. In light condition each caisson is a ship of approximately 3,000 tons displacement.

The dock was ready for initial flooding in September, 1944, and the construction was sufficiently advanced to allow of the emergency docking of

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Captain A. M. Clift (right), General Manager of Garden Island, shows Rear Admiral Takleo, of the Royal Thai Navy, the main control panel of the pumping equipment.

BATTLE OF THE NILE

Master's Medal

The medal reproduced here by courtesy of Mr. Kenneth C. Bruff Macdonnel, of Sydney, grandson of Mr. Bruff, Master of one of Nelson's ships, "Orion," at the Battle of the Nile, has come down to Mr. Macdonnel as a family legacy.

"Orion" carried 74 guns with a complement of 500 men and was commanded by Captain Sir James Saumarez, of Norman descent but born in the Island of Guernsey. A distinguished naval officer, he was a member of Nelson's Band of Brothers.

A commemorative victory medal in gold to Admirals and Captains engaged in naval actions was not exceptional, but the gift after the



Battle of the Nile of gold medals to Admirals and Captains, silver to Lieutenants and Officers ranking with them, copper-gilt to inferior officers and copper-bronze to the men by a private individual. Mr. Alexander Davison, an intimate friend of Nelson's, was exceptional. Mr. Davison was, in this case, agent for sale of the prizes. The device is remarkable in another way; the engraver is said to have made the mistake, on the reverse side, of showing the French Fleet at anchor with the British Fleet advancing to the attack and the sun setting in the East. The figure supporting Nelson's profile on the face of the medal is that of Hope.

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THE NAVY

H.M.S. "Illustrious" on 2nd March, 1945, three weeks prior to the official opening ceremony.

From that day onward, while construction work was in progress the Captain Cook Dock was continually in use for essential servicing of major units of the British Pacific Fleet and subsequent refits of units of the Royal Australian Navy. During that time 15 units of the B.P.F., which included Capital Ships and Carriers, were docked.

The Captain Cook Dock was opened by H.R.H. The Duke of Gloucester on March 29, 1945. This ceremony marked an important stage in the completion of the greatest civil engineering project ever undertaken in Australia, and at a time when the resources of the country were strained to the limit.

The dock is large enough to accommodate any ship afloat or at present contemplated. It has been designed in two sections so that medium sized ships can be docked simultaneously with smaller ships in the other section.

Special facilities such as shoring towers are provided in order that smaller ships can be docked safely in a dock of this size, as it is so large that it is not convenient or economical to dock single ships of ordinary size.

In all, two cruisers can be docked in the inner section and three destroyers in the outer section simultaneously.

Primarily the Captain Cook Dock must be regarded as a very important defence asset which should be kept in the highest state of efficiency and readiness for use. Its main use in peacetime will be the docking of Naval vessels especially those being refitted at Garden Island.

It will enable the work of refits to proceed without excessive disruption or the necessity



One of the huge valves used to control water flow.

for sending Garden Island men to work on ships at other dockyards. Its use for this purpose also relieves the pressure on other docks and enables more commercial dockings to be undertaken in Sydney.

It is considered most desirable, however, that should it be required, the Captain Cook Dock should be available for docking merchant vessels when necessary, and various proposals have been set up in this connection for inclusion in a brochure which, upon completion, will be distributed to all interested parties.

Included in the Dock Area is a large Engineering Workshop and Heavy Frame Shop which houses machinery capable of carrying out any work required on a Capital Ship.

Whilst the Electric Power is supplied by the City County Council the dock is self reliant in this direction in the event of a blackout, as an emergency power house is incorporated within the area which can supply all the power requirements for Garden Island and Dock Area. There are also three compressors constantly in use for all air supplies.

DIMENSIONS OF THE CAPTAIN COOK DOCK

Length: 1,120 ft. 5 ins.
Inner Dock: 706 ft. 5 ins.
Outer Dock: 393 ft. 10 ins.
Breadth: 147 ft. 7 1/2 ins.
Draught of water on sill at spring tide: 45 ft.
Maximum Pumping Rate: 360 tons per min. per pump.
The whole dock can be emptied in approximately 4 hours.

OCTOBER, 1957

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The Royal Australian Naval College opens way to a fine career

ANY young man who enters the Royal Australian Naval College as a cadet-midshipman may regard himself as extremely fortunate.

He will have taken the first step towards eventually becoming an officer in the Royal Australian Navy and in so doing of beginning a professional career that will be filled with varied interests and will give him opportunities to travel to many parts of the world.

It will be a career in which he will be performing useful service for his country, even in peace-time, and in which, if war at any time broke out, he would find himself prepared to help defend her—and her allies—against their enemies and to lead other men in defending them, too.

It will be a career in which there will be many openings to promotion and in which outstanding men can reach the highest posts.

A young man chosen to enter the College will have the satisfying knowledge that he has been selected with others, from among large numbers of candidates from all States of the Commonwealth. He will have been chosen because the members of the interviewing committee before whom he will have appeared have considered that he has the high degree of intelligence and the good physique, the personality and other qualities that are essential to the duties that he is about to undertake.

While he is being trained at the College he will have the bright and healthy companionship of intelligent, ambitious and energetic youths, who like himself, are anxious to discover an outlet for their talents and capabilities away from the

hum-drum routine of many of the occupations of civilian life. That companionship will continue throughout his life.

The Royal Australian Naval College is situated on a magnificent site amid beautiful surroundings and overlooks the deep broad waters of Jervis Bay which are visited frequently by ships of the Australian Fleet.

There are two ways of entering it. One is known as the normal entry, for boys aged between 14½ and 16½ in January of the year in which they join. The other is the matriculation entry, for young men aged not more than 19 in January of the year in which they join.

Candidates must be British subjects, or the sons of British subjects, and be substantially of European descent.

They must be legally domiciled in Australia, although the Minister for the Navy may accept applications from candidates not so domiciled if acceptable assurances are forth-

coming from their parents or guardians that they will be.

Applicants for the normal entry are required to pass a qualifying educational examination about equal to intermediate standard. Applicants for the matriculation entry must have already matriculated for an Australian University, or intend sitting for the examination during the year in which they submit their applications.

Eligible candidates are also required to undergo a specified medical examination. Those who pass both the educational and medical examinations then appear before an interviewing committee, and the selected candidates enter the College at the end of the following January.

In addition to their free clothing and free education, they receive free books.

During the early stage of their training, normal entry cadet-midshipmen receive

(Continued on page 30)



Proficiency in navigation is one of the fundamental qualifications of a naval officer. Here a midshipman is taking a bearing on the compass platform.

First "Nirimba" Apprentices

WILL JOIN FLEET IN JANUARY

IN January next the first 50 artificer apprentices who entered H.M.A.S. "Nirimba", the R.A.N. Apprentice Training Establishment at Quaker's Hill (N.S.W.) in January, 1956, will join the Fleet for their final year of training.

They will leave "Nirimba" with a rate equivalent to that of leading seaman and at the end of their 12 months' service with the Fleet will be advanced to the acting rate of petty officer.

After that their further advancement will be in accordance with normal R.A.N. advancement regulations and will depend on their ability and on vacancies in the various branches of the service.

Apprentices of outstanding ability and personal qualities will be allowed to compete for cadships at the Royal Australian Naval College, at which future officers of the R.A.N. are

trained or to apply for commissions in the Fleet Air Arm. Other avenues of promotion to commissioned rank will also be available.

It will be seen that entry to the R.A.N. Apprentice Training Establishment opens the way to very interesting and useful careers for ambitious boys who are prepared to bring enthusiasm and intelligence to their work and studies.

The training at "Nirimba" is claimed to be the best of its kind provided anywhere in the Commonwealth. While apprentices are undergoing it they receive an academic education similar in all respects to the education they would be given at secondary schools.

Boys who enter the Training Establishment must engage in the R.A.N. for at least 12 years, this period including the initial five years' training. On completion of 12 years' ser-

vice they may, subject to recommendation and service requirements, re-engage for shorter periods up to the age of 50.

The Training Establishment was founded and commissioned to ensure that the Royal Australian Navy would have a sufficient and continuous supply of trained artificers in various specialisations to maintain the Fleet at sea and to carry out their particular parts of dockyard repairs and refits.

Fifty boys are selected every six months from among applicants to enter the Establishment and at present 400 of them are under training.

At the end of their first six months of basic training each intake of 50 boys is divided into the trades of fitters and turners, electrical fitters, shipwrights and boilermaker/welders. In selecting apprentices for the different trades,



On a visit to the Garden Island Dockyard, apprentices from H.M.A.S. "NIRIMBA" display interest in a rear admiral's flag painted on the barge of the Flag Officer Commanding the Australian Fleet, which is undergoing refit.

consideration is given to their own choice, subject, of course, to their respective aptitude and ability and the numbers needed.

In addition to trade training, the specialised technical training that apprentices are given by civilian and naval instructors enables them to become:

Electrical artificers who fit, maintain and repair high and low power electrical, electronic, radio and radar equipment, and gun-fire and guided-weapon control systems.

Engine room artificers (fitters and turners and boiler-maker/welders) who care for modern steam plants, refrigeration, hydraulic systems, internal combustion engines, air compressors, catapults and aircraft carrier flight deck machinery.

Ordnance artificers (fitters and turners) who look after gun mountings, small arms, gun-fire control, electric and hydraulic equipment, guided

weapons and anti-submarine devices.

Air artificers (fitters and turners and sheet metal workers) who are concerned with air frames, engines, helicopters and jet and turbine power plants.

Naval shipwrights who do wood-work and build boats and are also engaged in welding, plumbing, painting and polishing, glazing, mast and spar making, plating and framing, docking and cable work.

One great advantage that apprentices trained at "Nirimba" enjoy is that their apprenticeship course is recognised by all the relevant trade unions and the New South Wales Apprenticeship Commission.

Naval artificers who reach the rate of petty officer may qualify for trade proficiency certificates and apply for recognition as qualified tradesmen in one of numerous categories.

Consequently, when they

leave the Navy they can continue to earn their living at their trades in civilian life.

Besides receiving their apprenticeship training and secondary education free of cost, boys who join H.M.A.S. "Nirimba" are issued gratuitously with a full kit of uniform and accessories and unserviceable items are replaced free until four years' training has been completed.

Comfortable accommodation and good food are also provided free in addition to medical and dental attention.

Every kind of sporting facility is available, and apprentices are encouraged to take an active part in sport. They are given expert tuition by naval physical training instructors.

The highest possible moral standard is maintained and religious instruction in each apprentice's particular denomination is given by naval chaplains.



Apart from their technical training, apprentices at H.M.A.S. "NIRIMBA" receive a secondary school education. Here some of them are seen being given a lesson in grammar.

OIL SERVES OUR NAVY WELL

Yes, to-day every ship in the R.A.N. is powered by oil. Each year more than 12 million gallons of petroleum products are used to maintain the Royal Australian Navy's mobility and fighting power.

Inserted by the Petroleum Information Bureau (Australia) on behalf of

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Ltd.
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pany (Australia) Pty. Ltd.

Historic Relics Held in T/S "Gayundah"

(From a Brisbane Correspondent)

T/S "Gayundah", which was named after one of the units of the Queensland Navy—the first State in the Commonwealth to have its own ships—was recognised in September, 1954, and commenced with a complement of four Officers, one Chief and three Petty Officer Instructors and 65 Cadets.

Initially, it used the Naval Depot, Alice Street (H.M.A.S. "Moreton") as its training establishment, having the use of the R.A.N.R.'s instructional equipment and whalers.

Within eight months the rush for membership was such that the Director of Naval Reserves approved its expansion to

"destroyer" strength, and the additional Officers, Instructors and Cadets were quickly forthcoming.

The Unit was then granted the use of the two upper decks in the old Naval Stores establishment at Kangaroo Point, Brisbane, situated on the river bank, with the Ocean Minesweeper, "Mildura" (decom-

missioned) alongside. These buildings were the birthplace of the Queensland Navy, having been erected in 1887, and are full of historic associations. They are still in active use by the R.A.N.R. and the Unit.

There is ample room in these premises for the Commanding Officer's and First Lieutenant's offices, the Training Officer's and Coxswain's offices, Signal

(Continued on page 29)



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This is your chance to take a part in Australia's ever-developing Naval Programme and learn an interesting and useful trade.

NAVAL DOCKYARD APPRENTICES

PARENTS Here is an opportunity for your son to be apprenticed and receive training in all branches of Naval Repair and Refitting work in the largest and best-equipped Naval Yard and Dry Dock in the Southern Hemisphere.

APPRENTICESHIP is available at Garden Island Dockyard, Sydney, controlled by the Commonwealth Government, under conditions which will enable you not only to become an efficient tradesman, but give you the opportunity of qualifying as a Draughtsman or Professional Officer in Mechanical or Electrical Engineering, or Ship Construction. The period of apprenticeship is for 5 years and, subject to satisfactory progress, Technical College fees will be paid by the Commonwealth Government.

RATES OF PAY are in accordance with the Arbitration Court Award made between the Department and the Trade Unions. On completion of the first year, an additional weekly payment is made, subject to satisfactory progress. Three weeks' annual leave and liberal sick leave are granted, and an allowance is payable to apprentices who are obliged to live away from home owing to distance.

ELIGIBILITY Age limit is 15 years and under 17 years at date of taking up appointment. A satisfactory pass at the Intermediate Certificate examination is desirable, but not essential.

VACANCIES exist for the following trade apprenticeships: Fitter and Turner, Scientific Instrument Maker, Refrigeration Mechanic, Radio Tradesmen, Boilermaker and Welder, Shipwright and Boatbuilder, Ship's Plumber, Painter, Moulder, Copper-smith, Engine-smith, Motor Mechanic, Sailmaker, Sheetmetal Workers, Joiners, Patternmakers, Upholsterers.

APPLICATION must be made on the form prescribed. For application form and copy of conditions of entry, apply to your District Employment Office, or the General Manager, Garden Island Dockyard, Sydney, closing date 18th November, 1959.

See Your Navy at Work

H.M.A.S. WATSON'S "OPEN DAY"

5th OCTOBER, 1959

The first major function during the 1959 Navy Week in Sydney will be at H.M.A.S. Watson, when this establishment will be open for public inspection from 1.30 p.m. to 5.00 p.m. on Monday, 5th October.

HOW TO GET THERE:

H.M.A.S. Watson is located at South Head with an Army establishment adjoining. The entrance gates are in Cliff Street, Watson's Bay. Buses (No. 327) from Central Railway (Eddy Avenue) and trams from Queen's Square terminate at Watson's Bay approximately 300 yards from the entrance gates.

Visitors arriving by private car should drive through the entrance gates. They will then be directed along Watson Drive to a car park.

WHAT TO SEE:

H.M.A.S. Watson is the home of the Torpedo Anti-Submarine School, the Navigation Direction School, The East Australian Area Naval Band, and an Advanced Cookery School.

Throughout the afternoon men of the two first mentioned schools will demonstrate for the benefit of visitors, the tasks for which they are trained.

TORPEDO ANTI-SUBMARINE DISPLAYS:

Perhaps the most spectacular events will be the Anti-Submarine Mortar Firings and the Diving Displays by Naval Frogmen.

Visitors will see at first hand how the deadly Mortars are fired in exactly the same way

as from anti-submarine ships of the Royal Australian Navy.

Naval Frogmen will demonstrate in Lady Bay how they enter the water and are retrieved by a fast moving boat so that they may carry out their missions in enemy waters and make good their escape as quickly as possible.

At the rear of the Torpedo Anti-Submarine School, Frogmen will show how underwater cutting torches are used.

Within the school, anti-submarine attack teams will show visitors how submerged submarines are detected and the sequence of events leading up to attacks by anti-submarine Mortars.

NAVIGATION DIRECTION DISPLAYS:

In the Action Information Training Centre and Radar Block all available radar sets will be operating. Here the visitor may witness how ships and aircraft are located by radar and their movements plotted, so that the Captain of a ship can see immediately the disposition of friendly and enemy forces and make his plan for attack.

BAND MARCHING DISPLAY:

Throughout the afternoon the combined Naval Bands of H.M. Australian Fleet, the East Australian Area and H.M.A.S. Albatross will play incidental music on the Parade Ground immediately in front of the Amenities Building. As a finale they will give a marching display at 4.45 p.m. on the road-

way in front of the Administration Block.

REFRESHMENTS:

Around the establishment visitors will find refreshment stalls to cater for their immediate requirements and Afternoon Tea may be obtained in the Amenities Building at 3.30 p.m.

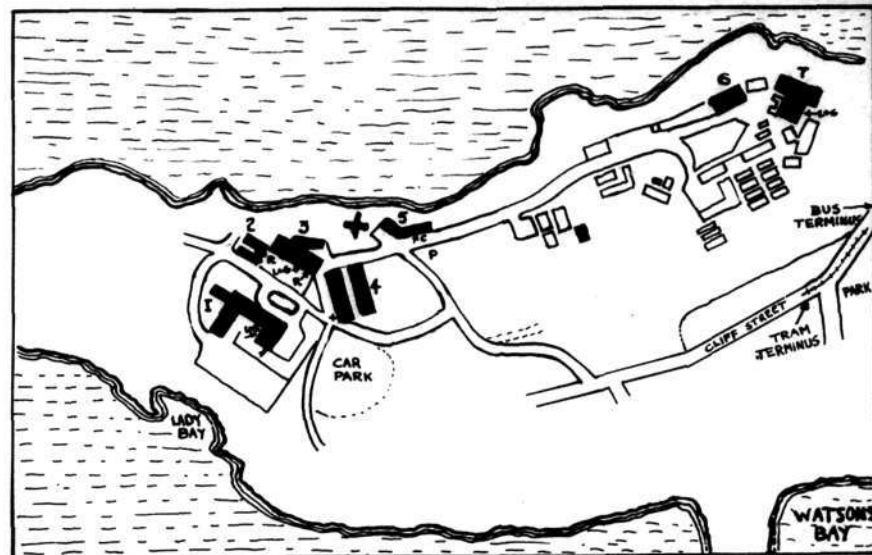
RATINGS' ACCOMMODATION AND AMENITIES:

The lower floor of the northern Junior Ratings' Accommodation Block will be open so that visitors may see the comfortable living conditions in H.M.A.S. Watson.

An inspection of the first floor of the Amenities Building will show how pleasantly ratings may spend their off duty hours with provision for wet and dry canteens, billiard and reading rooms, and television. On the ground floor of this building is a modern galley and first-class dining hall, with a seating capacity of 400.

A SHORT HISTORY OF H.M.A. DOCKYARD CHURCH, GARDEN ISLAND.

The first known Church service to be held in the present Church was a Thanksgiving Service for peace on the termination of the South African War. This would make the date of the present Church about 1902. Much can be said of this unusual Church (see brochure inside entrance door of Church). The Church is unique of its kind, and I doubt whether you would find another church in Australia, not on the



LOCATION OF INSTALLATIONS

- | | |
|---|------------------------|
| 1. Torpedo Anti-Submarine School. | 7. Radar Block. |
| 2. Chief and Petty Officers' Accommodation. | L. Ladies' Toilets. |
| 3. Amenities Building. | G. Gents Toilets. |
| 4. Junior Ratings Accommodation. | C. Lost Children. |
| 5. Administration Building. | P. Information Centre. |
| 6. Action Information Training Centre. | R. Refreshments. |
| | + First Aid Post. |
| | † Site of Chapel. |

ground level, yet having an outside entrance. The history of the Royal Australian Navy can be traced by looking at the stained glass windows, which depict many gallant ships.

SHORT HISTORY OF H.M.A.S. WATSON:

The establishment first commenced in the early years of the Second World War, when the need arose for a school in which to train operators of Radar, which had recently come into service in the R.A.N. The establishment was enlarged considerably in 1944, and in 1945 it was officially commissioned as H.M.A.S. Watson.

In the meantime navigation training had commenced at Watson, and the two types of training were combined under the title of Navigation Direction School.

The Torpedo Anti-Submarine School, which has been

located at Russhutter Bay, moved into its fine new building at Watson in 1956 and, following this, new accommodation buildings, dining hall galley and amenities buildings for all ratings, plus a new Administration building, have been completed.

A fund has been started to provide for the erection and fitting of a Memorial Chapel, about which you have read

elsewhere in this issue. A cross, illuminated each night, stands on the site of the new Chapel near the Administration Building. This cross will remain illuminated by night until the target figure of £27,000 is attained.

Finally, the Captain, officers and men of H.M.A.S. Watson would like to extend a warm welcome to all who visit us on October 5th.

Sharing in Great Traditions

It was a red letter day in the history of man when a floating log first bore him across a stream. With awakening understanding he wrought from the log a canoe. And thus, in his first tiny wooden craft, he searched for and found new hunting grounds and new peoples. He came to understand the pulse of ocean and the way of the wind. His canoes grew to caravels, to clippers, to ships of the line. In them he ventured beyond the horizon's rim, and the seaways and the havens of the world came to know the form of timbered hulls and the spread of wooden spars. Wood alone made it possible for man to explore and conquer, to merge and mingle, to trade treasure and exchange ideas, with lands and peoples across the sea.

But trade and treasure evoked the envy and avarice of lesser men. Ships had to be protected; ideas defended.



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And it was in ships of oak and elm that British seamen fought and won their great victory at Trafalgar, one hundred and fifty-four years ago.

MANNING THE FLEET

(Part II)

By Rear Admiral
W. H. Harrington,
C.B.E., D.S.O.

NO organisation can be efficient without discipline and the peculiar requirements of the Navy demand that men, who are land animals, shall live at sea in confined quarters under conditions which differ considerably from those to which they are accustomed ashore. Any space allocated to living quarters and amenities is provided at the expense of space for weapons and sea-keeping capacity.

Only by observing the strictest discipline can such a community live at peace with itself. It is fortunate that the increased level of intelligence required results in an increased level of responsibility and acceptance of order. The sentiment of the times precludes the imposition by force of disciplinary standards on people who are unwilling to observe them, and the only practical solution is to return them to the community from which they came.

The present manning situation in the Navy permits of optimism after a critical period. The reasons for the crisis are to be found in the War of 1939-45 and in the Korean War. During the former, the Government directed that recruitment of men on a permanent basis should cease except in so far as it was necessary to replace men who were discharged. Since the country was at war the only discharges made concerned men who were "Discharged Dead" or who became "unfit". At the end of the war all those men whose time had expired and who had been



Rear-Admiral W. H. Harrington,
C.B.E., D.S.O.

retained were released. Their reliefs who in the ordinary course of events would have been entered and trained for permanent service, had signed on for "Hostilities Only" and they also were released.

The immediate post war years were, therefore, a period of manpower turmoil. The Berlin Crisis and the Korean War brought volunteers flocking back, and between 1950 and 1953 the situation was restored. But this restoration itself introduced the elements of a future crisis, because a big influx of entries brings with it a big efflux some years later when engagements expire, unless a high proportion re-engage.

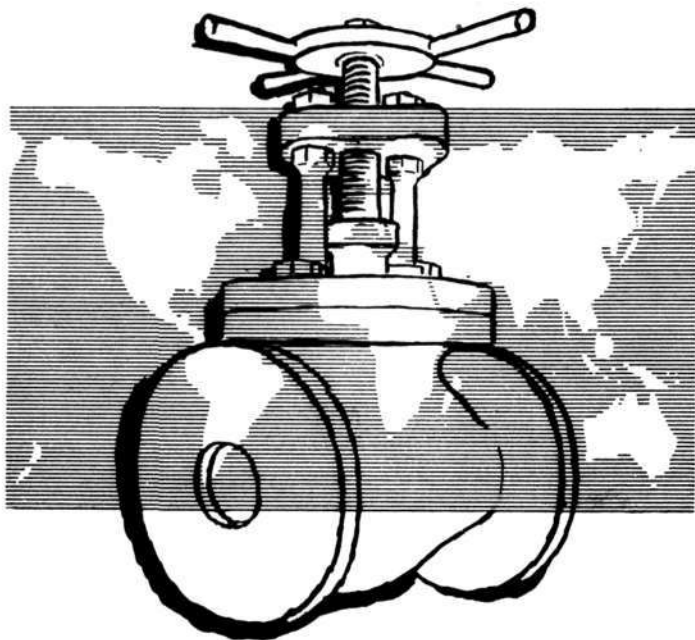
In 1950, a six-year engagement was introduced; previously it had been twelve years. Thus in the years 1956-58 there were two large blocks of men whose time was due to expire, the twelve-year men who had been entered immediately after the war in 1946 in replacement of those who had been retained for the period of hostilities, plus a large block of six-year men entered for the Korean War in 1950-52. Both these blocks were due to take their discharge in the years

1956-58. Service pay and conditions had lagged behind what was being offered by industry, and the attractions of Naval service were not sufficient to encourage men to re-engage in the face of an expanding economy, and an abundance of well paid employment in civil life. In 1958, service pay was improved, which helped to stem the rundown.

Naval recruiting is not immune from the ordinary effects of supply and demand. So long as pay and conditions in the Navy remain comparable with those of industry, recruitment reflects the availability or otherwise of employment in industry. In this connection it must be remembered that Treasury is responsible for advising the Government on pay and conditions of service and not the Naval Board: variations are made only after the most mature consideration having regard to the implications, not only within the Service but also in so far as industry is concerned.

As already stated, the majority of recruits enter the Navy at the age of 18 years. From 1945 onwards there has been an expanding birthrate, so that from 1963 there will be an ever increasing supply of young men of recruitable age. Unless some unforeseen development occurs, there is reason to believe that the Navy will be able to obtain as many recruits as it requires, even if the necessary standard becomes higher than it is today.

In dealing with men and planning for their engagement and training, it must never be forgotten that the material is human material subject to the desires, emotions and ambitions of human beings elsewhere. The Naval Staff Manual as its



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MANNING THE FLEET (Continued)

frontispiece has a picture of a sailor, and invites attention to the fact that he is the most valuable component of the Navy. This judgment is perhaps more important now than it usually is, for the reason that changes and developments in material have been so revolutionary and so rapid, that it is difficult to predict whether any weapon will not become outmoded in a few years. What is certain is that "the sailor" can never become outmoded. The intelligent disciplined man can be taught to handle any weapon, but without intelligent, disciplined men no weapon can be relied upon to function.

The situation with regard to officers is more difficult. The Navy is essentially a technical service; officers need to be specialised technicians, and who is to control technicians when such specialists cannot be

questioned in their own subject except by other specialists.

Over them you must have people who are specialists in leadership as well as in their own particular art. If a ship in battle has a small dose of radiation and its men can be saved only by going to hospital at once, it may still be necessary for them to remain in action. The Navy must be able to produce officers who can take the decision to continue; Captains whose men will follow them even though it means they'll die. Such men are sought after in all walks of life, and competition for their services is intense.

* * *

The concluding portion of Admiral Harrington's appreciation of the country's manpower and its distribution will appear in the November number.

Editor.

A Nation Dependent upon Sea Power

(Continued from page 9)

its enemy. Successfully exercised by an island nation, it means survival, whereas failure to maintain sea power can mean defeat even without invasion.

In the early months of 1942, when the Allies had lost temporarily command of the sea to the north of Australia, our then enemy, Japan, was able to attack the mainland of this country, carrying out a few sporadic raids with sea-borne aircraft and submarines. That southward movement was halted only when, in May of that year, the Japanese were repulsed at the Battle of the Coral Sea.

Let us not forget our debt to Sea Power.

JOIN THE



NAVY LEAGUE

The object of the Navy League in Australia, like its older counterpart, the Navy League in Britain, is to insist by all means at its disposal upon the vital importance of Sea Power to the British Commonwealth of Nations. The League sponsors the Australian Sea Cadet Corps by giving technical

sea training to and instilling naval training in boys who intend to serve in Naval or Merchant services and also to those sea-minded boys who do not intend to follow a sea career, but who, given this knowledge, will form a valuable Reserve for the Naval Service.

The League consists of Fellows (Annual or Life) and Associates.

All British subjects who signify approval to the objects of the League are eligible.

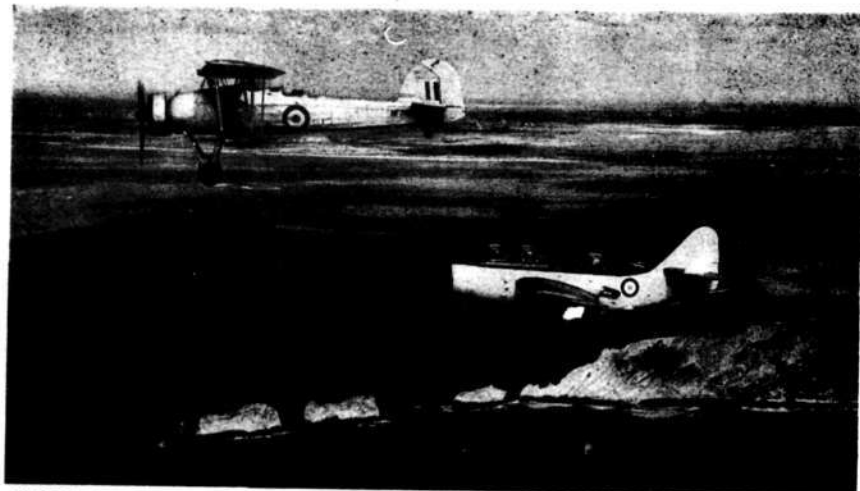
MAY WE ASK YOU TO JOIN and swell our members so that the Navy League in Australia may be widely known and exercise an important influence in the life of the Australian Nation?

For particulars, contact The Secretary, 83 Pitt Street, Sydney, N.S.W.
or The Secretary, Room 8, 8th Floor, 528 Collins Street, Melbourne, C.I. Victoria

or one of the Hon. Secretaries at:

- Box 376E, G.P.O., Brisbane, Queensland
- 726 Sandy Bay Rd., Lower Sandy Bay, Hobart
- P.O. Box 90, Darwin, N.T.

- 30 Pirie Street, Adelaide, S.A.
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HISTORIC RELICS

(Continued from page 19)

Room, Boatwain's Store, Wardroom, Quarterdeck, Projection Room, Maintop, Armoury, Chief and Petty Officers' Mess, Canteen Store and Flat, Cadet Petty Officers' Mess, Foretop, Clothing Store and Ship's Office.

The Unit is in possession of the following relics:

A lectern from the chapel of H.M.A.S. "Australia" (cruiser), (used at "Requestmen and Defaulters"). "Gayundah's" bell (river gunboat—Queensland Navy).

Photographs of "Gayundah" (dated 1899) and her ship's company (dated 1900).

A lifebuoy from the German raider ("Stiermark") which sank H.M.A.S. "Sydney" (cruiser).

A bottle of Irish whisky which had been under water for 80 years in Moreton Bay since the sailing ship "Scottish Prince" sank.

A fully-rigged scale model of the clipper ship "Cutty Sark" (which has sailed very successfully on many occasions).

A builder's scale model of an Orient liner.

The Unit has complete freedom of "Mildura" for instructional purposes and occasionally has a day in Moreton Bay in G.P.V. 957.

In January each year Annual Continuous Training is held, the Unit living in "Mildura" and running a routine similar to a ship alongside in harbour.

The afternoons are devoted to recreational training or visits to places of interest, such as shipyards.

At the moment any plans for improving the Unit's home are held in abeyance as it will, some time in the future, be moving to the (wartime) Victualing Yard at New Farm, to which several other Naval Establishments in the city are also being transferred.

UNIFORMS CHANGED

A CHANGE in the uniform worn by ratings of the Supply and Secretariat, Sick Berth and Dental branches of the Royal Australian Navy was made from October 1.

The Minister for the Navy, Senator Gorton, announced that, instead of wearing double-breasted jackets, trousers of ordinary pattern and peaked caps, ratings in the branches mentioned would be dressed in seamen's uniform.

This means that all naval personnel below the rate of petty officers (except artisan ratings, who would continue to wear double-breasted jackets as part of their uniform) would be dressed alike.

The Naval Board considers that uniformity in dress will increase the smart appearance of the Navy as a whole, and will simplify production and distribution of naval clothing.

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AVENUE ROAD, MOSMAN

XM 3094

Opens Way to a Fine Career

(Continued from page 15)

pocket money and later draw active pay. Matriculation entry cadet-midshipmen draw active pay from the day they enter the College.

A cadet-midshipman at the College engages in general studies, gains theoretical and practical nautical knowledge, and takes part in athletic sports and games and other forms of recreation.

Part of his recreation includes sailing and racing in the Tam-o'-Shanter and other college yachts and dinghies, cutters and other small boats. Some cadet-midshipmen have been included in the crew when the Tam-o'-Shanter has competed in the Sydney to Hobart yacht race.

Religious instruction has an important place in the College curriculum, and all cadet-mid-

shipmen attend church on Sundays and other special days.

After graduation cadet-midshipmen gain sea-going experience by serving for three months in the R.A.N. training frigate.

They live and work in the ship under the same conditions as naval ratings, so that they will learn the ship's routine in its relations to the sailor and become acquainted with the mode of life on the lower deck.

They also do a short air course at the R.A.N. air station at Nowra (N.S.W.).

At the end of this period they are promoted midshipmen, and go to the United Kingdom for further professional and academic training at the Royal Naval College at Dartmouth.

Having completed this training, which occupies 16 months, they are promoted acting sub-

lieutenants and — except for electrical specialists—go to sea in ships of the Australian Fleet.

After that, they can specialise in one or other of the seamen, engineering or supply and secretariat branches. Officers of all specialisations eventually become eligible for high appointments.

Officers who specialise in engineering complete two years' basic training at the Royal Naval Engineering College at Manadon, Devon (England), and may then volunteer for further specialisation in marine engineering, aeronautical engineering, or ordnance engineering.

After their initial training at the Royal Australian Naval College and the Royal Naval College, midshipmen selected to become electrical officers are sent to Australian Universities to study for the degree of Bachelor of Electrical Engineering.

PRINCESS ALEXANDRA'S VISIT

THE R.A.N. played an important part in the arrangements made in connection with the visit of H.R.H. Princess Alexandra.

The frigates "Queenborough" and "Quiberon" and the destroyer "Warramunga" berthed in the Brisbane River during the Princess's stay in Brisbane, while a combined R.A.N. band from H.M.A.S. "Melbourne", the East Australian Area and the naval air station at Nowra (N.S.W.) played at various functions held in her honour.

These included a race meeting at Eagle Farm, a State Reception and a Royal Ball. The R.A.N. band also gave a marching display at the Exhibition Grounds on the night of August 19.

H.M.A.S. "Warramunga" embarked the Princess at Bowen on August 29 and took her to Linderman Island, where she spent several days, at the end of which H.R.H. again took passage in the ship for Mackay, being shown Daydream, Molle and other well-known islands en route.

At a civic reception given to the Princess at the Sydney Showgrounds on September 11, the R.A.N. combined band again gave a marching display.

While in Canberra, the Princess opened a new accommodation block for Wrens at H.M.A.S. "Harman", the W/T station. The block will be known as Alexandra House.

At the opening of the Royal Show in Melbourne, on September 18, which was attended by H.R.H., a band from Flinders Naval Depot took part with bands from the other services in a programme of music and marching. The band from F.N.D. also played at Essendon airport on the departure of H.R.H. from Melbourne for Canberra.

SEA VIXEN'S SUCCESSFUL LANDING TESTS

Three de Havilland Sea Vixens (Rolls - Royce Avon engines) recently completed an intensive three-week work-up period in H.M.S. "Victorious", during which each aircraft made between 50 and 60 arrested landings both by day and night. It was possible on almost every occasion to "range" two of the three aircraft on the catapults, with the third available as a serviceable stand-by.

A substantial additional order for Sea Vixens for the Royal Navy was announced early in June, and they have now entered operational service. The Sea Vixen, carrying up to four de Havilland Firestreak infra-red-homing air-to-air missiles in its all-weather role, and bombs or rockets in the strike-reconnaissance role, and in addition an internally-stowed complement of 2-inch air-to-air rockets, will gradually replace the de Havilland Sea Venoms.

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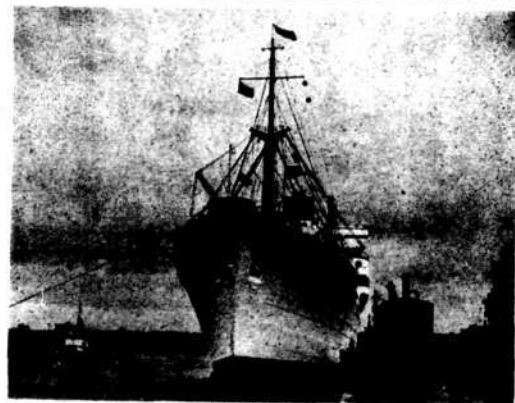
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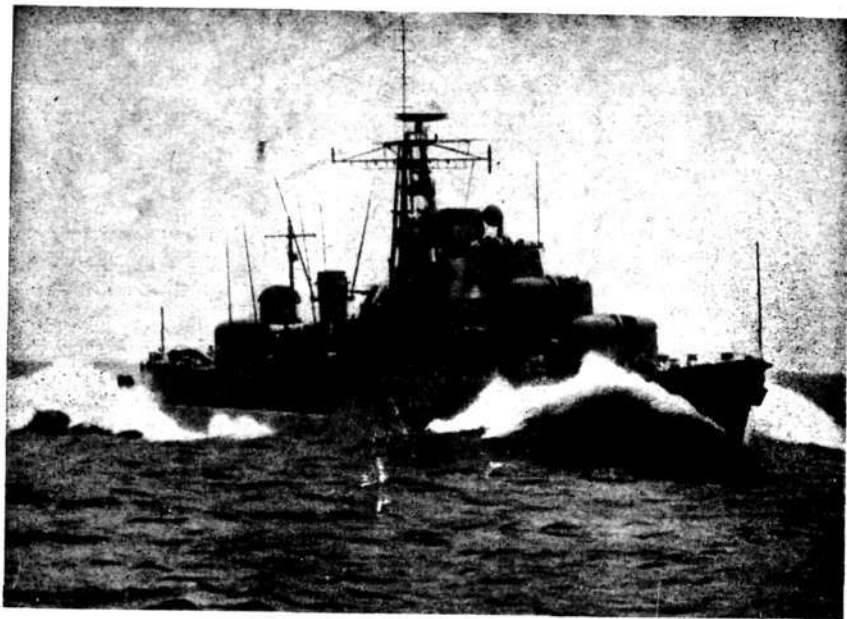


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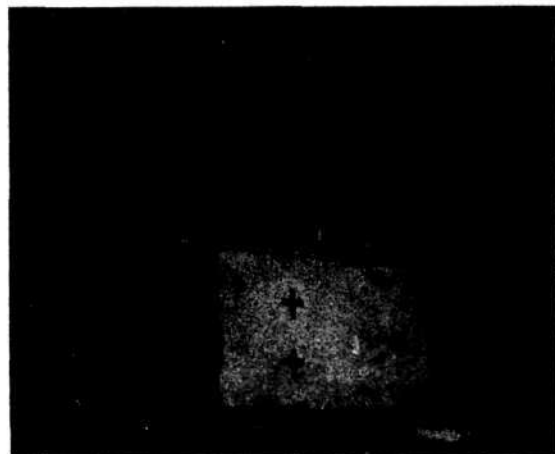


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WATSON MEMORIAL CHAPEL

MOST of you will have read about, or have seen in the papers or on TV or heard on the radio, our appeal for the Watson Memorial Chapel which is to be built at the South Head and we feel that most of you will want some more information about it.

First of all, there is no memorial in New South Wales to the men in the Navy who died in the service of their country, that is there is no memorial other than the memorial tablets or parts of the Cenotaph to our dead and we at Watson have felt that there is real place for a worthy memorial in Sydney which is the most important naval port in Australia. At Watson we were influenced in the form of the memorial by our urgent need for a Chapel and a Chapel



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with all its sacred associations, appears to us to be most suitable.

H.M.A.S. "Watson" is the main operational training establishment of the Royal Australian Navy and is equipped splendidly in all that could be desired in its instructional, recreational and accommodation facilities. Here at Watson we have always felt the need for a Chapel where the men and women who are serving

their country could find a place for the worship of God or for quiet or prayer or meditation and thus draw spiritual nourishment. When we talked with our Architect, Mr. John Mansfield, about the form of the Chapel he was much struck with our ideas and produced a most attractive design. This design shows the Chapel as a strong building springing from the rock face of South Head and surmounted

by a lofty Cross which will be illuminated at night, thus both by day and night people approaching the South Head from the sea, or looking towards it from the harbour side, will see pointing aloft this symbol of our faith in God.

The Chapel itself will be built principally of stone and beyond the altar which will incorporate stones from other parts of the Christian world, there will be a lovely view of North Head. We feel that our Chapel will be a most notable landmark and a perpetual reminder to those living in or visiting Sydney that we are a maritime country and that our prosperity depends upon the sea and it is the prime duty of the Navy to afford safe passages on the waters for both trade and commerce.

Up to date our Appeal has raised £10,000 in four months but another £17,000 is required before we can undertake to build. We feel confident that those who visit the Navy during Navy Week are already interested in the work of the Navy and it is our hope that they will help us in this Chapel Appeal, either by placing a donation in the box near the Model of the Chapel or by sending their donation to the Chapel Appeal Fund, H.M.A.S. "Watson", Watson's Bay.

Do help us to keep faith with those who paid the supreme sacrifice.

NUCLEAR WEAPONS FOR E.C.N.

THE Canadian Government has decided to equip Canada's three services, the R.C.A.F. at home, the R.C.N. in the North Atlantic and the Army in Europe, with nuclear weapons.

Arrangements for custody and control of nuclear weapons on Canadian ships have yet to be worked out with N.A.T.O.

Garden Island Grew From Vegetable Patch Into Mighty Naval Base

IT is recorded in the log of H.M.S. "Sirius", one of the units of the first fleet, on February 11, 1788, 16 days after the settlement of the colony, that a party of men was sent to "Garden Island" to clear it for the purpose of planting a vegetable garden for the use of the ship's complement.

The carvings on a rock at the northern end of the island FM 1788 and IR 1788, presumably made by members of one of these gardening parties are probably the first carvings made by white men on the eastern shore of the continent.

The topography of the Island then consisted of two rocky hummocks with a saddle, where the gardens were cultivated, in between. The northern hummock still remains but the

southern one was levelled to provide a site for buildings.

The gardens must have been successful for after H.M.S. "Sirius" was lost on a reef at Norfolk Island, other ships including H.M.S. "Lady Nelson", the first ship to make the passage through Bass Strait and to hoist the new Union Jack in the Colony, are recorded as having obtained supplies from the Island.

This association between the Navy and the Island was broken, however, in September, 1811, when Governor Macquarie, by proclamation, appropriated the Island to His Excellency's Establishment and excluded H.M. Ships from using it.

Reference to the Island for many years after this appropri-

ation are few but it is recorded that the remains of Mr. Ellia-Bent, Judge Advocate, were placed in a vault on the Island after they were removed from the George Street Cemetery (the present site of the Town Hall) when this grave-yard fell into disuse.

His remains together with those of his friend Major John Ovens, which had also been placed in the vault, and those of Commodore Goodenough and others which had been interred on Garden Island, were removed to St. Thomas Cemetery, North Sydney, in 1885 or 1886. In 1856, the Colonial Government offered and Captain Fremantle, on behalf of the Admiralty, accepted, the Island for the use of H.M. Ships in Australian waters.

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The formal notice of the dedication did not appear in the Government Gazette, however, until January 10, 1865, for the southern portion and June 5, 1866, for the remainder.

Differences of opinion as to the merits of Garden Island compared with such places as Dawes Point, Fort Macquarie, Goat Island, Cockatoo Island, and Potts Point, as a Naval Depot held up work until May 31, 1866, when a start was made on the Rigging Shed and Sail Loft, which building was completed in 1887. The establishment by 1896, when it was taken over by the Admiralty, comprised buildings known as the Barracks, Boathouse, Spar Shed, Engine and Boiler Room, Anchor and Chain Store, Sawmill, Blacksmith Shop, Naval Stores and Main Office, either in being or in the course of construction.

Admiralty House "Kirribilli" was acquired at a later date, as

a residence for the Naval Officer Commanding the Australian Naval Station but when the Governor General (Lord Denman) was evicted from Government House, Sydney, as a result of the Government of N.S.W. not considering itself to be responsible for providing an official residence for Commonwealth purposes, Admiralty House was taken over as the Governor General's official residence.

Rapid Growth

With Federation came a strong feeling that Australia should maintain its own Navy but it was not until several years later that it was definitely decided that it should be found. Once the decision was made, events moved rapidly and in 1913, the Royal Naval Squadron was relieved by the Royal Australian Naval Squadron. With the transfer of the station

the control of Naval Establishments passed to the Commonwealth with effect from July 1, 1913.

During the intervening years many alterations and additions have been made to the engineering establishments on Garden Island in order to keep abreast of modern Naval engineering.

In addition it has been found necessary to construct other subsidiary establishments and today in Sydney, we have H.M.A.S. "Penguin" (Balmoral Naval Depot), H.M.A.S. "Watson" (Radar Training), H.M.A.S. "Rushcutter" (Anti-Submarine Training), Torpedo Factory, Armament Depot R.E. Victualling Yard.

With the construction of Captain Cook Dock it can be claimed that Garden Island is one of the best equipped Naval bases in the Southern hemisphere if not the world.



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JUNIOR RECRUITS TRAINING SCHEME

Under the junior recruits training scheme which will be introduced into the Royal Australian Navy next July, youths of the Commonwealth and the R.A.N. itself will both benefit.

As announced by the Minister for the Navy (Senator the Hon. J. G. Gorton) recently the new scheme will be available to suitable boys aged between 15½ and 16½ years in all States and in July the first 150 of them will begin training. After that, 150 more will be entered every successive six months.

Training during each recruit's first year of service will be given at the Junior Recruits Training Establishment which will be opened at H.M.A.S. LEEUWIN, on the Swan River near Fremantle (W.A.).

At the end of their first year, recruits will be allotted in-

dividually either to the seaman, communications, engineering or electrical branches and will attend naval technical schools in New South Wales or Victoria for some months. They will then go to sea in ships of the Fleet.

Junior recruits will receive the following rates of pay:—
per week
Under 16 years . . . £3/10/0

16 years £5/5/0

17 years £9/14/10

During leave they will be paid an additional living-out allowance of 9/6 per day.

Youths who join under the new scheme will be required to serve for at least 12 years from their date of joining. On completion of that service they may expect, subject to recommendation and the R.A.N.'s needs,

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Junior Recruits Training Scheme (Continued)

to be given the opportunity to re-engage for shorter periods up to the age of 50.

They will be eligible for invalidity under the Defence Forces Retirement Benefits Act from the date of entry, and will contribute to the fund from the age of 18. Eligibility for pension on retirement, dates from the end of 20 years' service after the age of 20.

If a man does not re-engage on the termination of 12 years' service the contributions he has made to the Retirement Benefits Fund will be refunded to him and he will also be paid a gratuity.

Besides being supplied free with a full kit of uniforms and accessories on entering the service, recruits will be provided with comfortable accommodation, good food and free medical and dental attention.

Many Amenities

Numerous amenities such as a library, games rooms, cinema, sporting facilities and so on will also be provided. Religious instruction will be given by chaplains of the recruits own denomination.

Six weeks' leave in two periods will be allowed, and free return travel to visit next-of-kin.

It is hoped that the introduction of junior recruit training will attract to the Royal Australian Navy intelligent boys who would normally be absorbed and retained in civil employment between the age of 15½ at which some of them leave school and the age of 17 at which the Navy will accept them under the existing system.

While they are being given a basic naval training their school education will be continued by highly-trained and specialised naval instructor-officers.

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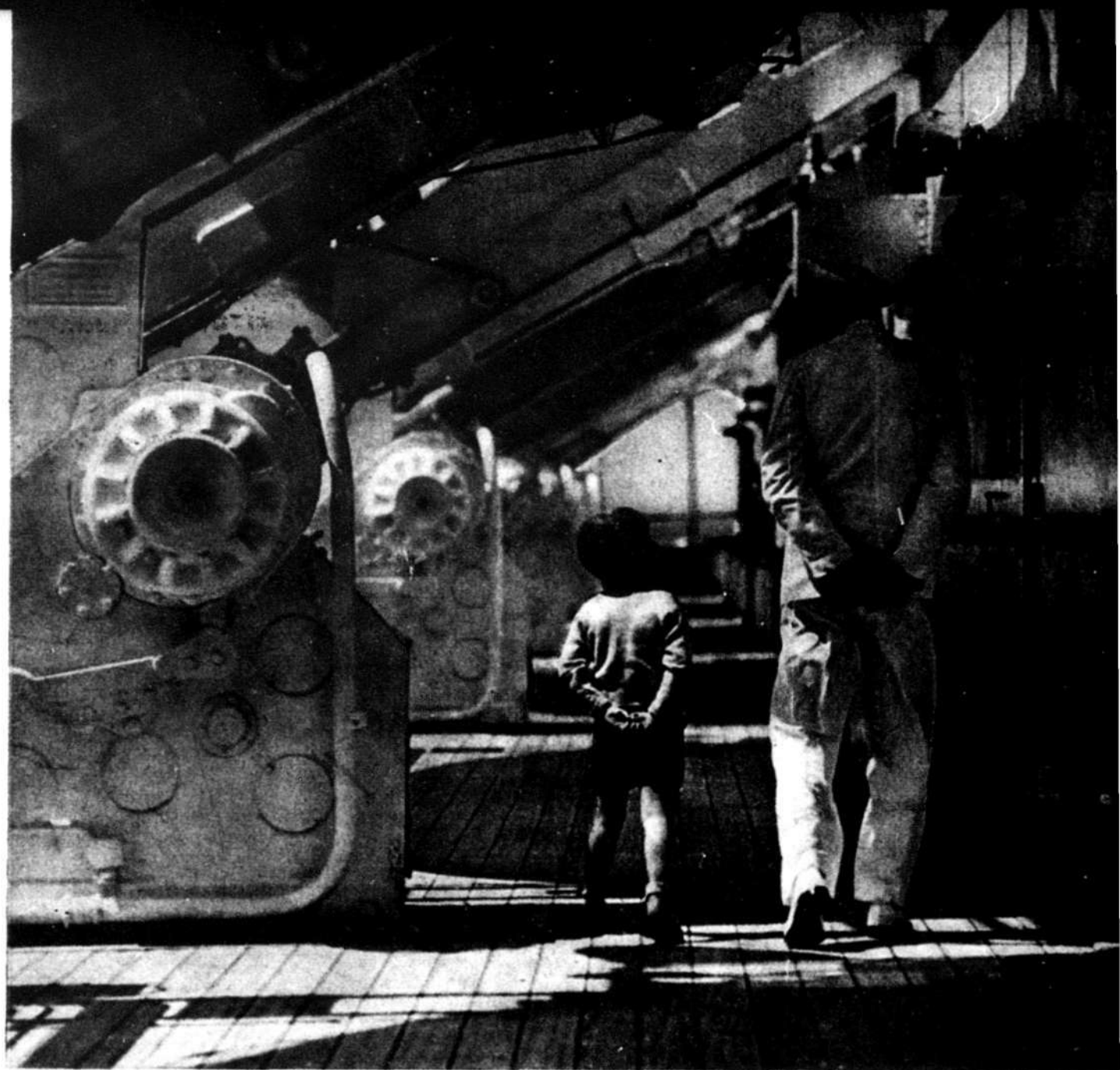
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THE NAVY

November, 1959 1/6

IN THIS ISSUE

The Navy's Divers

Underdiving - A Growing Segment

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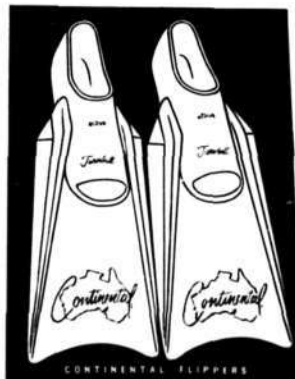
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THE NAVY

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NOVEMBER, 1959

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REAR-ADMIRAL Bertram Taylor, the Royal Navy's Flag Officer, Submarines, is visiting Australia and New Zealand to have discussions with the Australian Naval Board and to inspect the Fourth Royal Naval Submarine Squadron based in Sydney.

Rear-Admiral Taylor, who joined Submarines in 1928, commands most British sub-

marines based in the United Kingdom, and is the British Admiralty's adviser on all Submarine matters. He also holds the NATO appointment responsible for the planning of Submarine Operations in the Eastern Atlantic, and for their conduct in war.

His appraisal of the importance of modern submarines in Commonwealth defence will be found on pages 15 and 16.

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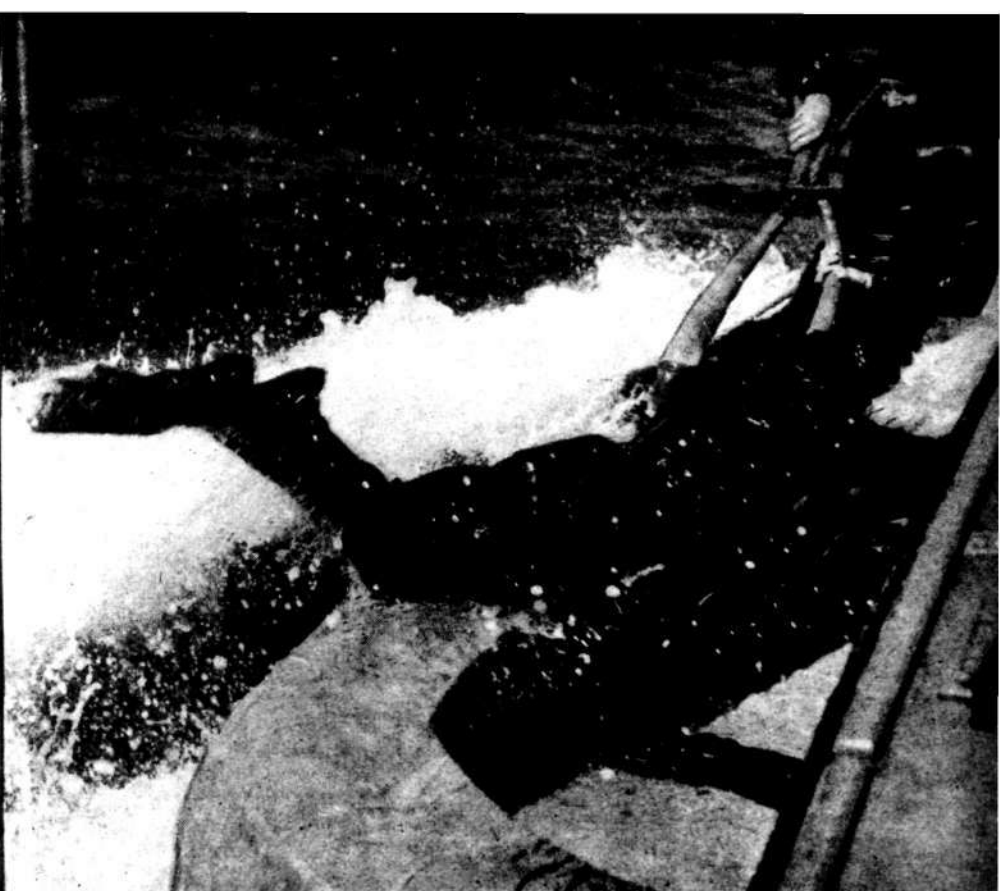
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THE NAVY



Petty Officer A. Donald helps another frogman aboard during a demonstration associated with the recent Open Day at H.M.A.S. "Watson". The frogmen's display was one of many phases of Navy life demonstrated to stimulate public interest in Australia's Navy.

THE NAVY'S DIVERS

The birth of the "Frogman" and his position in the R.A.N. to day.

By Lieutenant (C.D.) P.A. Hawke, R.A.N.

IT is many hundreds of years since man first began to dream of going below the sur-

face of the water, there to investigate the secrets of the sea. Initially, of course, man simply held his breath, and this method is carried on to this day by sponge divers and the modern snorkel diver. Some experts in this form of diving can go down to a depth of as much as a hundred feet, and can remain under water for

four to five minutes. Very early attempts were made to create a machine which would enable a man to stay down for longer periods and carry out useful work whilst there. The earliest form of this is mentioned by Aristotle (360 B.C.), when a simple inverted bucket system was used. Throughout the centuries since then, con-

stant reference has been made to attempts by man to develop a reliable diving dress, and many of these were successful in so far as a diver could remain under water for up to an hour, although not to a great depth.

The first truly successful diving dress was, however, invented by Augustus Siebe, a German, in 1837. This was a completely "closed dress," i.e., the diver was covered from head to foot, and as such was an improvement on his earlier "open dress" of 1819. This "closed dress" of Augustus Siebe, virtually identical to the Standard Diving Dress used to-day.

When diving was first introduced into the Services, early in the nineteenth century, it was carried out exclusively by the Army's Royal Engineers, and it was not until some fifty years later that diving was

taken over by Naval personnel. However, the Royal Engineers continued, and still continue diving, but now they are trained by the Navy.

Standard Diving Dress, which relies on a surface supply of air to the diver, virtually remained the only type of diving dress used in the Navy right up to the beginning of the Second World War, although self-contained diving, i.e., a diving dress which enables the diver to carry his own air supply with him, became a practical possibility early in this century and was used extensively in World War I.

During the last war, self-contained diving came into its own, and much has been written of the exploits of the "Charioteers" and "X" craft divers who carried out numerous attacks in the Mediterranean, Norway and Singapore. The earliest and probably best known of these was the attack

by Italian Charioteers on the British Fleet in Alexandria, which was so successful that for some time thereafter the British Fleet lost the control of the Eastern Mediterranean. The Royal Navy quickly learned from the Italians, and within a year of this attack had highly trained frogmen ready to operate. What is not so well known is that the Germans also learned, and in the last fourteen months of the war used under-water swimmers and vehicles extensively. In addition to the frogmen, the Royal Navy also began to train men to deal with mines under water, and these men formed teams which became known as "P" (or Port) Parties. They were used to clear harbours and docks not only in the U.K., but also in the ports of Europe captured after D. Day.

After the war, it was seen that men trained in both types of diving would continue to be

required, but due to lack of numbers the two were combined and the end product eventually became known as the "Clearance Diver".

In 1952, it was decided to commence a Clearance Diving Branch in the R.A.N., and, in order to train our personnel, officers were sent to the U.K. to undergo course for Clearance Diving Officer. Upon their return, and when sufficient volunteers for the new branch were obtained, the first course began in late 1955.

The role of the C.D. has also expanded considerably, and trainees are now taught not only to use the seven different types of diving equipment in general use, but, in addition, learn bomb and mine disposal, demolition, wreck survey, salvage, under-water cutting and welding, beach reconnaissance, beach clearance and submarine rescue.

It is obvious that for as specialised a job as this, a particular type of man must be selected. The greater part of our work is done from boats, and the C.D. spends much of his life handling ropes and wires, and is frequently confronted by problems which demand a high degree of common sense—consequently the first requirement is that he be a good seaman. Secondly, he must, of course, be of a high physical standard, though this does not necessarily mean that the trainee should be fit. He will be made fit on the course.

Physical standards for Navy Divers require that a candidate should be free from any illness or physical abnormality, such as hernia, varicose veins or skin diseases, and he should have no history of claustrophobia, or serious head injury.

Before commencing diving, every candidate must have a full medical examination, where particular attention is paid to

ears, nose, throat and teeth. This last examination is of great importance, since pressure changes when diving may cause serious injury to a man with any abnormality of these systems.

Once qualified, a diver normally has a medical examination every three months, and an X-ray once a year.

He should be under 25, as over that age one's reactions slow down. He should, of course, be a good swimmer—mainly because this would mean he has confidence in the water. He must be recommended by his Captain, and when considering a recommendation, the Captain normally must decide whether the volunteer is of above average intelligence (that is, for the rate he holds in the Navy) and whether he has a well-developed sense of responsibility. Without these, he would be of little value as a C.D., where often the success of an operation and the life of his companions as well as his own may depend upon his doing the right thing at the right time.

Severe Test

Upon being selected for C.D., a rating will join a class at H.M.A.S. Watson, in Sydney. He has in front of him a course of twenty weeks, and in that time an average of 3 out of every 8 will fail. Throughout this course the candidate is worked very hard, indeed, but particular emphasis is placed on this aspect in the first three weeks, after which a good instructor can generally tell whether a man will make a success of the course or not. Due to his direct responsibility for other people's lives, the removal of a man from course who is not up to standard has to be quite ruthless. Periodically thereafter, the instructor introduces intervals of constant pressure, eventually pro-

ducing at the end of the course a man with two chief mental characteristics. Firstly, persistence—the determination to see a job through, despite the obstacles, and, secondly, the ability to obey orders to do anything. It is our boast that there is **nothing** a C.D. cannot do.

During the course, part of the time is given to diving and the remainder to Bomb and Mine disposal. The candidate must, first of all, be taught all about the equipment he is to use in order that he will have confidence in it, and then he must be given confidence in the water. Despite all the popular books written to the contrary, the reaction of the normal man to his first dive is one of doubt and nervousness, with perhaps a slight appreciation of the pleasure it can bring him in the future. Initially then, he will dive in the easiest equipment to use, that is the aqualung, using compressed air. However, later in the course he changes to breathing, first pure oxygen and later still a mixture of oxygen and nitrogen which is varied according to the depth to which a diver is to descend. The change from using an aqualung or "open breathing circuit" to oxygen or "closed circuit" is a considerable one, and immediately introduces factors which increase the danger of poisoning to the diver. This stage is, therefore, handled carefully, and the man is not allowed off a life line until his instructing officer is confident that it is safe to do so. Oxygen diving is not a thing for the amateur to play with. Mixture diving is a natural follow-on of oxygen, and simply enables the diver to go much deeper, as oxygen is poisonous if used over a depth of 33 ft. It may well be asked why, if it is dangerous, does the Navy use oxygen and mix-

(Continued on page 10.)

UNDERWATER MOVIES!

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If you have any questions on the technique of underwater movie making, contact your local authorised Bolex Dealer or write us direct.

Illustration: Complete unit, ready for submersion, has handsome but functional design. Special plastic sight is tinted to show contrast underwater.



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BOLEX
OF SWITZERLAND

PRIME MINISTER ATTENDED SYDNEY SEAMEN'S SERVICE

SEA RANGERS, Sea Scouts and Sea Cadets formed the guard of honour when the Prime Minister, Mr. R. G. Menzies and Dame Pattie Menzies attended the annual Seafarers' Service at St. Andrew's Cathed-

ral, Sydney, on Sunday, October 25.

Officiating at the service was the Dean of Sydney, the Very Rev. E. A. Pitt.

He said that in time of difficulty and danger, during storm at sea, St. Paul received strength from a vision of God's angel.

The vision assured St. Paul of the completion of his jour-

ney and the safety of those who sailed with him.

"The angel of God's presence is still available to those who seek to give themselves to Him and serve Him," the Dean said.

"The Mission to Seamen offers in the name of the Church, help and friendship to the seafarers of every nation.

"There are more than 100 stations of the mission throughout the world and 14 in Australia."

SEA CADETS HONOUR TRAFALGAR

THE 154th anniversary of the Battle of Trafalgar was commemorated in Sydney on October 24 by the Navy League of Australia and the Australian Sea Cadet Corps in a city parade and wreath-laying ceremony at the Cenotaph, Martin Place.

The Cenotaph oration was given by the president of the N.S.W. Division of the Navy League, Rear Admiral H. A. Showers.

Wreath laying ceremonies have been held in previous years on Trafalgar Day, but this was the first occasion when their organisation was in the hands of the Navy League of Australia.

The success of the ceremonies confirms hopes that future similar occasions will add colour and pageantry to Sydney's calendar of important events.

Sea Scouts and Sea Rangers joined in the ceremony and the Royal Australian Navy East Australian Area Band led the march in and out of Martin Place.

Wreaths were laid by Rear Admiral H. A. Showers, C.B.E., R.A.N. (Retd.), a representative of the Ex-Naval Men's Association and the Deputy Lord Mayor, Ald. J. Byrne, representing the City of Sydney.

Manning The Fleet

By Rear Admiral
W. H. HARRINGTON,
C.B.E., D.S.O.

PART III

THE Navy is evolving in the wake of the technological advances which are being made in the world.

One effect of these technological advances is that military hardware is becoming so expensive in intelligent men, in money and in scientific effort that small nations find it very difficult to compete with large nations in the quality of their weapons as well as in quantity.

It is discouraging to serve in a force whose weapon inferiority can only be made up for by supreme skill, determination and self sacrifice, and it requires dedicated leaders of superlative quality to overcome this sense of being perforce a second rate organisation.

There are factors which, in Australia, tend to discourage such young men from joining the Navy, among them are the following:

- A commonly held misconception that the "H" bomb has made leadership and morale unimportant.
- A disinclination to be committed to serve for the best years of one's life.
- Early retirement.
- A poor basis for rearing a family.
- Higher awards in industry, particularly with regard to fringe benefits (the "fringe benefits" factor has a larger bearing on the matter than is often realised).
- Ill-informed but persistent sniping at the officer corps generally and, in particular, the "Top Brass".
- The universal desire for peace and the realisation that war will not only bring discomfort,

but acute physical danger to the civil population as well as the armed forces. This has engendered a feeling of distaste for all things appertaining to war and is reflected in a public disinclination to approve of anything military.

Of these factors, I believe that the most potent are the awards in industry and sniping at the officer corps.

Able young men beginning their careers rightly make the assumption that they are candidates for the highest positions and the tangible awards of High Rank in the services are demonstrably smaller than those at the top of the Industrial Tree or, indeed, of many other trees in the Career Forest.

Good Officers

A knowledge that they cannot expect material rewards and must expect the sniping referred to above is not encouraging. This is no new phenomenon, but faced with it the officer candidate is inclined to withdraw and accept the likely advice of his parents, his headmaster, and his career-adviser, to "do better for himself in some other calling."

Despite these developments, the Navy has so far been able to obtain sufficient good officers, and some of them are very good, indeed, but if the time should come when this does not occur there should be no Navy, for a badly officered service is not worth maintaining.

An article of this nature would be incomplete without some reference to the phenomenal increase in the world population. Hungry men are not susceptible to any logic other than the rumblings of their stomachs, which to them will seem louder than the rumblings of vaguely comprehended Megaton explosions.



Rear Admiral W. H. Harrington.

Quite apart from any questions of political doctrine, it would be wise in the present state of the world to be sure that a sufficient number of the right sort of men are attracted not only to the Navy, but to all services—although this must be at the expense of other national commitments, for there are never enough of the right sort of men to go round.

Our position in Australia is peculiarly interesting, and is quite new, in this connection. We have realised that it has changed since 1939 in so far as the balances of world power are concerned.

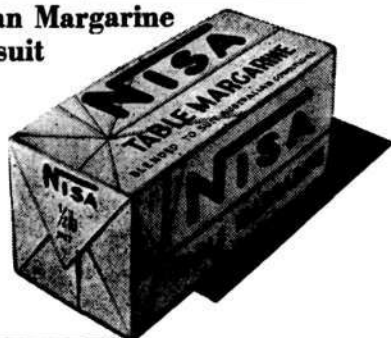
What we have not fully realised is that we are a small European community, living on the edge of an enormous Asiatic population.

Our standard of living is comparatively luxurious and it must take some very appreciable period before the living standards of Asia can be raised to our level. Moreover, our ideas and philosophy are in many ways alien to theirs.

It is unreasonable to suppose that, until a better acceptance of each other is achieved by Europeans and Asiatics generally, we can be regarded as an altogether desirable neighbour.

In such a climate of opinion it seems wise to have at hand the steady influence of an efficient force of arms.

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THE NAVY'S DIVERS

(Continued from page 7.)

tures? The answer is, firstly, that endurance under water is increased considerably, and, secondly, if oxygen only were not used in a closed circuit system, bubbles would be given off which would quickly give an attacker's position away to a defending ship.

The true "Frogman", then, wears a tight black rubber suit with tight hood, and rubber fins on the feet. He

breathes from an oxygen closed circuit breathing system, feeding oxygen to the lungs via a mouth-piece fitted in a fully enclosed face mask. He carries, in addition, a depth gauge and compass.

The trainee is brought to a high standard of physical fitness partly by Physical Training, but largely by continuous and prolonged surface and underwater swimming, and, indeed, throughout his course he will average a distance swim of some four miles every day.

Upon completing his course, a rating becomes a Clearance Diver, 3rd Class, and within four years can undergo course for Clearance Diver, 1st Class, after which he is qualified to supervise most forms of diving operations.

Clearance Diving Officers continue to be trained in the United Kingdom, but it is only very recently that sufficient R.A.N. officers have completed the course to fill the number of officers of the Royal Navy that we have reached a standard comparable to that of any Navy in the world to-day.

In addition to Clearance Divers, the Navy also trains men as ships' divers. These are the men who carry out routine diving jobs in ships, such as finding articles lost overboard, clearing inlets of weed and sometimes propellers of wires and hawsers that have been accidentally wrapped around them. As in every other aspect of diving, so the number of jobs which can be done by ships' divers is ever-increasing, and many jobs which once required a sea-boat and crew may well in the future be carried out more efficiently by divers. The Diver rate is made up of Seamen, Cooks, Writers, Naval Airmen and anyone else who cares to volunteer, and they are trained in the use of Aqualungs or, to use the Service term, Compressed Air Breathing Apparatus. They also learn to use "Hookah", which is similar to an Aqualung, but has air piped to the diver from a surface supply.

We in the R.A.N. Diving Branch are very pleased with the progress made so far and are proud of the men who have qualified. We look forward to an ever-expanding branch and know that, as the equipment we use is further developed, so will we be able to improve our performance and further probe the very largely unknown secrets of the under-sea world.

Skin-diving — The Growing Sport

More heads are bobbing around Australia's coastline each year. If you want to join them, now is the time.

By Karl Neubauer

TO dive to the bottom of the sea is no longer the privilege of the dare-devil of some 20 years ago. We adapt our mind quickly to new achievements—like sending satellites into orbit, transplanting the head of one dog on to another one's body or leaving this solid ground to share the weightlessness of fishes in a liquid medium 800 times denser than air.

Movies, radio and television showing the adventures of undersea hunters or the escapades of "Underwater Supermen" no longer thrill the audience as they did a few years back. It has become an established fact: anybody can go into a sports store, buy himself an aqualung and join the ranks of other adventure-hungry individuals.

It all seems so easy. In fact, it is easy; but a great number of beginners are in for a surprise. The breathing apparatus that supplied air at the slightest effort of inhaling on land, seems to be working inefficiently under water. The novice comes up—gasping for air and voices his opinion, blaming the design of the apparatus, the taste of the air or something else for his failure.

Yet the cause for this failure is invariably found in his mind. People with more or less robust mental outlook, generally, do not suffer from such experiences—but they are the

smaller number. The majority of beginners are impressed by the fact that suddenly there is water not only underneath them, but also above them.

They feel enclosed, become excited, and, because excitement increases the rate of respiration, cannot any longer draw enough air from the instrument to which they are not yet accustomed.

The need for proper tuition by an experienced and able teacher who is capable of preparing his pupil not only physically, but also mentally, is obvious. Where the pupil does not suffer from claustrophobia, is an experienced swimmer and skin-diver, many of the possible difficulties will remain unknown to him, enabling him to commence at an early stage to enjoy and find pleasure in observing the life in this so wrongly called "silent world".

Some millions of years ago we were well equipped to live in the ocean. We had gills, duckwebs between toes and fingers and other essential abilities to make life under water comfortable.

Remains of this specialised equipment can still be found in the human embryo during its first stages, but are lost in the course of development with the exception of very few—one of which is the human ear, formerly a gill slot.

Archaic water-memories lie deeply buried in our unconscious mind. During his evolution, man has been perpetually drawn to the sea. To-day, we find ourselves sitting on the edge of a cliff, pondering over the possibilities of rejoining those we have left so long ago to become the homo sapiens whose inventiveness enables him to, once more, equip himself with duck feet and under-

water lungs to pay short visits to his early hunting grounds.

In the sports store we are facing a new stage of evolution. After suppression of duck feet in humans over many millions of years man has, suddenly, grown (although artificially) such a variety of shapes and sizes of duck feet that the purchaser is confronted with the difficult task of selecting the right ones for his intended purpose.

Let us assume that we want to explore, observe and photograph. Flippers with a small to medium water displacement are more suitable for the beginner. They are not as tiring as very large ones.

Later on, after the necessary thigh muscles have been developed, the big ones no longer make the divers' legs ache and stiff. The off-set types of flipper, with the propelling section pointing downwards, away from the toes, assist greatly in saving cramps or tightness in the calf muscles.

Flippers should be used rhythmically in a steady and controlled motion. Trying to go somewhere fast, except for very short bursts, is not recommended, since it only leads to exhaustion and imposes a terrific strain on the heart.

The very large thigh muscles, propelling the body through a dense medium, consume a tremendous amount of energy which cannot be supplied for long.

Some plane-parallel and transparent plate in front of our eyes, sealing off an air space is necessary to see properly. The only thing is—that what we see is not where we see it. It is farther away.

Due to the refraction of light on the inter face of air and water we see things at three-

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Make up a party and write direct for Bookings

Skin-diving — (Continued from page 11.)

quarter the distance they actually are. Any object distant, say, 12 feet, appears to be at 9 feet.

But, remarkably enough, we can adapt ourselves quite well to this phenomena after some experience and are no longer confused.

Generally, a diving mask which encloses eyes and nose is the most desirable one. People with round faces find oval shaped, and those with longish faces, circular, forms will fit them best. Those who have difficulties in equalising the air pressure in sinuses and inner ear will find goggles with provisions to clip their nostrils with their fingers through the mask particularly useful.

Last, but not least, let us mention the snorkel. This simple tube (ping pong balls and other valves cannot be recommended) consists of nothing but a straight tube with a return bend and mouth-grip on the bottom. It serves two main purposes: firstly, it enables the swimmer to view the world beneath him uninterrupted while swimming on the surface and, secondly, increases the swimmers buoyancy whilst his head is immersed, due to the increased water displacement.

These advantages become extremely valuable when, after the aqualung-diver has run out of air, he has to swim back to shore along the surface with all his equipment.

This rounds up the necessary basic equipment. Some people may need a lead belt for ordinary skin-diving. Their total buoyancy is too great to allow them to remain submerged without continuous effort. A few pieces of lead overcome this difficulty.

Still more lead is needed with an aqualung. Most compressed air cylinders are buoyant even

when filled. In the course of diving, air is exhaled into the water, incurring a continuous loss of weight. There are 12½ cubic feet of air to one pound in weight. Whilst emptying a 50 cubic feet cylinder the diver loses 4 pounds of ballast.

The selection of an aqualung depends largely on one's bank account. In Australia they vary from £25 to £150. It is better to use two 20 cubic feet than one 40 cubic feet cylinder, for example.

Breathing from one cylinder only, all the time, and decanting from the other one as often as necessary, is the surest way to determine the air left in the set. One can easily forget to look at a gauge.

* * *

Do you think of taking a knife to defend yourself against sharks and other monsters? Forget it. First of all, there are no monsters and, secondly, as a defence against sharks a knife is the most useless instrument. A 5 feet long broom-stick serves this purpose far better.

If we can believe the wisdom of the naval book of rules, there is nothing to be feared, as "the presence of sharks in the vicinity of diving activities is no reason to abandon operations."

Whether certain colours have an attraction for sharks or not has not yet been fully established, but a rather dark tone in the protective clothing a diver should wear (overalls) seems to be desirable.

Here we are now—fully equipped with lots of good advice and ready to see for ourselves. Of course, it is in the shallows where we make our first attempt to breathe under water. After mastering the breathing and use of flip-

pers, we, perhaps, glide over a rocky ledge and skim over a waving forest of seaweeds.

Here, in the shallows, we find delight as weightless we remain suspended between mirror-like ceiling, the surface, and the strange swaying plants of another world.

So strange and remarkable is the scene, that we could easily imagine ourselves to be on another planet.

PIGEONS IN MISSILE TEST

WASHINGTON.—The American Navy was engaged in a three-year effort up to 1951 to use pigeons to steer guided missiles to a moving enemy target at sea.

Preliminary experiments were begun during World War II. The idea was to use a camera-like device to direct the missile to target. If it got off course, a spot would show on an internal screen, and trained pigeons were to peek at this moving spot to keep the missile on target.

Star pigeons under test were found to be eighty per cent. efficient under ideal conditions, but with poor conditions their efficiency was halved. The project was abandoned in 1951, when other electronic guidance devices became available.

25,000-TON TANKER

THE largest Australian-owned ship has arrived in Australia on her maiden voyage.

She is the 25,000-ton tanker, Leslie J. Thompson, owned and operated by Ampol Petroleum Ltd., and named after the company's Chairman of Directors.

She will go on the shuttle service carrying crude oil from Sumatra to the Australian Oil Refinery at Kurnell, Botany Bay.

ALL GOES IF COURAGE GOES

Handful of navy and army personnel
bravely manned canoes in
daring raid on Jap. ships in Singapore

AMONGST the most spectacular exploits during the war against the Japanese was a raid carried out by a handful of Navy and Army personnel on the enemy-held port of Singapore.

It was a fantastic operation, relying for its success as much upon the element of surprise as upon that streak of steel-hard courage that is found in men of the right temperament.

The tactical scheme leaned heavily upon the camouflage offered by an ex-Japanese fishing vessel, whose log, written by the navigator, Lieutenant H. E. Carse, R.A.N.V.R., begins by saying that "this is the true and faithful account of the voyage of the good ship 'Audacious'—alias m.v. 'Krait', 'The Crate', 'The Singapore Terror'..." And she was just that.

With a crew of fourteen, "Krait" left Exmouth Gulf (W.A.) on September 2, 1943, with the intention of attacking Japanese shipping in Singapore, at a time when any disorganisation of enemy communications was likely to affect their fighting qualities in the Lae-Finschhafen area of New Guinea. The idea was to hit and run, but it was no slap-dash affair.

For nine months this party of Englishmen and Australians had planned and trained. Their leader was a major in the Gordon Highlanders, whose wife was somewhere behind the Japanese lines.

The First Lieutenant was serving in the R.N.V.R., while of the other two officers one was in the A.I.F., the other in the R.A.N.V.R. There were sailors as well as soldiers

amongst the crew, most of whom were Australians.

"Krait" made her own way to within twenty-one miles of Singapore before dropping the attacking party near one of the numerous islands in that part of Malacca Strait. There, they remained for five days, observing enemy shipping coming and going and making final preparations.

On September 26 the attack was launched. Three two-men canoes went in, and, with their limpet mines, sank one freighter, probably sank five others and left an oil tanker in flames.

Shipping put out of action or destroyed amounted to 37,000 tons. To this must be added the sense of anxiety created in the Japanese ranks. Looked at from any angle, the raid was a huge success.

While this was going on, the good ship "Krait" had been waiting for sixteen days off the

coast of Borneo, and the log for October 3 shows something of the relief felt when they were all together again.

"Thank God we are on our way home," writes Lieutenant Carse, and, no doubt, that was the feeling of every one on board.

The whole affair was kept very quiet with the object of confusing the enemy, but every one who sailed in "Krait" on that occasion was decorated or "mentioned".

No public announcement was made; not even the men concerned were told, and several of them went to their deaths without knowing that their exploit had been recognised.

For that was the tragedy of the whole thing. They tried it on again. A second expedition left Australia in 1944 in H.M. Submarine "Porpoise", carrying a mixed party of twenty-three soldiers and sailors, the proportion of Australians to

THE MEN CONCERNED

These are the men who took part in the successful raid upon Singapore in "Krait" in September, 1943:

- Major I. Lyon, M.B.E., D.S.O., Gordon Highlanders, C.O. (killed in second raid).
- Lieut. D. N. Davidson, D.S.O., R.N.V.R. (killed in second raid).
- Lieut. H. E. Carse, M.I.D., R.A.N.V.R. (N.S.W.), navigator.
- Lieut. R. Page, D.S.O., A.I.F. (N.S.W.), (killed in second raid).
- Ldg. Seaman K. P. Kain, M.I.D., R.A.N. (Q.), ship's staff.
- Ldg. Stoker P. McDowell, R.N., engineer.
- Ldg. Tel. H. Young, M.I.D., R.A.N. (N.S.W.), radio operator.
- Cpl. R. G. Morris, M.M., R.A.M.C.
- Cpl. A. Crilly, M.M., A.I.F. (Q.), cook.
- A.B. A. W. Falls, D.S.M., R.A.N. (killed in second raid).
- A.B. A. W. Jones, D.S.M., R.A.N. (W.A.).
- A.B. A. W. Houston, D.S.M., R.A.N. (Q.), (killed in second raid).
- A.B. F. W. Marsh, M.I.D., R.A.N. (Q.), (killed in second raid).
- A. B. M. Berryman, M.I.D., R.A.N. (S.A.).

Englishmen being about two to one.

Ivor Lyon, now a Lieutenant-Colonel with the D.S.O., was again in command, and with him were two other officers awarded D.S.O.'s for their part in the first raid. These were Lieutenant Commander Donald Davidson, R.N.V.R., and Captain R. Page, A.I.F. In addition, the R.A.N. ratings, Falls, Houston and Marsh had all taken part in the first expedition.

This time there was none of the friendly anonymity of "Krait" to help them. Plans included the capture of a vessel in which to make the run in, and, while that was successfully accomplished, the attackers were unfortunately enough to be challenged by a Japanese launch at the entrance to Singapore harbour.

They were forced to open fire and with that the game was up. They were on the run, and Lyon gave orders to retire independently in four rubber canoes.

The Japanese caught up with Lyon's party on Sole Island, both Lyon and the Japanese commander being killed in the engagement that followed.

The other canoes reached the rendezvous two days before the submarine was due, and from there they fought the Japs. From island to island until twelve of them had been killed or died and ten were taken prisoner. Of these, one able-seaman died shortly after capture.

The other nine were lodged in Singkep Police Station before being taken to Singapore, where they were eventually joined by another officer who had been picked up in the vicinity of Timor.

Of their life in captivity there is a remarkably full record. It is clear that from the first they were regarded with respect verging on awe by the Japanese.

They were given books, chocolates, cigarettes, and, while none of them had much doubt as to what their fate would be, the whole party remained in the best of health and spirits until the end. Sentenced to death by a military court on July 5, 1945, they were beheaded two days later.

What happened is taken from Japanese records.

In his opening remarks, the Japanese prosecuting officer

spoke of the fine determination of the exploit. As he said, "We do not hesitate to call them heroes whose valorous spirit reminds us of the daring enterprise of our own men of the Naval Special Attack Corps, who died in their attack upon Sydney Harbour . . ."

The flowery language used is not our way of speech, but in his own manner this Japanese officer went on to recall that the Australian Government had granted a military funeral to the Japanese naval officers who manned the midget submarines that entered Port Jackson on May 31, 1942. It was something that appealed to Japanese mentality, and, in calling for the death penalty, the prosecutor used words indicating the respect of one fighting man for another.

"The last moments of a hero must be historic and dramatic", he said. "As we respect these men, so we feel it our duty to glorify their last moments, and by so doing enshrine their names in the hearts of the British and Australian people."

There is evidence that the Japanese were anxious to avoid the death penalty, and it was, in fact, suggested to the prisoners before the trial that they should adopt a humble attitude and plead for mercy. Instead, every one of them remained resolute and defiant to the last.

The terse phrases of these reports adds to the grimness of the tale, but shining through it all is the simple gallantry of men who had nothing to help them but their own sense of what was proper.

What history may regard as an incident in the crowded years of war, Major General Ohtsuka, of the 7th Area Army, referred to as an example "of chivalry which should be taken as a model by the Japanese." And one would like to think, by those of British stock as well.

WAR UNDER WATER

By Rear Admiral
Bertram Taylor

Condensed from a broadcast as the ABC's Guest of Honor on September 6, 1959.

THE submarine has acquired a new significance as the outstanding strategic and tactical weapon of the nuclear age.

In two wars, the conventional submarine or submersible has been established as one of the most dangerous of naval craft. In 1945, when Germany surrendered, her latest design of U-boats had not been tried in war. Post-war evaluation has proved that they would have been more than a match for the anti-submarine weapons of that day.

The years which have followed since then have witnessed great strides in submarine development. With modern equipment, new hull forms, new methods of detecting targets and new weapons, the submarine of today has a potential far greater than its predecessor in World War II.

To all of this has been added nuclear propulsion, with its almost unlimited endurance. This has made possible the construction of a true submarine, which, being designed to operate entirely underwater, permits a better hull form, and higher speeds continuously sustained, than anything before.

Underwater endurance and speed now cease to be limiting factors in the performance of nuclear submarines. Almost equally important is the degree in which they can operate entirely below the surface of the sea. This confers an added measure of invisibility and

hence secrecy of movement, and immunity from detection and attack. These qualities will allow a true submarine to reach and attack maritime targets which would have formerly passed unseen and beyond range.

In the future, we shall see submarines armed with guided missiles with nuclear warheads. With ranges of 1,500 miles from launching positions accessible to the submarine missile carrier, there would be virtually no spot on this planet immune from such attack.

Nuclear submarines are not built overnight, and at present they are extremely expensive. With their tremendous capabilities, it must be expected that the limited numbers which will be available for many years to come will be reserved for use against the most important military targets, and so the conventionally-powered submarine of today has, and will continue to have, a vital role for several years yet.

Very large numbers of conventional, diesel-propelled submarines are in existence today, and it is these which constitute, at present, the main problem to our defences. How might these submarines be used against us? Briefly, they will be used aggressively against our trade, and against our naval forces.

The conventional submarine already has adequate range to take it almost anywhere in the world, and until defensive measures are fully mobilised, it will be extremely difficult to detect and kill.

It is at this point that friendly submarines can make an immediate contribution: patrolling in likely transit points and off the enemy's

coast in waters beyond the reach of other friendly naval forces.

Now what of the Royal Navy's present Submarine Force?

This is the 58th year since our foundation. We started with the little Holland Class of about 100 tons; and today we have on our slips our first nuclear submarine of almost 40 times the tonnage. Our submarine fleet consists of about 50 submarines, mostly of the type I have referred to as conventional — that is, relying on diesel engine propulsion on the surface and electric motors and batteries when submerged.

I must, however, mention two novel submarines, which are driven by hydrogen test peroxide, when submerged. Until very recently, they held the underwater blue ribbon, with a speed of over 25 knots. We trust that our Dreadnought, which has American nuclear machinery, and her hoped-for successors, which will have British machinery, will well exceed this speed.

The bulk of our submarine strength is based in home waters, where, together with submarines of other NATO countries, they form a very powerful force. I have the honour of commanding this force in the unhappy event of war. Similarly, our Squadron in the Mediterranean acts in concert with the NATO countries in that area. Our submarines East of Suez are similarly prepared.

In peacetime, there are forces, both air and surface, which must be trained in the most difficult art of anti-submarine warfare. Our submarines provide just that training for them, and it is not

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always appreciated how much effort this involves.

The British Submarine Service provides training for naval and air forces of the whole Commonwealth; a squadron in Canada; the squadron you know so well out here, which serves Australia and New Zealand; submarines visit the Baghdad Pact area, the SEATO area and South African waters, too. In fact, we are pretty universal.

The remarkable successes achieved by British submarines are often forgotten. Our submarines (together with allied submarines under British Operational Control) sank or damaged 1,458 enemy ships (that's over 2 million tons) in World War II. These results were achieved by torpedoes, mining and gunfire, and represent a tremendous effort by a relatively small part of the Navy. At no time has the submarine branch in peace or war exceeded 3 per cent. of the

total manpower of the R.N., and so I am sure you will agree this is a very good return for the country's money.

It is of interest to note that these figures included 249 enemy warships sunk or damaged, among which there were no fewer than 41 U-boats. We lost 74 submarines. However, only six of these were sunk by the enemy U-boats.

The major part of these successes were achieved in European waters, where we severely crippled Rommel's supply line from Italy to North Africa. We hampered the Germans in their Norwegian campaign, and we put out of action that immensely powerful battleship, the "Tirpitz."

In the S.E. Asia area our successes were more modest, but they included two Japanese cruisers and 100,000 tons of enemy supply ships. Undoubtedly, they would have been greater, had we been able to concentrate our forces in

this part of the world earlier in the war, and had bases closer to the theatre of operations.

Our submarines did not confine their activities to sinking enemy ships. They landed agents, bombarded railway lines, acted as markers for invasion forces, provided the means of reconnoitring landing beaches, acted as air-sea rescue vessels, and even supplied beleaguered Malta.

The submarine has joined the surface ship and the aircraft in the battle against our principal enemy — the U-boat. Battles of the future may well be fought entirely under water. Now British submariners have had more practice at this game than anybody else, and we are confident that we can win it.

Our submarine crews must be efficient and tough — efficient in the performance of their tasks, and tough to withstand the arduous life in the submarines. For in spite of the improvements in habitability, such as air-conditioning, washing machines, individual bunks, etc., living conditions are still rugged. Patrols in submarines can last for three months or more with little contact with the atmosphere.

I don't think that all future ships in navies will be submarines, but I'm certain that the submarine will form a high proportion, and will possess powers far greater than their numbers suggest.

H.M. The Queen was pleased to present Her Colour to the Submarine Command on June 8 this year. In her speech she said: "I give you this Colour in memory of the splendid achievements of the Submarine Service in the past, and in recognition of the vital part which you and your successors will play in the defensive strength of this country and the future of the Royal Navy."

There's Hope — For Clumsy Clots!

● Your next fumble could well provide the world with a fabulous discovery — such as laminated safety glass!

IT has often been said that the accident of discovery has been man's greatest ally throughout time, and how truly this applies to glass!

During the 1st century A.D., a young Phoenician helmsman goofed in his calculations off the coast of Syria and successfully wrecked his vessel. The ship's crew floundered ashore, and managed to salvage various items of equipment that had been washed in from the wreck.

The ballast customarily used in those days was blocks of natron (soda), and several of these blocks that had been washed ashore were used to mount the Phoenician's iron cooking pot over a fire. In the dying embers of that fire which had fused the sand and soda, these disgruntled mariners discovered the first man-made glass!

A more recent accident in 1903 also was responsible for a major development in the glass industry and happened to a young French chemist named Dr. Edouard Benedictus, who inadvertently dropped a bottle in his laboratory which had contained a solution of cellulose nitrate from which the solvent had entirely evaporated.

After exclaiming "Dam-me," "Drat it," "Curses," or whatever it is the French employ to tongue-lash themselves — Benedictus picked up the bottle and was amazed to find that it had retained its original contours and was quite intact, as the fragments were held together by the inner lining of cellulose.

The good doctor made haste to register a patent describing his discovery, but it was not until the outbreak of war in 1914, which made necessary safety glass lenses for gas masks, that Dr. Benedictus' discovery bore fruit.

Obviously, one of the chief needs of a gas mask was to protect its wearer against deadly fumes. Such a mask presupposed the use of eye-protective means as an integral part of its makeup, and glass discs were immediately used.

However, the repercussion of gunfire and flying fragments of bullets, even stones or pebbles thrown up from the ground, caused the simple glass lens to break and splinter. This at once rendered the mask useless in excluding gas and imperilled the eyes of the wearer.

The assembly of small pieces of glass with a cellulose film between pairs was relatively simple with the doctor's aid, and afforded to military personnel a positively needed protection. Consequently, laminated safety glass lenses were the first outstanding quantity production of safety glass products.

The earlier forms of interlayer used were rather unsatisfactory, as the glass sandwich had to be sealed around the edges to keep out moisture. Moreover, cellulose materials easily discoloured, became brittle and blistered.

Research over the years has now provided a synthetic resin, polyvinyl butyral, which has none of the disadvantages of its predecessors. It has a high

tensile strength and can be stretched 400%. The most important contributions polyvinyl provides are toughness, extreme elasticity, permanent adhesion to glass and freedom from blistering and discolouring when subjected to exposure. Probably most important of all is that it is not necessary to seal the edges of the laminate, as it is impervious to water when fabricated.

The ability of modern laminated safety glass to stand up to exacting conditions makes it a natural choice for use in many applications throughout the world today.

With the growing interest in spearfishing and underwater swimming in Australia, laminated lenses in swim masks ensure that the fullest possible safety is provided for the eyes of the wearer.

INFLATABLE DINGHY

Elliot Equipment Limited have developed and manufactured a notable addition to their aircraft dinghy range. This is the M.S. 20 Mk. II aircraft dinghy, the design of which incorporates an inflatable boarding platform which considerably assists exhausted aircrews and survivors to board the dinghy.

In addition, great care has been taken to design full insulation to the whole dinghy, that is in the floor, the hull, and the weather covers. This latest development is the outcome of several years of investigation and trials.

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THE NEW NORMALAIR AQUALUNG

Until the introduction of this unique equipment, very little alteration or improvement had been made to compressed air breathing sets.

THE type of set used by such pioneers as Cousteau, Tailliez and Hass is still in use despite the passing of time and resultant new techniques.

It is only in the past six months that we in Australia have seen any completely new apparatus become available for general use.

Normalair Limited, England, Europe's largest designers and manufacturers of oxygen equipment, have turned their research organisation towards designing and producing a completely new breathing apparatus.

They have succeeded in this field, and in so doing they have produced a set that is indeed controversial in some ways, but certainly offers the underwater diver a complete new world of comfort, vision, speech underwater and easier breathing. The quick release harness and weight pouch is an outstanding improvement on existing types.

A controversial feature of the apparatus is the full face mask, incorporating single stage demand regulator. Normalair state in their underwater manual that these new ideas will revolutionise underwater swimming. The writer, having used the set for a short period, sees no reason to refute this statement.

The name Normalair will not mean much to most readers, but they have had a vast experience in the field of pressurisation and oxygen systems for military and civil aircraft. In addition, they designed and manufactured the



oxygen assault packs for the Everest expedition led by Sir Edmund Hillary. This in itself should be sufficient recommendation.

The introduction of this set

to Australia is expected to bring in a new and greater era of underwater diving and enable hundreds of people to enjoy the new fields available on the sea bed.

FULL FACE MASK AND CO₂

HOW LUNGS ADJUST TO GET RIGHT
AIR MIXTURE FOR UNDERWATER CONDITIONS

THE widespread belief that CO₂ builds up to dangerous proportions in the full face mask is erroneous.

If it had any substance, gas masks would be lethal, and people who sleep with their heads under the bed clothes would suffer from CO₂ poisoning.

In any mask there will, of course, be a slightly increased quantity of CO₂ in the inhaled air, the amount depending on the size of the dead space, and the way in which the fresh air is admitted to the mask, and the exhaled gas leaves it.

The breathing, which is governed largely by the CO₂ con-

centration in the lungs, immediately adjusts itself to the situation by increasing the ventilation until a position of equilibrium is reached with the lung CO₂ at its correct level.

As compared with mouth-piece breathing, a full face mask produces a slight increase in ventilation, with the consequent loss of a few minutes' endurance.

There is no risk of CO₂ poisoning.

Another common statement which needs clarification is that the danger of CO₂ poisoning increases with depth.

This is true, but only to the extent that the effects of CO₂, like those of nitrogen and oxygen, depend on its partial pressure.

Apart from the very small percentage of CO₂ in pure air, (0.03 per cent. at atmospheric pressure) the partial pressure of the CO₂ with which we are concerned, that in the exhaled air, remains, broadly speaking, constant, regardless of depth.

This is more readily understood when it is appreciated that the mass of CO₂ exhaled depends on the mass of oxygen used, and that this mass is constant for a given work rate.

Hence, though the breathing volume does not alter, the volumes of oxygen consumed and CO₂ exhaled in each breath reduce in proportion to the depth.

Of course, the partial pressure of any CO₂ in the air supply does increase with depth, but, provided the air in the cylinders is pure, the effects of this increase are negligible at the depths with which we are concerned.

In fact, therefore, an underwater swimmer using an open circuit compressed air breathing apparatus at reasonable depths and breathing normally from a full face mask without mouthpiece, will not be concerned with the effects of excess CO₂.

Meet
the



"AQUAMOBILE"

AN UNDERWATER SCOOTER THAT WILL HAPPILY
TOW YOU AROUND AT NEARLY TWO KNOTS

NEW equipment available to underwater enthusiasts includes the "Aquamobile" scooter, which is similar in purpose to the scooters featured in "The Silent World," the movie which attracted considerable interest two or three years ago.

Scooters have also been popularised by Mike Nelson's use of one in the TV show "Sea Hunt."

Such film uses have whetted appetites of local underwater divers here and stimulated demands for equipment which is now available at a reasonable investment of £120 or so.

The "Aquamobile" is powered by an ordinary 12 volt car battery, giving one hour's endurance at a speed of about two knots.

The equipment is so compact that it will fit into the boot of even a small car, still leaving room for the picnic lunch and aqualung.

This scooter is highly manoeuvrable and only a twist of the wrist is needed for even a sudden turn.

It weighs 78 lbs., with a length of 32 inches and a diameter of 10½ inches. It is positively buoyant in sea water, negatively buoyant in fresh water, and has a static pull of 25 lbs.

Technical details from the manufacturers give the following information:

Hull: ¾ in. thick yellow fibreglass with "O" ring sealing suitable for operation down to 200 feet. Bulkhead between battery and motor compartment.

Motor: 12 volt, 30 amps heavy duty, adequately cooled, fitted with flexible coupling to propeller shaft.

Propeller: The three-bladed "Birmabright" propeller is mounted on a stainless steel shaft running in water-lubricated "Tufnol" bearings. A synthetic rubber shaft seal is fitted.

Battery: Silver "Exide" 6LHF9R 38 ampere hour capacity, fitted with special vent caps (supplied with "AQUAMOBILE") incorporating valves which make the battery spillproof and completely safe.

Propeller Guard: This carries the chromium plated handles and is made of yellow fibreglass. Wrist-type depth gauges and underwater watches may be mounted on the centre section as shown in the illustration.

Switch: This is the spring-loaded type which returns to the "off" position when released.

"SEAROCKET"

The Original CO₂ Speargun

This amazing speargun of French design has been made in Australia for over 5 years.

Smashing Power: The high pressure gas (1000 p.s.i.) gives a range of 35 ft. An instant kill at over 20 ft.

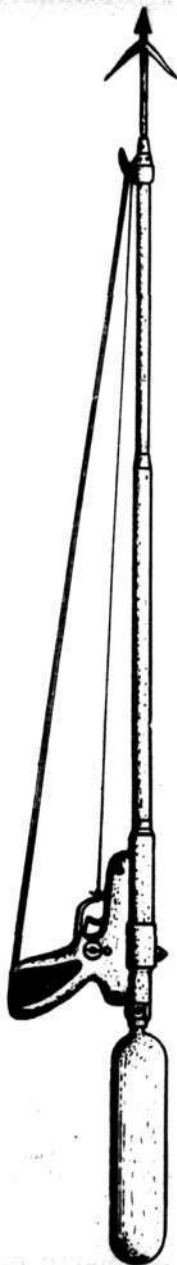
The principle used to fire the spear, the performances, the finish and appearance make the "Searocket" a product of high quality. In its design, the main objectives were: Power, ease of reloading, number of shots, easy replacement of the gas cylinder, safety and quality.

Power: The high power gun uses Carbon Dioxide stored in a small cylinder. Unlike the overseas gas-wasteful model of guns, a volume of gas is automatically measured and stored prior to every shot. This gives two immediate advantages: no gas is wasted and a large number of shots—30 shots or more—and each and every shot is of the same power. This gun is far more powerful than the most powerful of the conventional spear guns, is able to fire a 1/2 inch spear at 300 feet outside the water, and under water, the killing range is well over 20 feet. The "Searocket" was used to kill a 393 lbs. cod off Coffs Harbour.

Safety: The gun is fitted with a trigger safety lock—a feature not very common on a spear gun.

Easy to Reload: "Searocket" is the easiest gun to reload ever made—just slide the spear into the barrel—no more exhausting fight with slippery rubbers. The gun is fitted with a positive line release of an original design and a valve ejects the water from the barrel when reloading under water.

Number of Shots: As mentioned above, the "Searocket" fires 30 shots and more from a small gas cylinder (2 1/4 in. O.D. by 12 in. long) filled with Carbon Dioxide liquid. The



cylinder is easily removed from the gun—just unscrew it. There is no valve and no tap. The cylinders are easy to reload by the owner himself, and large cylinders are available anywhere. The cost of refilling is 2/- or less.

Quality: The workmanship and finish are of the highest standard and all materials are the best available in light alloys and plastics.

This gun is a positive shark protection, even without the spear being in place. The shock wave of a gun fired under water will be the most effective shark repellent.

The "Searocket" is covered by a 12 months' unconditional guarantee. This is undoubtedly the most accurate and powerful gun of all for hunting the really big fish.

Spearfishing Has Caught On Here

There are more spearfishing enthusiasts in Australia than in the rest of the world, according to experts on the sport.

Amateurs can buy a complete set of gear for £10 or less. This includes gun £6, mask £2, snorkel or lead belt £1.

A better range provides for a gun at £20, flippers £7, a mask £5, and breathing apparatus £80 or so.

Three basic types of spearfishing include bottom stalking, surface diving and aqualunging.

Bottom stalking requires only mask and lead belt in addition to gun.

The operator usually works in shallow water, never far from rock platforms, where he can stand up to breathe and rest.

His lead belt enables him to glide along close to bottom, looking for fish under rocks or in caves.

MEN WHO COUNT

Admiral Burrell's Distinguished Career

He is a keen gardener and he still enjoys a game of tennis, but at no time are his thoughts very far from his job.

VICE ADMIRAL HENRY MACKAY BURRELL, C.B.E., A.D.C., who became Chief of the Naval Staff and First Naval Member of the Commonwealth Naval Board in February, 1959, has a rare gift for leadership.

In this he is assisted by a wide and varied acquaintance with the technicalities of his job, together with an ever-ready understanding of other men's problems.

Gliding a capacity for drive behind a facade of friendliness and geniality, he might easily mislead people who do not know him well into underestimating the high value he places upon discipline. Behind it all, however, is a deep humanity; a sense of fairness which has won for him the respect and regard of officers and men alike.

Admiral Burrell, who is in his 55th year, is a tallish, well-built man with a sunburned complexion, a wide mouth, dark, greying hair and thick, bushy eyebrows. It is a serious face capable of breaking into a broad, boy-like grin. In conversation he is vivacious, and when on the move he keeps on moving.

His tall figure is due, to some extent, to a love of exercise and sport. In 1951, he won the Royal Australian Navy tennis singles championship, and, with Captain (now Commodore) N. A. Mackinnon, R.A.N., as partner, went on to beat all-comers in the Navy doubles championship.

Admiral Burrell, who graduated from the R.A.N. Naval College in 1918, is a specialist

in navigation, a subject that he will always discuss with enthusiasm.

Although happiest at sea, the Admiral has filled a number of different roles, and all of them with distinction. For instance, he was the first Naval Attache to be appointed to the Australian Legation—since raised to the status of an Embassy—in Washington, and he is the only officer in the R.A.N. to have held the post of Deputy Chief of the Naval Staff on two occasions.

Prior to the Second World War, Burrell served in numerous ships of the Royal Navy, and his first command on active service was H.M.A.S. "Norman."

This ship he commissioned at Portsmouth, and in her he steamed 120,000 miles. Under his command the ship saw service in Arctic waters as well as in the Atlantic and Indian Oceans, besides making one sortie into the Mediterranean.

Later, "Norman" was attached to the Eastern Fleet, during a period when operations were taking place against the Vichy French in Madagascar. For his share in these operations, Burrell was mentioned in dispatches.

Following the fall of Madagascar, "Norman" supported carrier operations in the Indian Ocean and in the Bay of Bengal. Then, in 1943, Burrell went to Navy Office, where, as Director of Plans, he helped prepare for the coming of the British Pacific Fleet.

Two years later came com-

mand of H.M.A.S. "Bataan" and service with the United States 7th Fleet in the Pacific.

With Burrell still in command, "Bataan" was present at the Japanese surrender in Tokyo Bay, going on to help in the recovery of prisoners of war before forming a unit of the Allied Occupation Force and of the Korean Strait Patrol.

After Burrell had served his first appointment as Deputy Chief of the Naval Staff he was given command of the cruiser "Australia" which, on a visit to South Australia, he took up the Port Adelaide River to the Inner Harbour.

Attendance at the Imperial Defence College in 1950 was followed by the Senior Officer's Technical Course, and after that a term as Assistant Australian Defence Representative in London.

As captain of the aircraft carrier "Vengeance," lent by the Admiralty to the R.A.N., Burrell brought the ship out to Australia and remained in command during the visit of H.M. the Queen.

In due course he became Flag Officer Commanding the Australian Fleet, before taking up his present appointment.

Vice Admiral Burrell is married and has a son and two daughters. It may come as a surprise to some to learn that one of his favourite forms of relaxation when at home is to get into old clothes and potter about with a paint brush.

The Admiral has a deep and abiding love for the Service to which he has devoted his working life, and he can be relied upon to ensure that the R.A.N. lives up to the traditions that have come to be associated with it.

MISSILES FOR N.Z. FRIGATES

THE ROYAL NEW ZEALAND NAVY will be the first Dominion service to operate guided missiles.

The two new Whithy class frigates, H.M.N.Z.S. "Otago" and H.M.N.Z.S. "Taranaki", now being built in Britain, are to be fitted with the close-range ship to air "Seacat" missile.

Announcing this, the Minister of Defence, Mr. P. G. Connolly, said that the "Seacat" would replace the Bofors 40 mm. anti-aircraft guns originally scheduled for use on the frigates.

The "Seacat" would not be fitted on the frigates, however, until they arrive in New Zealand. By 1961, therefore, the Royal New Zealand Navy will have entered the guided missile field, he said.

Mr. Connolly said that the missile would give a greater

protection to men in the ships from attacking aircraft.

Short Harland developed the "Seacat" for close range work.

The Royal Navy intended fitting them progressively until they eventually replaced all the existing close-range anti-aircraft weapons normally carried.

CENTENARY OF R.N. RESERVE

LONDON.—The Royal Naval Reserve was established in 1859, following an inquiry into the manning of the Royal Navy.

To mark the centenary, Prince Philip and other members of the Royal Family attended a special service of thanksgiving in St. Paul's Cathedral on November 4.

National, diplomatic and service figures, and representatives of the shipping industry were also present. For Roman Catholic officers and ratings,

High Mass was sung in Westminster Cathedral.

On the eve of these services — November 3 — officers of the Royal Naval Reserve were hosts at dinner in the painted hall of the Royal Naval College, Greenwich, with Prince Philip as principal guest. Anniversary celebrations were also arranged at R.N.R. centres in the provinces.

The reserve has provided the Royal Navy with a body of skilled officers available for duty in an emergency. By 1910, menace of mine warfare was recognised by the formation of a trawler section with fishermen enrolled with the rank of skipper.

The organisation so established was expanded enormously during two world wars for minesweeping and anti-submarine duties and in all, ten officers and two seamen of the R.N.R. have gained the Victoria Cross.

DEFENCE TALKS IN CANBERRA

American and Australian leaders discuss closer co-ordination in equipment and supply lines

A SERIES of top secret defence talks between Australia and the United States began in Canberra on September 29.

Discussions were expected to continue for some weeks, according to reports from the Federal capital.

The conferences were attended by the Commander-in-Chief of the United Forces in the Pacific, Admiral Harry D. Felt, and senior Australian Ministers.

Main defence talks began when the U.S. Secretary for Defence, Mr. Neil McElroy, arrived in Australia on October 8, accompanied by the U.S. Air Force Chief of Staff, General Thomas White.

Listed for discussion were ways of strengthening supply lines between the United States and Australia and keeping them open in an Asian war, and greater standardisation, where possible, of Australian and American defence equipment.

When Admiral Felt arrived in Sydney by plane, he was met by Vice-Admiral Sir Roy Dowling, Chairman of the Australian Chiefs of Staff Committee, Rear Admiral D. H. Harries, Lt-General R. G. Pollard and Air Vice-Marshal V. E. Hancock.

Admiral Felt conferred with the Prime Minister, Mr. Menzies, and acquainted him of developments in Laos.

The Canberra talks are said to be part of a long-range plan to co-ordinate Australian and American defence preparedness in South-East Asia.

Observers said that such a plan would not cut across the South-East Asian Treaty

Organisation, but would strengthen SEATO as an effective bar to future Red Chinese aggression.

Earlier, in a Press interview in Sydney, Admiral Felt revealed that a U.S. atomic submarine was operating in waters near Laos.

Atomic submarines had operated at various times in the Pacific, he said.

A week earlier he had attended a conference of SEATO military advisers in Bangkok, but he could not disclose what had developed in these talks concerning the situation in Laos.

Admiral Felt said that any SEATO participation in the Laos crisis must come from a "political decision".

He denied any link between his visit and the Laos situation.

American Strength

Of the preparedness of SEATO forces, he said, "The Pacific forces under my command are ready."

"Those forces include the Pacific Fleet in the Eastern Pacific and the Seventh Fleet in the Western Pacific, plus two divisions of Marine forces and air wings.

"These forces are ready for action at any time. They are extremely mobile and constantly alert."

American strength in the Pacific under Admiral Felt's command includes:

NAVY: About 245,000 men, including two divisions of marines, 400 ships, 2,700 combat planes.

AIR: About 60,000 men, 800 to 900 combat planes.

ARMY: Three divisions, totalling about 60,000 men. Two divisions are in Korea and one in Hawaii.

Admiral Felt told interviewers that Khrushchev had been talking a long time about scrapping Russian cruisers and concentrating on submarines, torpedo boats and minesweepers.

"Russia has the largest fleet of submarines in the world—about 450 of them operating more boldly all the time," said Admiral Felt.

"So far as I know, none has nuclear power."

"The fact that Russia has built up such a large fleet of submarines doesn't mean we should build up one as large."

The U.S. is putting great emphasis on anti-submarine warfare, Admiral Felt added.

Published reports indicate that Australia's three-year defence programme to operate from 1960-61 will not include any plan for atomic submarines.

However, naval advisers are anxious that the R.A.N. should obtain submarines as soon as possible, so that all its branches can gain direct experience of them.

The Minister for the Navy, Senator J. G. Gorton, recently stated that an atomic submarine would cost £30 million without its weapon system.

The coming three-year programme seems certain to provide for the Navy to acquire conventional submarines.

Australia is unlikely to enter the field of nuclear-powered submarines at present, mainly because of the tremendous cost involved in initial construction and in setting up technical servicing facilities.

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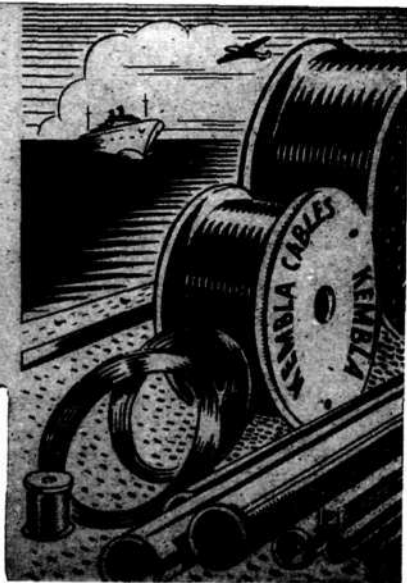
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young Unit. Also to Lieut. Colonel J. J. W. Grey and Officers and staff of 121st Coastal Command for the loan of equipment and facilities at the Batteries' Headquarters at East Point, Darwin.

The Unit will now settle down to training two teams for the International "22" Shoot for the Duke of Edinburgh Trophy Bell, won last year by Canada. With more training this year, we have great hopes of bettering our position of 16th out of 200 entries which

we obtained last year, and hope that we can perhaps bring this coveted trophy to Australia for the first time.

NAVY EXERCISES

CANBERRA.—The Minister for the Navy, Senator Gorton, announced that units of the Australian, British and New Zealand Navies would engage in exercises during November.

The exercises will take place in Australian, New Zealand and Malayan waters.

THE SEA IS PARAMOUNT

"THE sea in all its might, magnitude and munificence, is still the mainstay of modern civilisation," declares an editorial in the latest issue of "Port of Melbourne Quarterly."

"Modern life, with its many invaluable aids provided by industry and science, is still essentially a never ending struggle to procure life's basic requirements of food and shelter."

"In this the sea is paramount. The nations of the world, including Australia, cannot for long sustain their population entirely on their own without supplies of food and raw materials from other lands."

"It is the freighters, liners, tankers and trampships of the sea on which man and his elaborate structure of civilisation are utterly dependent."

The editorial adds that the morning newspaper, the cup of tea, the seasoning and spices which add piquancy to food, and the many raw materials of industry and agriculture would quickly disappear without the ships and ports such as the Port of Melbourne.

"Today the dependability and low operating costs of the world's shipping industry make the necessities and luxuries of life available to all," the editorial continues.

"Australia herself is not only dependent on what the ships bring into the ports, but also on what they take out, whether primary produce or secondary industry products, for the economy of the nation as a whole is geared on the exchange of goods on the world market."

A-Subs Could Defend Australia

Look towards America, not Britain, for help in this vital field, says noted naval writer.

A WIDELY published series of newspaper articles written by Alistair Mars has stimulated public interest in the importance of atomic submarines for the Royal Australian Navy.

His series of newspaper articles was projected into the public atmosphere which surrounded reactions to the two Power talks in Washington between President Eisenhower and Russia's Khrushchev, and the recent visits of British and American naval experts to Australia.

One of the author's strongest points was that Australia could not rely on help from the United Kingdom in the event of war. Therefore, Australians should now look towards the United States insofar as naval ships, weapons and maritime strategy were concerned.

Mars emphasised that if Australia possesses six atomic submarines "no power in Asia would dare to move aggressively against her."

Of costs, he says that one atomic submarine might cost £30 million, "about the same as a modern aircraft carrier, which the atom-sub. can destroy with the greatest of ease."

The submarine would require a crew of about 100, as compared to 2,000 in a big carrier. Overall operation of the submarine would be more economical than the huge surface craft.

After conventional Royal Navy training from 1928 to 1936, Mars served in the China Fleet Submarine force and commanded submarines from early 1941 to 1945. He is also known as an author of sea

stories with an authentic background.

Mars believes that Australia faces two possible threats in point of time—the first could come within ten years and the second between 20 and 30 years.

In the near-future period he discussed the possibility of a straight Indonesian attempt on West New Guinea and suggested that this might be overcome by present conventional forces, "even if Australia has to stand alone."

He suggests that Indonesia could be assisted by Russians or Chinese, or both.

In such a clash Australian coastal cities could be bombarded with atomic-headed missiles from submarines.

Remedies for this type of attack would rest mainly with the Navy and Air Force, working in unison.

Mars explores the possibility of China invading Australia in his long-term theory, and points out that atomic submarines could destroy the invaders at sea, cutting off the beach-heads.

"I wonder if some £200 million is too much to pay for an insurance policy of this calibre," he says, "particularly if it were spread over five years, and in view of the comparatively low running costs."

"Peace in the short run is expensive, but in the long run it is priceless. A look into the future and a dip into the pocket can ensure it."

Mars does not suggest that the rest of the Navy, Army, Air Force or Civil Defence should be neglected in favour of atomic submarines.

All countries need balanced forces, and he thought Aus-

tralia needed a striking force as potent in defence as it could be in attack.

"The atomic submarine is a means of getting it well within man-power capabilities, and, as I believe, economically," he said.

According to Mars, the Americans have recently developed a new art which they call hydrobatics.

This is the underwater equivalent to aerobatics and entails throwing a 2,000-ton submarine around in climbs, dives and spirals of fantastic manoeuvrability, made possible by control systems similar to those of a large aircraft.

Object was to prepare the smaller atomic boats for operations against larger atomic submarines.

Americans were about ten years ahead of the British in this sphere.

Discussing Australian skill with submarines, Mars points out that in World War I Australian submarines distinguished themselves, but later, the R.A.N. gave up submarines.

In World War II Australians again distinguished themselves in British submarines.

Atomic submarine bases, says Mars, should be far away from the public eye and safe from attack by even atomic weapons. The crews would have to be a highly trained elite under special conditions of service—reticent men, not too much in contact with the outside world.

The squadron should spend long periods at sea and be at all times at instant readiness for war—as the operational squadrons of the United States Strategic Air Force are to-day.



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SEEKS TO END "SNIPING"

Overseas shipping group negotiates for freight rises

A PARTY of top overseas shipping executives arrived in Sydney early in October for discussions with Australian exporters on freight rates, and to "put a stop to perpetual sniping at shipowners in Australia."

The visitors included:

- Mr. R. A. Lloyd, director, Ellerman and Bucknall Steamship Co. Ltd., London.
- Mr. P. Carlsson, managing director, Transatlantic S.S. Co. Ltd., Gothenburg, Sweden.
- Mr. H. T. Beazley, director, Federal Steam Navigation Co. Ltd., London.
- Mr. W. R. Russell, director and manager, Shaw, Savill and Albion Co. Ltd., London.
- Mr. A. E. Alcock, secretary, Australian Tonnage Committee, Australian-European Shipping Conference.

In their discussions in Australia, the executives represented the Australian-European Shipping Conference, one of the world's biggest groups of shipping lines.

Fourteen British and eight Continental shipping companies and groups are members of the Conference.

The group's objective was to discuss with exporters and producers' representatives alterations to the formula used for determining freight rates.

Contracts based on the formula are renewed yearly and the formula itself is reviewed every two years. The formula has been operating since 1957 and this is the first time it has come up for revision.

A meeting of Australian exporters last July decided that the terms of the formula were unsatisfactory to Australian shippers.

The formula is based on principles which allow shipowners a 12 per cent. profit on operations.

Present contracts were extended from July pending the current discussions. They operate until December 31 on wool and meat, and on November 30 for dairy products and general cargo.

At a Press conference in Sydney, Mr. Lloyd, who led the visitors, said overseas shipowners had averaged less than five per cent. profit on their Australian operations over the last three years.

"In the past we have been called some very offensive names in the Press, which we are getting a bit bored with," he said.

"We are perfectly legitimate businessmen."

"We have gone farther with our clients, the Australian exporters, than is usual in other industries in allowing their accountants to examine our operational costs."

"We have shown we are not making exorbitant profits out of the business and, in fact, are making much less than other industries."

"We run a service for Australian shippers and we obviously require a freight rate which can assure a fair return."

Mr. Lloyd said a most important part of the shipowners' visit was to "put a stop to perpetual sniping at shipowners in Australia."

Mr. Russell said the formula this year indicated that a freight rate increase of 13 per cent. was justified.

This was the proposal which caused a breakdown in discussions in July between shipowners and exporting interests.

LACK OF WARSHIPS ALARMS MEN OF MERCHANT SERVICE

LONDON.— Merchant Navy experts are alarmed about the problem of how British merchant ships can be protected if war should come, "having regard to the serious diminution in the strength of the Royal Navy."

The Mercantile Marine Service Association seriously doubts whether even taking N.A.T.O. into account "it would be possible for British shipping to survive and discharge its essential task of supplying the nation until such time as adequate protective forces were built up."

The run-down of the Royal Navy was recently publicised in pictorial form by the London "Daily Telegraph." It emphasised that since 1950, 218 ocean-going warships have been scrapped or otherwise disposed of and 36 replacements have been built.

More ships are scheduled for disposal or scrapping and the building programme is meagre.

One nuclear submarine has been laid down and four anti-aircraft light cruisers are to be armed with guided missiles. Navy commentators point out that it may be ten years before the modern fleet takes shape at the present rate of progress.

CANBERRA VIEWS ON SHIP SALE

CANBERRA.— A vote of £1,240,000 for the Department of Shipping and Transport was discussed during the debate on the Budget Estimates in the House of Representatives in October.

Mr. E. J. Ward (Lab., N.S.W.) criticised the recent sale of four River class vessels—River Mitta, River Murray, River Hunter and River Northern—to Japan for £220,000.

Mr. L. H. Bury (Lib., N.S.W.) said that the River class vessels were obsolete and could only be run at extremely high costs. The sound policy was to get rid of them and acquire modern ships.

He pointed out that this policy also aided Australian

shipyards which were going into something of a depression at present.

He said that the chairman of the Australian National Coastal Shipping Commission, Mr. Williams, and the present shipping commission had breathed new life into Australian shipping.

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NOVEL LAUNCHING OF OIL TERMINAL

REMINISCENT of some of those ingenious constructions that contributed to the "D" Day landing in Normandy in World War II, the first section of a deep water oil terminal was launched in July at a Tyneside shipyard. It is part of a £25 million sterling development project to be placed at Khor Al Amaya, at the head of the Arabian Gulf.

The terminal will comprise a large centre platform against which tankers up to 65,000 tons will lie while loading, two smaller sections and two intermediate dolphins, all interconnected by light steel bridges.

The outer sections — those which were launched recently — provide for a helicopter landing, a tug berth, and a fully air-conditioned accommodation deck house for operating

personnel. Long legs go down from the platform deep into the sea bed.

The section will be towed 7,000 miles to the site in the Arabian Gulf.

ANY BUYERS?

THREE midget submarines are up for sale in U.K. The Parliamentary Secretary to the Admiralty says that they cost about £93,000 apiece. At the date of our report the only offer is a bid of £7.

The midgets, Sprat, Minnow and Shrimp were built for demonstration purposes. A security screen kept the public away when Shrimp was launched in 1954, but Sprat gave demonstration dives in the Thames in 1957. It seems that an American film company is interested. What about Sydney's underwater spear fishermen?

RUSSIAN VESSELS HARD TO IDENTIFY

LONDON.— It has become exceedingly difficult to identify Russian warships since the numbers painted on the hulls are changed periodically, reports The Navy journal in Britain.

Sometimes the names are changed, but the pennant numbers of the auxiliary type vessels do not change.

Names of some destroyers are based on their fleet assignment. Those in the Black Sea have names beginning with B. Northern Fleet names begin with O. Baltic Fleet names with S and Pacific Fleet with V.

This is the only class to which names appear to be applied to indicate fleet designations.

The names of the Kotlin, Skoryi and Otlichnyi classes of destroyers are particularly difficult to identify by class or fleet.

Whyalla Plans for 40,000-tonners

WITH the recent launching of the m.v. "Mount Kiera," a 14,000-ton deadweight ore carrier, the aggregate deadweight tonnage of shipping built at the Whyalla shipyard since the first launching in 1941 exceeds 250,000 tons.

Ships built, range from naval patrol vessels of 682 tons deadweight to the largest vessel ever built in Australia, s.s. "Iron Flinders", of 19,000 tons deadweight. This was launched in November last and commissioned during August after successful sea trials.

The m.v. "Mount Kiera" is the largest motor vessel built in Australia to date, with an overall length of 512 ft. 9 in. It is the thirty-second ship to go down the Whyalla slipways.

From its early days as a steel producer, the B.H.P. has had a natural interest in shipping and shipbuilding, and the latter was given dramatic expression early in the war, when it agreed to Admiral Sir Ragnar Colvin's suggestion that the company build corvettes for the Admiralty.

Work was commenced early in 1940, the initial shipbuilding programme comprising four local defence vessels for the Royal Australian Navy, the keel of the first, "H.M.A.S. Whyalla", being laid down in July, 1940, launched in May, 1941, and completed in January, 1942.

The other three vessels were completed at three-monthly intervals. In view of the formidable difficulties attending such a large scale project in those troubled years, this was a remarkable achievement.

From a virtual wilderness, this remote centre has now become a self-sufficient industry, com-



Photo. of m.v. "Mount Kiera" prior to her launching.

prising a design and drawing office, mould loft, plate and bar shop, marine gear shop, five slipways and necessary fitting-out shops.

One slipway is being enlarged to build ships up to 40,000 tons, and next year the keel will be laid for a 32,250-ton oil tanker.

In the life of the Whyalla yard, ships of the company's own fleet have evolved from the all riveted 8,000-ton deadweight "Chieftain" class steamer to the 95 per cent. welded 19,000-ton deadweight vessels.

Continuing development at all times has made such a change possible, and further plans have been initiated to enable the building of the larger class of ship now de-

manded by the owners of bulk carriers.

The Minister for Transport and Shipping, Senator Palltridge, recently announced that the Government would subsidise the building of two 16,400-ton vessels to carry iron ore to Newcastle and Port Kembla steelworks. Estimated price of each ship is about £1,750,000.

New Vessels for "Meat Run"

Four new ships, specially designed for the refrigerated cargo trade between Australia and North America, will enter service for the Crusader Shipping Line next year to serve the growing meat export trade from Australia and New Zealand to the West Coast of the U.S. and Canada.

Since January, Crusader vessels have run a regular monthly service, collecting Australian cargoes at ports from Adelaide to Townsville and discharging them at San Francisco, Los Angeles and Vancouver.

The line's constituent members, Blue Star Line Ltd., Port Line Ltd., Shaw Savill & Albion Co. Ltd. and New Zealand Shipping Co. Ltd. have hitherto supplied the ships. The new vessels, of 7,500 tons d.w., 420 ft. long and 60 ft. wide, with a general service speed of 17 knots, will provide 320,000 cubic feet of refrigerated cargo space and 40,000 cubic feet for wool and general cargo.

OLDEST PLATER

THE Queen has sent a special personally signed message to 91-year-old Tom Kerrigan, believed to be the oldest shipyard plater in the world.

He has clocked in at the Greenock Dock Yard Company for over 50 years, walking a mile to work each morning, without a day's absence.

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NAVY LEAGUE

The object of the Navy League in Australia, like its older counterpart, the Navy League in Britain, is to insist by all means at its disposal upon the vital importance of Sea Power to the British Commonwealth of Nations. The League sponsors the Australian Sea Cadet Corps by giving technical

sea training to and instilling naval training in boys who intend to serve in Naval or Merchant services and also to those sea-minded boys who do not intend to follow a sea career, but who, given this knowledge, will form a valuable Reserve for the Naval Service.

The League consists of Fellows (Annual or Life) and Associates.

All British subjects who signify approval to the objects of the League are eligible.

MAY WE ASK YOU TO JOIN and swell our members so that the Navy League in Australia may be widely known and exercise an important influence in the life of the Australian Nation?

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SHIPS SWITCH TO MISSILES

THE American cruiser "Canberra," which was completed in 1943, is one of several surface units which have been converted to missile cruisers.

"Canberra" and her sister ship "Boston," with their 8-inch guns, were considerably altered in appearance during their reconstruction in 1955/56.

For instance, the original two slim funnels were replaced by one massive stack towering stiffly above the midship section.

The bridge and superstructure amidships have been enlarged and extended appreciably.

Aft, the substitution of two launchers for the Terrier missiles and their radar control towers for the original X and Y turrets is an easily recognisable feature.

The guided missiles in use by the U.S. Navy include the Terrier, Talos and Regulus.

The Terrier I is a beamrider surface to air rocket with a range of about 10 miles. Another version with longer range and terminal homing is in an advanced stage of development.

Talos is ram-jet powered, with a range up to 50 miles. It can be fitted with a nuclear warhead, and is a tactical weapon against surface targets as well as a surface to air missile.

It has a fully automatic control system, with a combination of beam rider and semi-active homing guidance systems.

Regulus is a flying bomb type of surface to surface missile. Guidance is a combination of radio command, inertial and ATRAN (Auto Terrain Recognition and Navigation) systems.

The cruiser "Galveston" is the first unit in which the Talos missile becomes operational. Originally a Cleveland class six-inch gun cruiser, she was converted a year ago into a missile vessel.

THE WORK GOES ON

ALTHOUGH the International Geophysical Year is over, some twenty or thirty thousand scientists and technicians will remember it as mankind's most ambitious effort to improve its knowledge of the earth and the space around it.

In the course of continuous observations, in the polar blizzard as well as under the desert sun, scientists and technicians from 66 countries gathered an incredible amount of information. Their laboratory was the earth, its surface, its interior, its oceans, its atmosphere, the space around it.

THE RECORD GROWS

THE Service has been fortunate in its historians. Both Arthur W. Jose and G. Hermon Gill have dealt in a distinguished manner with the story of the Royal Australian Navy. Although their work is separated by nearly forty years, the books of these two authors should be read together, for the same pattern is discernable in both.

The development of the R.A.N. falls neatly into sections. From a line-of-battle ship to a battle-cruiser covers a period in naval history as revolutionary in thought and technical achievement as is likely to be the coming nuclear age. Sail gives way to steam; electronics introduce a wider field, yet none of these things alter the basic principles of sea power. As Themistocles once said, "he who commands the sea has command of everything," and the how and why of it are incidental.

In the days of sail, a ship was alone with the winds and the tides. A shipmaster was his own master until the claims of Empire brought with them staging points like victualling and dockyard and, finally, coaling stations. As briefly described by Jose in his "History of the R.A.N. (1914-18)," the way in which the Australian Navy emerged from the colonial commitments of the Royal Navy has all the gripping qualities of a boy's adventure book. It's a heartening story, too, for the idea was never forced upon Australia. Local opinion demanded a navy, and in the end achieved one.

The expansion of German interests in the Pacific led, as it was bound to do, to that bright, calm October day in 1913, when, as Jose puts it,

the battle-cruiser "Australia" passed through Port Jackson Heads. "Within a year," he continues, "she passed out again to capture German colonies and drive a German squadron from the Western Pacific."

It's a grand tale, still remembered as "a short, spectacular period when ships of the R.A.N. acted together on under a single command." Then, as now, Australia's sea communications were vital, and the elusive Von Spee and his German "China Squadron" remained a threat, until brought to action and destroyed in the Falkland Islands. That was inevitable. We held command of the sea.

It is at this stage that G. Hermon Gill, Australia's Official Naval Historian of the Second World War, takes over the record. Fully documented and extremely well written, his account begins with a chapter summarising those troubled years, when an Empire wearied to the point of exhaustion tried to preserve itself with words alone. One might be reading of the present day.

In the fog of indecision that hung about the League of Nations, public opinion in Australia boxed the compass. It is the more surprising, therefore, to find that in spite of everything the country persisted in a naval programme, which, both in ships and men, provided solid foundation on which to build when events in 1939 called for rapid expansion. Moreover, officers graduated from the Naval College had by that time reached a stage in seniority that gave to the R.A.N. that character which the people of Australia had always wanted.

There was no enemy at hand as was the case in 1914. There

As official Naval historian, G. Hermon Gill has a number of calls upon his time. On numerous occasions he has acted as Editor of "The Navy," and it is because of Gill's own modesty that no previous mention of a literary work of absorbing interest to naval men has appeared in these pages. — Editor.

was none of that "short, spectacular period" during which Australian sailors and soldiers took over German possessions in an easy stride. But the pattern remained the same. Australia's naval units did what they had done before: assumed the place required of them in the Royal Navy and, because of close association in times of peace, did so in such a way that in the next couple of years a cap tally required close scrutiny to pick out the letters "H.M.A.S."

Gill's work is as wide in scope as the war itself. He obviously takes pleasure in writing about the heroic days of the Tobruk Ferry Service, of Crete and Calabria and the high spot of "Sydney's" engagement with "Bartolomeo Colleoni," yet manages to place them in perspective against the long, dull periods that everybody knew. Relentless is the sequence that leads to Singapore, and the shorter focus that centred upon the arc of islands which became Australia's front line.

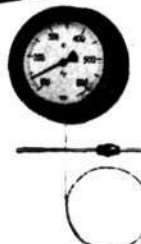
Step by step the record grows. With the defeat of Germany, Australian ships and personnel returned to clinch the matter on their home ground, and with them came

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a reciprocal movement of British naval units. If not exactly ruling the waves just then, Britannia still continued to ride them with accustomed ease.

As always happens, those with knowledge of the subject approach war histories from the angle of their own experience. The historian cannot afford that luxury. He must unravel what is often contra-

dictory evidence, and sift it time and time again. It's a lengthy business requiring research in naval archives all over the world.

Hermon Gill began his two-volume task in 1946 and, with one volume published, is about one-third of the way through the second one. Together they will complete a story of interest to all readers of "The Navy."

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THE OLD AND THE NEW

Noticed in "The Navy" (England) is reference to a recent exhibit in the National Maritime Museum at Greenwich of an ancient astrolabe made in 1462 by Johannes Muller, of Konigsberg. An astrolabe is an old device for calculating the positions of the sun and stars, and the remarkable thing about this specimen is that it was made before the birth of Copernicus, founder of modern astronomy, and thirty years before the discovery of America by Christopher Columbus.

Of more immediate interest, perhaps, is the new type of sextant described in "Guild News", the official organ of the Merchant Service Guild of Australia. From this it is learnt that Collins Radio, of Iowa, U.S.A., has announced the development of a radio sextant which it claims can track the moon and the sun continuously under all weather conditions.

The sextant was ten times as accurate as present marine devices and could revolutionise naval warfare.

Dr. Gene Marner, head of the company's radio-astronomy group, said that the importance of the sextant lay in its ability to pick up extremely weak signals from the moon.

Present sextants require a clear sky to obtain a "fix" from the moon and stars, but the radio sextant could track both the moon and the sun under all weather conditions. Dr. Marner said that when using the radio sextant, approach to fog-bound ports would be easier.

A research official, Dr. David McCoy, said secret experiments since late last year had yielded the first continuous tracking of the moon in history.

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JUBILEE YEAR OF SEA CADETS

LONDON.—Sixty years ago in October, 1899, the Sea Cadet Corps was born. The first unit was formed when the Navy League bought a Thames Sailing Barge and fitted it up at a total cost of £175.

Twenty-five boys began voluntary part-time training in the evenings and on Saturday afternoons. The first instructor was Mr. G. Moore, late of H.M.T.S. "Worcester."

The Corps has come a long way since then and done a great deal of good, fitting boys for a life of good citizenship and helping those who wanted to go to sea to achieve their ambition.

We are sure that all cadets will join with us and thank the Sea Cadet Corps for all it has done and to wish it a very happy Jubilee Year.

OIL TANKERS IN DEMAND

LONDON.—The largest oil tankers launched from United Kingdom yards are the sister-ships *Spyros Niarchos* and *Eugenia Niarchos*, each of about 47,000 deadweight tons (dwt.), and completed in 1956. British Petroleum and the Anglo-Dutch Shell Group have placed orders in the United Kingdom for even larger vessels, including seven of 65,000 dwt., each. The United States Esso Company's programme in United Kingdom yards ranges up to tankers of 48,000 dwt.

Other bulk carriers that have been built or are building in the United Kingdom include those designed for the transport of ore, coal, grain and sugar.

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U.S. NAVY OUTLOOK ON SOVIET

The value of the Naval Task Force as an instrument of national policy is emphasised in this article by Lt. Comm. W. H. Veit, of the United States Navy, who suggests that further expansion by the Soviet will require control of ocean areas.

IN any examination of naval task forces which have been instrumental in complementing national policy, one is confronted with the problem of where to commence.

The utilisation of this command of the sea concept is readily observed from the time of Xerxes, in 480 B.C., until the present. Especially pertinent in any consideration of the future employment of the Military Departments within the Defence Establishment, is a discussion of effective application of U.S. naval task forces as supplements to national policy.

Command of the sea has implemented national policy from the outset. Localised command by the French fleet gave the colonies victory at Yorktown and ultimately independence. The Tripolitan War, War of 1812, Mexican and Spanish American Wars, Acquisition of Panama, the Open Door Policy, Annexation of Samoa and Hawaii, World Wars I, II and Korea are evolutionary examples demonstrating the valid principle of command of the sea.

The landing of Marines in Lebanon indicates our immediate ability, in any required degree, to come to the aid of friendly nations upon request. The future effectiveness of the Eisenhower Doctrine will rest in good measure on the tangible presence of a naval task force.

In each era of scientific advancement, extremists have sponsored proposals which would, if implemented, destroy the effectiveness of our naval forces. We are now in the vestibule of the missile age with

time the crucial factor. The time element will grant the aggressor increased advantages of initiative and surprise; the non-aggressor must insure the survival of retaliatory forces. However, the principle of command of the sea remains valid and pertinent in this age of new weapons and

new conditions. Command of the sea is accomplished by the unchanging element of naval strategy — concentration of naval forces.

This concentration is effected by proper utilisation of an adequate and balanced tridimensional naval task force.

(Continued on page 30)



Admiral Sir Gerald Vaughan Gladstone, Commander in Chief Far East Station, who arrived in Sydney in December in the Royal Navy frigate *Alert*. He said he did not think the world's navies would build many more aircraft carriers. They probably would be replaced by missile-carrying submarines. —Sydney Morning Herald photo.

INDIAN OCEAN SURVEY BY R.A.N. FRIGATE

A 5,000-MILE oceanographic survey cruise in the Indian Ocean, extending over nearly two months, has been begun by the Royal Australian Navy frigate "Diamantina", which has six C.S.I.R.O. scientists on board.

The "Diamantina" and a sister-ship, the "Gascoyne", have been fitted with modern laboratories and equipment to enable C.S.I.R.O. scientists to engage in oceanographic research work that will provide extremely valuable results from the point of view of science, economics and defence.

The Minister for the Navy, Senator J. G. Gordon, said that during the cruise, which would be a preliminary to a widespread project in which ships of several different Navies would take part in

1961, the "Diamantina" would visit Coos and Christmas Islands.

She and the "Gascoyne" had recently been engaged in survey work in waters off the north-western coast of Australia and Arnhem Land, and in the Gulf of Carpentaria. The "Gascoyne" was now on her way back to Sydney.

Scientists embarked in the "Diamantina" would make observations which would, it was hoped, give them information about streams and currents in the ocean depths, about animal and vegetable life and mineral deposits and about the density, changing temperatures, oxygen and nutrient contents and other characteristics of sea water at greatly varying levels.

They would also investigate

geological changes that had occurred on the ocean-bottom, and try to ascertain why and how they had been brought about.

Some of the information would be of purely academic interest, but much of it would have a distinctly practical use in facilitating long-range weather forecasting, which would help agriculturists as well as mariners and other people, in assisting problems that from time to time confront ships' engineers, and in revealing vast supplies of sea-food and sources of iodine and other commodities required in the science of medicine.

Senator Gorton added that while oceanographic surveys were being conducted officers and men of the "Diamantina" and "Gascoyne" would undergo their normal sea-training, and consequently, the ships would serve a dual purpose.

MORE MEMBERS NEEDED IN W.A.

Reports on Navy League Progress and Activities of Sea Cadet Units

THE financial position of the W.A. Division of the Navy League of Australia continues to be satisfactory, but the membership list, still short, leaves much to be desired, said the president, Mr. D. W. Brisbane, in presenting the Division's annual report. We feel that the Navy League should attract greater support if only for the encouragement which it offers to lads to take an interest in something more worthwhile than those other activities which too often lead to distressing results he added.

"During the year two 17ft. 6in. motor dinghies were purchased from the Navy at the nominal cost of £100. These were made available to training ships Creswell and Bedford on the basis of each unit paying half the cost, the League finding the other half.

Committee Members, Capt. Manning and Mr. A. E. Mason, arranged the necessary handling and transport without cost to the units or the League, a generous action appreciated by all concerned. As a result, these two units will be able to take more training afloat than has hitherto been possible.

"It is with regret that I report the closing down of the Unit at Aquinas College—T/S Harwood. This had been a most promising unit, but due to a lack of suitable instructors, it was not found possible to continue its existence.

"An opportunity was offered to the Division of sending two cadets to the Empire Sea Cadet Camp in New Zealand next January. Free travel to Port of Embarkation—Sydney was offered, but fares to New Zealand and return, at a cost of £60 per cadet, would

be the responsibility of the Division.

"Much thought was given to this proposal, but it was eventually decided that an expenditure of £120 for only two cadets, whose selection would have proved difficult, would not on this occasion, have been justified.

"Recently the B.P. Tanker Co. Ltd. offered to provide accommodation for two Sea Cadets on a Tanker from Fremantle to Australian ports and return. This offer was gratefully received, and all Units will shortly be advised regarding conditions for selection of Cadets.

"During September the Director of Naval Reserves, Captain G. D. Tancred D.S.C., R.A.N., accompanied by Commander H. L. Gunn, O.B.E., D.S.C., inspected all Sea Cadet Units, but his report is not yet to hand.

"Again this year, as in the past, we have been considerably helped in our work by the Naval Officer-in-Charge, Commodore J. C. Morrow, C.B.E., D.S.O., D.S.C., the Captain of H.M.A.S. Leeuwin (Commander C. J. Stephenson, R.A.N.) and his Officers, in particular Lieut. H. A. Watson, R.A.N. Liaison Officer, who has proved most co-operative. To these Officers we tender our appreciation."

"The overall picture of the Sea Cadet Units in W.A., is one of higher numerical strength and standard of efficiency," reports Commander L. F. Vickridge Commander R.A.N.R., V.R.D., Divisional Senior Officer."

During the past six months, the organisation has been strengthened by the appoint-

ment of a capable and enthusiastic divisional staff as follows:

Lieut. L. Lawrence, R.A.N.R., as Divisional 1st Lieut., Surg-Lieut. Commander A. Kingsbury, R.A.N.R., as Divisional Medical Officer, Sub-Lieut. R. Prindville, R.A.N.R., as Divisional Training Officer, Sub-Lieut. G. Curran, R.A.N.R., as Divisional Supply Officer.

"It is now possible to carry out the principle of Divisional Control of all W.A. Units and I feel that already sorely needed help is being given to those hard-working Unit Officers in problems associated with Sea Cadet activities.

"T.S. Creswell (Commanding Officer Lieut. I. Winning, A.S.C.C.) has had a most successful year, having paraded cadets in both Fremantle and Perth on all possible occasions. Favourable comments were received from both the general public and reviewing officers.

"Unfortunately, owing to heavy commitments, the sea training craft stationed at Fremantle was not available to take this Unit to sea for actual sea training, but it is hoped that this may be remedied during the May school holidays, 1960. Some training was carried out in S.D.B. 1325 in week-end or day trips to sea and on H.M.A.S. Diamantina, a river class frigate which has recently relieved H.M.A.S. Fremantle.

"It must be appreciated that although this unit enjoys the full training facilities of H.M.A.S. Leeuwin (including a spare hut) the Navy League may be faced with finding alternative headquarters when the Junior Rates Training Establishment commences in H.M.A.S. Leeuwin, approximately July, 1960. Several alternatives have been suggested.

(Continued on page 25)

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ARMAMENT OF MISSILE SHIPS

THE United States Navy recently released information about three of its latest guided missile ships and the Bureau of Ships revealed details of their appearance.

These vessels represent a second generation of missile ships in which main battery guns are completely replaced by missile launchers. With their unusual features and distinctive appearance these vessels may forecast the shape of warships of the missile age.

The two smaller ships are guided missile frigates, one of which will be atomic powered. The third and largest vessel is the former heavy cruiser "Albany" CA 123 which is converting into an all guided missile cruiser.

The "Albany," now numbered CG 10, is being converted in place of the "Oregon City" under the 1958 cruiser conversion programme. Originally the "Albany" was scheduled for decommissioning and moth-balling after years of active service, but she was chosen to replace her sister ship which has been out of commission for the past ten years.

After conversion at the Boston Naval Shipyard, the "Albany" will be the first all guided missile ship in the United States Navy. All of the other missile cruisers planned up to this time have been partial conversions of the "Boston," "Galveston" and "Little Rock" classes.

The one exception is the nuclear cruiser "Long Beach" CG(N) 9 which is of new construction and not due for completion until 1961. The "Albany" will be fully air conditioned and will incorporate all of the latest habitability improvements.

Official drawings reveal that there are several unique features about the "Albany." Her primary armament will be twin "Talos" missile launchers located fore and aft. The ramjet propelled "Talos" is designed to engage subsonic or supersonic targets up to sixty-five miles away.

Either a standard explosive charge or a nuclear warhead may be fitted. The missile's speed is Mach 3.5 or almost 3,000 miles per hour. A "Talos" missile weighs over 3,000 pounds and is 21 feet long, including booster.

An extremely complex magazine and handling system service the fore and aft launchers. The system is designed to store, load, train, elevate and launch the missiles. The handling equipment will automatically select the type missile chosen by the fire control officer and will deliver it to the launcher.

The control system relies upon electronic memory units to know what missiles are in every rack and if any changes are made in the racks.

Weapons Direction equipment for the "Talos" system is manufactured by the Sperry Gyroscope Company a Division of Sperry Rand Corporation. This equipment will track, evaluate and assign targets to fire control stations. After assuring acquisition by the fire control station's radar, the Weapons Direction equipment will evaluate the damage to the attacker.

In addition to the "Talos" missiles, the "Albany" will carry "Tartar" missiles amidships. The "Tartar" is a smaller and simpler version of the "Terrier" missile. It is small enough to be used as a direct replacement for 5-inch

dual purpose guns and it so serves in the "Albany" conversion.

Weighing only 1,000 pounds, the "Tartar" needs no booster to attain a speed of over 2,500 miles per hour and a range of twenty-five miles. "Tartar" is not designed to carry a nuclear warhead.

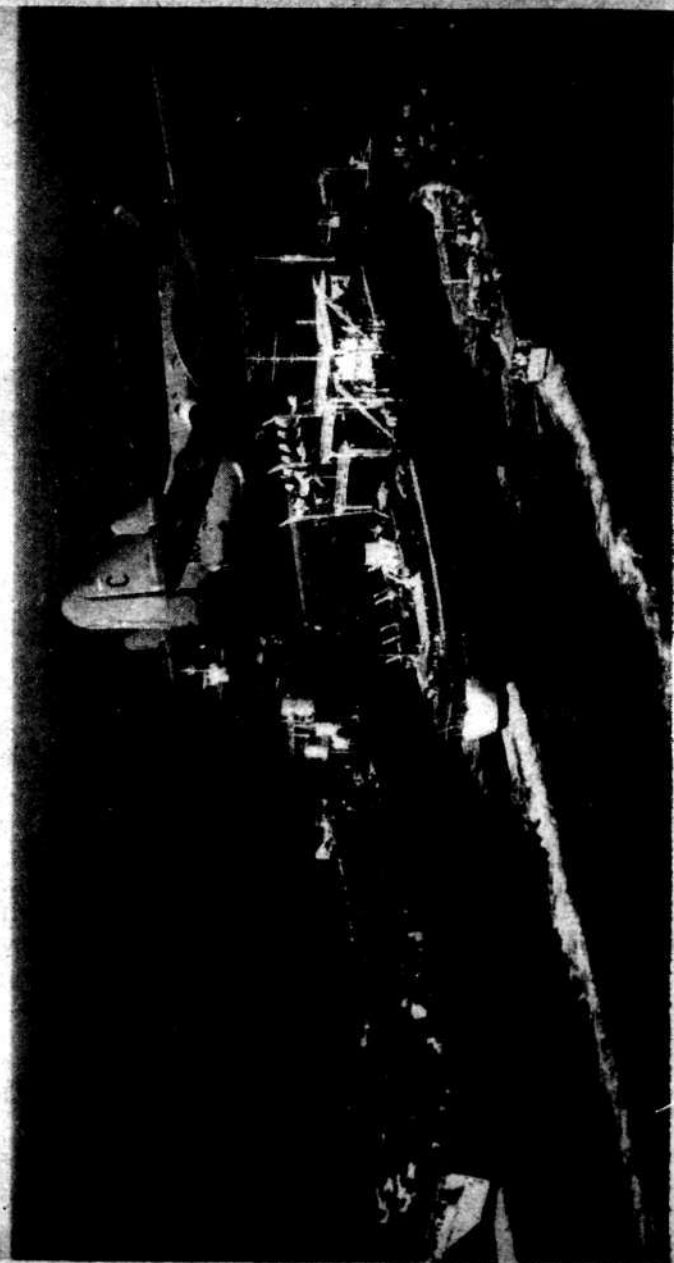
Two new type of anti-submarine missiles complete the "Albany's" armament. Two triple launchers for homing torpedoes are mounted forward and a multiple anti-submarine rocket launcher makes its appearance amidships. It is the first appearance of this type launcher in the United States Navy and its inclusion in each of the designs recently released is significant.

The "Albany's" appearance is unique for its high superstructure, clear of booster smoke, is overlooked by two large towers reaching high above the ship. These are what the Bureau of Ships terms "macks," a combination of the masts and stacks.

The tremendous increase in radar and electronic equipment requiring outside masts and antennae is largely responsible for these towers. Rapid deterioration of such equipment due to the close proximity of the stacks led to the unusual design which places the radar array atop the "macks" and jet the stack gasses off to the sides.

The same design concept is already noticeable in the frigates of the DLG 16 group which will have the same functions as the guided missile cruisers but will carry smaller missiles. The seven frigates, including three from the previous fiscal year, are to be built for \$340,000,000 provided

ROYAL NAVY CARRIER REFUELS AT HIGH SPEED



This picture, taken from a Gannet aircraft which had just taken off from the aircraft-carrier H.M.S. "Centaur", shows the carrier refuelling as it steamed towards Brisbane at 30 knots with the oiler "Tide surge" and the destroyer "Lagoo". The Centaur visited Brisbane for the Queensland centenary celebrations and arrived in Sydney on December 16.

—"Sydney Morning Herald" Photo



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by the fiscal 1959 shipbuilding programme. These ships will be of a so far unnamed class of which the DLG 16 is the prototype.

In general appearance the DLG 16 resembles the "Albany" with twin missile launchers fore and aft and superstructure surmounted by two tall "macks." The design marks a distinct break from the traditional flush deck American hull and the appearance of a knuckle at the main deck level is unique among American destroyer-type vessels. With an overall length of 535 feet and a beam of 53 feet, these ships are really small cruisers displacing 5,000 tons standard and 6,700 tons fully loaded. A speed of 34 knots is expected with 80,000 S.H.P.

Twin "Terrier" missile launchers fore and aft provide the main armament, but in addition a twin 3-inch 50 cal. battery is mounted on either side amidships. Additional armament of long and short range anti-submarine missiles is carried, including a large multiple anti-submarine rocket launcher just forward of the bridge. These vessels will be the first frigates to have a main armament entirely of missiles.

Design studies have already begun on a nuclear powered destroyer which will displace only 3,000 tons. The DLG(N) 25 looks much like DLG 16, but the "macks" have given way to lattice masts which rise above a funnelless hull.

Armament is the same as the DLG 16 class with "Terrier" missiles as primary armament.

The navies of the world are just entering the missile age which will no doubt produce many unusual designs and innovations, but certainly America's second generation of missile ships will occupy a distinct place in the birth of a new era of sea power.

SMALL NAVIES CAN MAKE SENSE

This article, giving a German Navy leader's views on small navies, attracted considerable interest when it appeared recently in the American Navy Journal, "United States Naval Institute Proceedings."

It represents the views of Vice Admiral Friedrich Euge, Inspector of the German Federal Republic's new Navy, a position analogous to that of Chief of Naval Operations. He wrote the history of the German Navy in World War II, "Der Seekrieg."

The views condensed here have a special interest to Australian Navy officers and personnel, in view of our own problems of reaching the "big Navy class."

IN the good old days, one could buy a small corvette complete for about \$1,000. What a boon that must have been for budget and defence committees to say nothing of naval staffs! That was nearly 170 years ago.

Somewhat later Fulton installed the first steam engine in a ship, and we had to get used to iron as a shipbuilding material. Life was going to be difficult for both seamen and budget specialists, because from that time on, inexpensive warships were a thing of the past.

The technique of ship construction, as well as propulsion and weapons, have since that time been in a constant state of flux, with the rate of development increasing from a slow pace to its present dizzy tempo.

Hence navies have been in a continuing state of renovation for a hundred years, and costs have risen with reckless abandon.

Before World War 1, the cost of a division of large battle units was the same as the nominal price of a single present-day 3,000-ton destroyer. If you consider the subsequent currency devaluation, the battleship of those days cost about the same as a modern destroyer.

It is true that there has been a constant striving for simplicity and low cost as design factors. This has been successful up to a point. However, so many new devices and weapons have been invented that all savings in space and money have been eaten up by the innovations.

As recently as thirty years ago, the navigation aids for a minesweeper consisted of a good old magnetic compass, a couple of Peildiopter (range and bearing device), the hand lead, which had scarcely changed for some thousand years, and perhaps the Thompson's sounding machine for soundings at high speed. Total cost: a mere thousand marks.

Today the corresponding vessel carries a gyrocompass, a fathometer, radar, radio direction finder, and a modern navigation system, such as Decca or Loran, to ascertain the ship's position by radio beacon from the shore stations. Total price: in the hundreds of thousands of dollars.

The weapon situation is even more difficult. A modern, fully automatic gun of 100 to 127mm. calibre, such as is carried on all destroyers or escorts, cost about as much as the whole ship used to cost. It is true that the

single gun, with its firing speed of about one shell per second, replaces a whole battery of earlier construction.

In recent years, antisubmarine warfare has seen great progress. It began with simple depth charges and now has depth charge launchers with complicated fire-control units, homing torpedoes, sensitive acoustic listening gear, and electronic sonar.

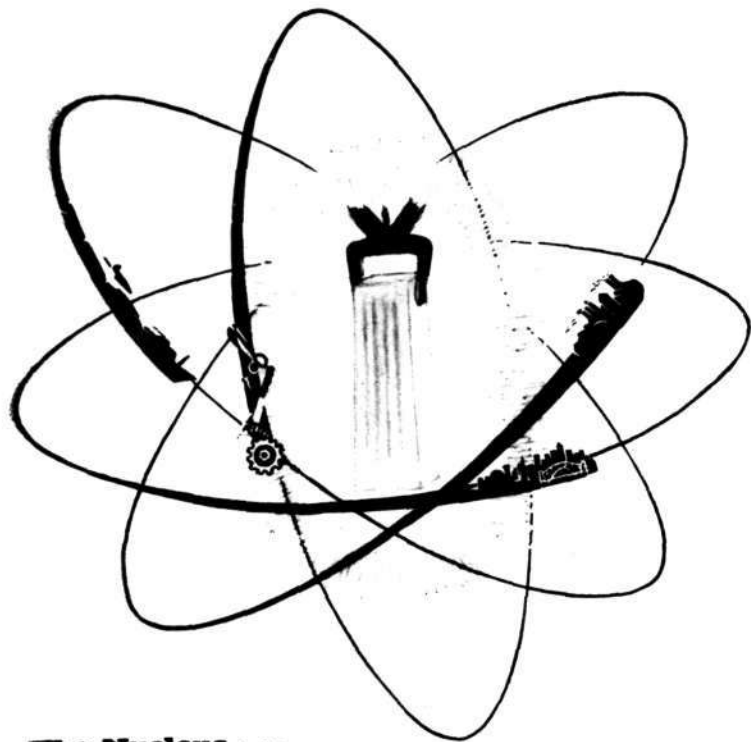
Under these conditions it is quite unfeasible for smaller nations to acquire and operate all the types of ships used by large navies. They cannot build full-scale fleets, from the super-carrier costing over a billion marks, and atomic-powered rocket-launching submarines costing over a hundred million marks, to cruisers, destroyers, and MTB's. They can scarcely hope to keep pace in any real sense with the development of weapons and devices.

Use of Service Craft

Under these circumstances, it is quite appropriate to ask whether small navies have any meaning whatsoever. In view of the tremendous progress in aircraft, rockets, and guided missiles, the question arises as to the viability of surface craft.

The answer is found in the fact that now as always, the sea is the most economical and effective transportation route for bulky goods and that it connects all continents. Air transport of course does the same thing, but its kilometer-ton cost is a hundred times greater. Every country that is dependent on large quantities of imports has a lively interest in maintaining the freedom of this most productive highway over the sea.

(Continued on page 13)



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SMALL NAVIES (continued from page 11)

Hence we must continue to maintain a far-flung series of warships in order to protect the supply lines against any potential aggressor. These ships must be organized into navies and fleets, in order to permit rational operations and training. Aspects of combat will continue to change and develop, we will travel more under water and in the air, but the fleets will remain. Western Europe must have a special interest in them; for it is nothing but a bridge-head and must be supplied from the sea.

It is not easy to define the term "small" in the sense of this discussion. As late as the turn of the century, fleet strength was expressed in terms of battleships, whose heavy artillery and strong armour made them far superior in day fighting to any other ships. It is true that torpedo boats could already be dangerous in night actions.

In World War II, the battleship had to make way for the aircraft carrier, which with its bombers and torpedo-planes could attack the enemy from a much greater distance. However, the carrier is no longer the only criterion of fleet strength even though it continues to be the most useful vessel.

Of the world's some sixty navies, the United States is incontestably the strongest. In round numbers they have 900 ships in commission. This is a fleet which can operate in any naval theatre and concentrate its forces in the shortest possible time for either attack or defence.

Surface operations on the oceans by any other nation are futile against this power. It is true the Soviets have a fleet of some 35 cruisers ready or in construction, but they have completely neglected the car-

rier. Thus they have put all their efforts in submarine construction, of which they now have nearly 500.

This is a powerful and obvious threat to western sea lanes, especially in the Atlantic, and must be considered in relation to the question of the small navies. The Soviets have in addition about 150 destroyers, 1,500 smaller craft, and 3,600 naval aircraft — clearly the second most powerful navy.

Contrast of Strength

At the other end of the scale are navies like those of Honduras with one frigate, Lebanon with three small patrol vessels, Iraq with four patrol vessels and a yacht. This type of fleet does not come within the scope of our discussion, though they can unexpectedly change their significance. Thus the Syrian Navy until recently had only three patrol boats. However, in Latakia, the Syrian naval base, twelve Soviet MTB's and two submarines were recently stationed and the port was built up.

A similar development took place in Egypt, where half of the ten escorts were lost in the Suez conflict, but subsequently the fleet grew by at least two Soviet destroyers, six submarines, four subchasers, four minesweepers, and a dozen MTB's. The same thing could happen in Albania.

However, the Soviets spare Western nerves by keeping as quiet as possible about such build-ups of combat strength. In contrast they raise a great hue and cry when a destroyer is loaned to the German Federal Republic, as though the immediate effect were that of a torpedo aimed straight at the Kremlin.

For purposes of this analysis, neither the very small nor the great navies come into the pic-

ture. In the latter category we can list, in addition to the U.S. and the Soviet Union, only Great Britain and France. The British Empire (including Canada, Australia, South Africa, New Zealand, Pakistan, and India) possesses a fleet of fourteen aircraft carriers, 24 cruisers, 133 destroyers, about sixty submarines, and other small and supporting vessels in proportion.

France has a less ambitious fleet, with four carriers in service and two under construction, two battleships, six cruisers, 22 destroyers, some seventy frigates, about eighteen submarines in service and fourteen under construction, 127 minesweepers, and additional auxiliary vessels and landing craft. The well-balanced, well-trained, and effective French Navy ends our enumeration of great fleets. A long-range planned construction programme will see to it that its position is maintained.

It must be considered that the major threat to maritime traffic is the submarine. Only in specific maritime theatres lying closer to the enemy bases is the danger from air attack greater. In addition, shallow waters provide an area for modern mines with mixed detonators, reacting to magnetism, sound, and pressure, which are very difficult to sweep.

With the great number of navies and the varying geographical character of their countries, it is only natural that they should not all have a similar development.

The South American ABC States used to have one or two battleships apiece, of which the Chilean "Almirante Latorre" (ex-British "Canada") was still in existence as a participant in the Battle of the Skagerrak. Now they have, or are planning to have one escort carrier each.

The Netherlands Navy is similarly articulated, with one

Combined with a strong coastal defence and air force.

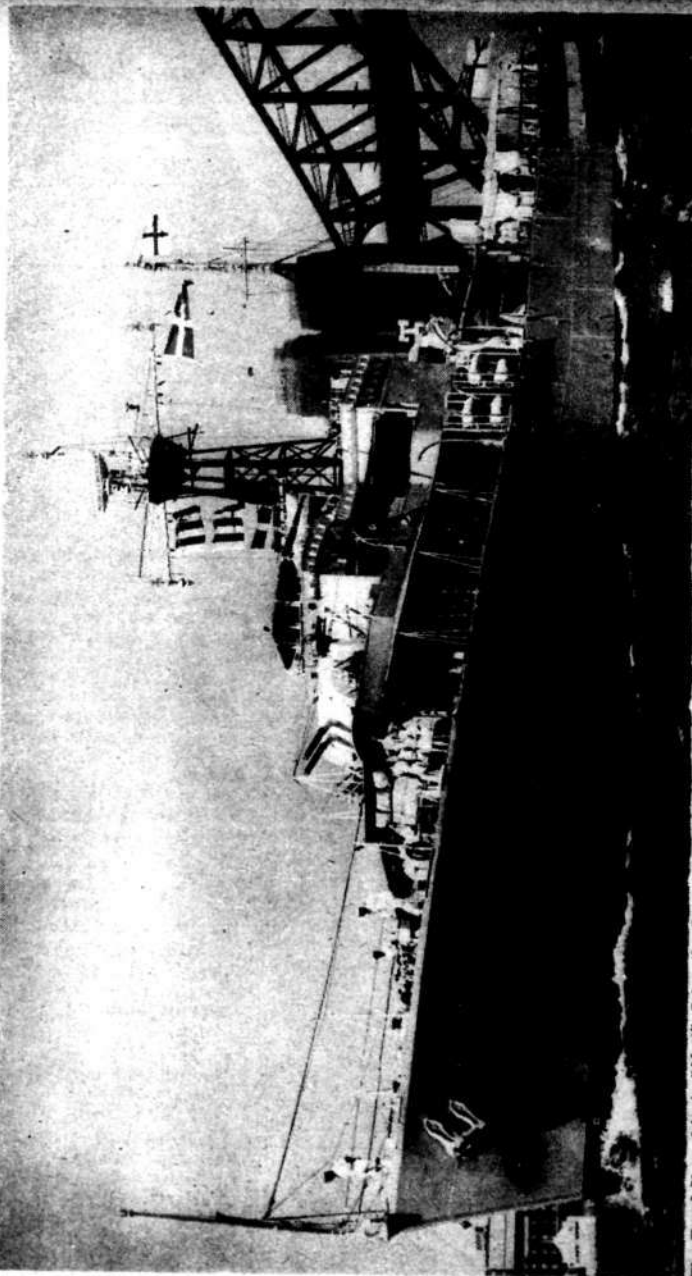
It is worth noting that shelters in the rock have been made for the mass of the ships, so that a surprise attack, even with atomic weapons, would not destroy them.

Turkey places the emphasis on land and air forces. The navy still has the battle cruiser "Yavuz", the old German "Goeben", which still looks astonishingly modern, but is no longer quite suitable for our times. In addition, the fleet has eight destroyers, seven submarines, some thirty minesweepers, and a number of minelayers and small auxiliary vessels. The principal mission is the defence of the straits through which the Muscovites have sought to force their way for centuries.

Naturally the Turkish fleet does not stand alone; the American Sixth Fleet will support it with its tremendous fighting power. On the other hand, the Greek fleet, consisting of a cruiser, sixteen destroyers and frigates, four submarines, a nineteen minesweepers, and a number of auxiliary and landing craft, will have its hands full to protect the supply lanes to its own country, even discounting political opposition.

Similarly, the Italian fleet will be entirely devoted to escort missions. It has three cruisers, five destroyers, 42 frigates, six submarines, something over 100 minesweepers, and a number of smaller and auxiliary vessels. As soon as the cruisers are rearmed with missiles, they

Royal Navy Frigate on Goodwill Visit



—“Sydney Morning Herald” Photo

The Royal Navy frigate "Alert", flying the flag of the Commander-in-chief, Far East Station, Admiral Sir Gerald Vaughan Gladstone, steamed under the Harbour Bridge on arrival from Brisbane. The "Alert" was the first of a new class of frigates to be ordered, making a goodwill visit to Australia and New Zealand. The arrival of the "Alert" was a most colourful naval event during the month, others including the return of Tobruk after service with the forces, the arrival of the aircraft carrier H.M.S. Centaur, the recommissioning of the River class frigate "Barcoo", pay off of the Warramunga, the graduation ceremonies at Duntroon and Rear Admiral Barrington's official assumption of the post of Flag Officer Commanding the Australian Fleet.

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will be able to carry out good escort missions in the Mediterranean in deep water where there is no mine danger.

The Japanese fleet, the third strongest (after the United States and Britain) at the outset of the war, was, like the German fleet, wiped out in the catastrophe of 1945, and is likewise coming back as a small navy.

It presently has thirteen destroyers in service and under construction, three submarines, and numerous small vessels. Because of the country's complete dependence on imports from overseas, it is planned to increase the number of destroyers and frigates. There is also talk of constructing an escort carrier and some cruisers.

The German Federal Republic has been from the beginning planned most soberly and has renounced all ship types that will not be definitely used by us. As it is, there are plenty of tasks incumbent on us by our situation on two seas.

Aside from a school ship of some 4,800 tons, which, contrary to many press reports, is a training ship and not a cruiser, the type chosen as the largest unit would be the 3,000-ton destroyer as all-round combat vessel. The Federal Republic has obligated itself to produce twelve of these. For actual escort service these will be supplemented by six escorts of 1,700 to 1,800 tons. These could be called frigates.

Offensive power in this defence set-up is provided by forty MTB's and twelve submarines of 350 tons. In view of the very shallow water passages, 54 minesweepers constitute a minimum. A number of landing craft will supply coastal areas outside the harbour areas, transport troops by sea, and maintain lines to the islands. A small naval air arm of 58 first-line planes (in ad-

BALTIC NAVIES COMPARED				
The following comparison of navies in the Baltic was published in an article in the U.S. Naval Institute Proceedings, to emphasize the relative strengths of Soviet and other powers where discussions revolve around the aggressive intentions of any nation.				
	W. Ger.	Denmark	Poland and Sov. Zone	Sov. Baltic
Cruisers	1 (18)	18	10	70
Destroyers, Escorts, Frigates	40 (54)	36	160	over 300
Minesweepers, etc.	2 (12)	4	8	130/150
Submarines	12 (40)	20	200	200
MTB's	20 (50)	—	—	over 1300
Naval Aircraft	—	—	—	—

(Planned goals in parenthesis)

dition to reserve aircraft, rescue planes, and helicopters) will serve for armed reconnaissance and antisubmarine warfare.

These tasks are all essential to the life of our people and can scarcely be avoided within the framework of the NATO alliance, since each partner has similar missions within his own coastal area.

All members have a common responsibility for AS warfare in the Atlantic, for in the event of a conflict this would be the major hunting ground of the overgrown Soviet submarine fleet.

The Federal Republic's Navy will make its most effective and significant contribution if in co-operation with the Danish Navy (eighteen frigates, 20 MTB's, submarines, 36 minesweepers) it so defends the Danish straits that the Soviets are contained in the Baltic.

If these narrows are closed, it means that there will be 100 to 150 fewer submarines to sow destruction in the Atlantic.

It would take too long to describe all the small navies of the NATO and Soviet blocs. They are similarly constituted, i.e., of destroyers, frigates, subchasers, MTB's, submarines, minesweepers, and auxiliary vessels.

There is one difference — the fleets of Poland and the Soviet Occupied Zone are under the sharp control of the Soviets, while those of the NATO are completely independent in

their internal affairs, lend mutual assistance in matters of training, and in all exercises co-operate excellently with equal rights.

By exchange of knowledge and experience within the NATO navies, it will be made possible for the little navies to keep up-to-date without being weighed down by expenses.

They are accordingly capable of looking after their own local problems and in this way they can lighten the tasks of the great fleets in their primary oceanic missions.

A good example of the division of labour is afforded by the Belgian Navy, which has soberly and clearly concentrated on minesweeping with fifty excellently manned minesweepers.

RUSSIAN SHIP ON SHOW AT FREMANTLE

PERTH.—Thousands of people inspected the Russian research ship Vitiaz at Fremantle's North Wharf.

The 14 laboratories in the Vitiaz were manned by scientists, who answered questions and demonstrated their equipment.

Many of the visitors also inspected the destroyers HMAS Anzac and Tobruk at the other end of the North Wharf.

The Tobruk and the Anzac left on December 7, on their way to Sydney and Melbourne for refit.

ROYAL NAVY'S EXAMPLE IN GOODWILL MISSIONS

LONDON.— In the Autumn of 1923, a Special Service Squadron was formed to visit countries of the Commonwealth and British territories overseas.

It consisted of the Battle cruisers "Hood" and "Repulse," the Light cruisers "Delhi," "Danae," "Dauntless" and "Dragon" and was under the command of Vice-Admiral Sir Frederick L. Field, K.C.B., K.C.M.G.

The cruise, which started in November, 1923, and finished almost a year later, was a truly monumental one. It took the Squadron round the world, the Battle cruisers spending 133 days at sea with a distance run of 38,000 miles, the Light cruisers 154 days at sea and a distance run of 45,000 miles.

Such was the scale of an Empire cruise in those spacious days. The First Lord at the time (Rt. Hon. Walter C. Bridgeman, M.P.) reported to Parliament that the Squadron was "received at all ports of call with the greatest cordiality."

The Navy was carrying out its traditional role of showing the Flag and the large number of officers and men concerned could reflect that they had not only joined the Navy, but had seen the world.

After this cruise, ships returned to their respective Fleets for the normal span of a Home or Foreign Service commission, and events seldom, if ever, took a ship beyond the bounds of her appointed station.

Today, the news that H.M.S. "Scarborough" (Captain E. M. Usherwood, D.S.C., R.N.) has arrived at Portsmouth after circumnavigating the globe for the second time in the last two years, reminds us that although the pattern may have changed, and round-the-world

cruises can no longer be carried out with quite the lavish exuberance of the past, voyages of considerable length by single ships are by no means rare.

One recalls the voyage of H.M.S. "Bulwark," (Captain P. D. Gick, O.B.E., D.S.C., R.N.) which steamed some 52,000 miles in eight months, ranging from the West Indies to the Far East, and that of H.M.S. "Albion" (Captain A. B. Cole, D.S.C., R.N.) which recently completed a remarkable chain of visits to the Southern Hemisphere, embracing Australia and New Zealand, South Africa and South America.

What is noteworthy is that such voyages are performed within the framework of the General Service Commission, one of the primary objects of which is to reduce the length of periods of family separation.

Whilst the actual sea time spent by the individual officer and rating may be somewhat shorter than hitherto, his chances of seeing a large part of the world during his service are better than ever before.

It is a far cry from the large Special Service Squadron of the inter-war years, but by a re-disposition of existing resources, the Royal Navy still keeps in the forefront of its programme the goodwill visits to foreign countries, thus cementing old friendships, fostering new ones and giving both officers and men the benefit of the finest of all universities, World Travel.

UNDERWATER ARCHAEOLOGY

LONDON.— One of the M.F.V.'s which accompanied the Fleet to Augusta for the regatta in 1959 was the Fleet Diving School's tender.

Both on the way to Augusta and on the way back, divers of the Royal Navy co-operated with the Cambridge Under-

water Exploration Group and a team from the Sicilian Archaeological Society under Count Prero Gargallo exploring known ancient Greek and Roman relics in the sea at a little fishing port of Narzamenis near Sicily's south eastern tip.

The most interesting of the relics investigated was an ancient Greek trireme which foundered 2,700 years ago loaded with rough cut marble pillars. Some of these are between 25 and 35 feet long and 8 feet in diameter.

Much coral growth obscures the actual wreck, but in many places the actual lines can be seen. Among the many pieces of broken pottery brought to the surface was the top of a large vase of Rhodian origin.

Count Gargallo entertained four officers from the M.F.V. to dinner at his home, the Palazzo Gargallo where many firm friendships were made.

One of the features of the Palazzo is the Count's collection of ancient lead anchor stocks, many of them over 3,000 years old.

OIL BEATS COAL

COAL has been largely replaced by oil as a source of power for new ships.

Only 8 per cent. of shipping afloat in the world in 1956 used coal, compared with 50 per cent. in 1935 and 96 per cent. in 1914.

Rather more than half the shipping under construction in United Kingdom yards in June, 1957, consisted of motorships, that is ships with diesel engines, or diesel-electric or other motors. The steamships now building are mostly being equipped with turbine engines of various kinds.

The first marine turbines were designed by the British engineer Sir Charles Parsons, whose company built the world's first turbine-driven vessel, Turbinia, at Wallsend-on-Tyne in 1894.

EARL MOUNTBATTEN SEES SWORD-DANCING TEAM

LONDON.—A rapper sword dancing team from Tooting and Balham unit who gave a 'side-show' on board H.M.S. Victorious on the occasion of the Royal Naval Film Corporation's annual dinner to the film industry, could have been excused if they had shown signs of stage nerves.

But their display, on the quarter-deck after the dinner, and in the presence of a heavily gold-braided audience, was faultless.

It earned warm praise from the very top. Admiral of the Fleet, Earl Mountbatten of Burma, Chief of the Defence Staff and President of the R.N.F.C., in a letter of thanks to Captain R. Casement, O.B.E., R.N., Secretary to the Council at Sea Cadet Headquarters, says the cadets 'were quite first class and made a very great impression on all our guests.'

Lord Mountbatten requested

his congratulations to be passed on to all concerned.

After the show the cadets spent the night on board H.M.S. Victorious. Commanding Officer of the Tooting and Balham unit is Lieut. Commander (S.C.C.) A. H. Taylor, R.N.R.

TORPEDO CONTROL

WASHINGTON.—Mark 112 Torpedo Fire Control System: This system, to be installed in USS George Washington, first Polaris nuclear submarine, will determine enemy position, direction and speed, solve the geometrical problem of establishing a firing point, and indicate on the operator's display when a navigational solution is reached. The operator then pushes the firing key.

The system also activates the torpedo after it has travelled a safe distance from the firing sub, and uses one or a combination of sensors to detect enemy craft and constitute an antisubmarine defense device.

DROWNING MAN RESCUED BY YOUNG SEA CADETS

LONDON.—Two sea cadets who demonstrated their courage in rescuing a drowning man have provided inspiration for sea cadets everywhere.

Cadet Ordinary Seaman Michael Thompson, 14, and Billy Mackay, 15, were strolling home along Whitley Bay promenade after they had attended a parade at Tynemouth.

They saw a man dive into shallow water and hit his head on a rock. Knocked unconscious, he was being gradually carried out to sea when the cadets ripped off their uniforms and went to the rescue.

The rescue, a team effort, will demonstrate to many people the wonderful spirit of the Sea Cadet movement. The two young heroes are to receive the Navy League Gallantry Cross, the highest honor that can be bestowed on cadets—only awarded twice since 1951.

Subsidy Advantages for U.S. Shipping

PROBLEMS facing the American merchant fleet were outlined recently by Captain E. B. Perry, U.S.N. (Ret.), in an article in the Navy magazine of the Navy League of the United States.

Captain E. B. Perry discussed with unusual clarity conditions under which American liner tonnage is subsidized and the position of the tramps and tankers, and also made suggestions for a solution to the problem which would make "flags of necessity" unnecessary.

"Have you ever considered what our Naval Sea Power might become were we to place our dependence upon the good offices of some of our friendly neighbors, employing a Mercenary Navy to save a few dollars and to push aside some of the more vexing problems?" he asked. "Do you know that we are, to-day, involved in some such practice with respect to our United States Merchant Marine, a service which is sometimes known as our Fourth Arm of Defence?"

"Many fine merchant vessels, owned in whole or in great part by American capital, are now flying the 'Flags of Convenience/Necessity' in the PANLIBHON Fleet under the flags of Panama, Liberia and Honduras."

Captain Perry pointed out that "hired help" could not satisfy naval defence needs: this would be a Navy in name only. Similarly, the merchant fleet was essential in war and peace. Why, then, did some people believe that American owned vessels documented under a foreign flag, employing foreign crews, were really part of American maritime strength. He continued:

"... It costs between two and three times as much money

to operate a vessel under the United States flag as it does to operate a similar vessel under many of the foreign flags. The crew costs, alone, under our flag are about double those of the foreign-flag competition, and the demands for more and more wages and benefits seem to be limitless.

"In order that United States shipowners might compete with foreign shipowners the Government has subsidized certain vessels in the liner service, working on the essential trade routes, subject to rigorous restrictions, by taking over a fraction of the greater costs of operation under our flag. This aid is known as operating-differential subsidy.

"Our present subsidized fleet consists of about 310 vessels making about 1,960 annual sailings from our shores, and the yearly cost to the Government is about \$145 million, a part of which is returned to the Treasury through taxes and other recapture provisions. This small fleet of about 310 fine vessels is our assured and long range American Merchant Marine — for so long as operating-differential subsidy payments shall be available to the owners.

"In addition to our subsidized liner-service fleet, we have a small fleet of tramps which is only a shadow of its former strength, about a couple of hundred world-wide traders, some of which are 'captive' to particular industries in whose interests they serve; a small fleet of tankers; a rapidly diminishing intracoastal and intercoastal fleet; and a small assortment of vessels fitted for particular services, such as refrigerator, collier or ore carrying.

"Of the above, only those vessels which are engaged in our foreign commerce on our essential trade routes and are conducting, or able to conduct, a liner-common-carrier service are eligible for consideration for operating-differential subsidy aid. All of the owners who believe that they meet the eligibility requirements have applied for subsidy aid stating that they can no longer operate under our flag without Government assistance.

"Under our present statute, neither the tramps, tankers, vessels in the domestic trades nor captive world-wide traders are eligible for subsidy aid. Some of the world-wide traders, presently conducting semi-such assistance. They can not receive such aid unless authorized sailings are made available and Federal funds are appropriated to cover those sailings.

"For the fiscal year 1960, the recommended budget limits the authorized sailing to 2,040 and the dollar aid to \$130 million. That means that most of the present applicants for operating-differential subsidy are going to find that the cupboard is bare. If sufficient sailings were to be made available to cover the proposed sailings of all applicants, the annual sailings would have to be increased to about 2,600 for the employment of about 450 ships at an annual cost to the Government (before recapture) of about \$210 million.

"If the additional authorized sailings and funds are not to be made available, the shipowners who have made application for such aid are going to be forced to look elsewhere for relief from the excessive burden of expense under United States documentation. The



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PANLIBHON fleet offers such a refuge and hence has been termed, by the shipowners, as the 'Flags of Necessity'.

"No American shipowner would accept subsidy aid if it was possible for him to compete with foreign-flag ships without such financial support. Subsidy money does not go into the pocket of the shipowner. It enables him to pay some of the far greater cost of operation under our flag: wages, overtime, subsistence, insurance and repairs; money that flows into the pockets of American taxpayers.

"Perhaps the most onerous requirement of the subsidy contract is that which makes it necessary for him to replace his vessels every 20 years, this regardless of the type of vessel, the condition of the vessel or the ability of the vessel to meet foreign-flag competition."

Captain Perry points out that ship replacement is expensive. He estimates at about \$10 million the replacement cost of a typical 20-year-old dry cargo ship with a current market value of \$1 million. There is a construction-differential subsidy whereby the Government undertakes up to 50 per cent. of the cost plus certain allowances for defence features. The owner obtains a credit of \$1 million by turning in his existing vessel to the Government and must pay the balance of \$4 million for the new vessel.

Captain Perry points out that the existing Government programme should be adequate. Most ships to be replaced could also be used on less exacting services.

"There is no man who has as much interest in his ship as a 'plank-owner,'" says Captain Perry. "We must encour-

age and aid our sea-going personnel to re-establish that old custom, let them become financially interested in the venture which earns them a very good living. Let Labour share in the profits from its Labour, guard against losses, and make the 'Flags of Necessity' unnecessary."

NAVY REDUCES AGE LIMIT

Boys aged 15½ will be able to join the Royal Australian Navy in 1960.

Since 1927 the age for enlistment was 17½.

The Navy will accept 150 boys every six months beginning July, 1960, for an enlistment period of 12 years.

The junior recruits will first go to the training ship, Leeuwin, on the Swan River, Fremantle.

Later they will be transferred to communications, engineering, electrical or seaman branches of the Navy.

THE WILLIAMSTOWN DOCKYARD

Historic background of vital link in our naval defence chain

BY 1836, there were nearly two hundred people settled in and around the present site of Melbourne, which was then regarded as part of the Port Phillip District of New South Wales. Not until 1850 did Victoria become a separate State, but long before that shipping was putting in to Hobsons Bay.

Faced with providing the normal facilities of a recognised port, the Victorian Government in 1856 laid out the sum of £58,000 on a patent slipway at Williamstown, designed to accommodate vessels up to 2,000 tons. Until replaced by the Alfred Graving Dock in 1874, the slipway was in constant use.

The 'fifties was an interesting time in which to live. With the gold rush at its height, there were wholesale crew desertions from shipping lying off Melbourne. Old prints show Hobsons Bay as resembling a fleet anchorage, with the difference that half the ships lay with cockbilled yards, immobilised until crews could be signed on again. Responsible opinion as voiced in contemporary newspapers, took a dim view of what was termed "port stagnation".

Elsewhere, there were discussions of a very different kind. People may have thought of the war in the Crimea as a shadowy thing, but in places into which confidential information found its way, there was a good deal of curiosity about a document that had come into the hands of the authorities in England, which, if genuine, showed that the French Emperor, Napoleon

III, was thinking of seizing the Australian colonies and reviving privateering.

So far as Victoria was concerned, the immediate reaction to this and other moves in the international field was the purchase of an armed steamer. Six 9-pounder and two 24-pounder guns were also obtained, while steps were taken to keep the 24th. Regiment of Foot in Melbourne, and support them with a body of local volunteers. Implied in the defensive scheme was a satisfactory ship repair establishment.

Amongst the most picturesque vessels seen at Williamstown in those days was the Confederate steamer "Shenandoah", which, arriving unannounced during the final stages of the American Civil War, asked permission to effect repairs and take on provisions. That much was permissible under the rules of war. While docked at Williamstown, however, someone was said to have planted explosives in the ship, and a guard from the Victorian Navy was posted on the slipway.

Further trouble arose when "Shenandoah" did a little recruiting on the side, and there was a feeling of relief when the ship pulled out and went about her business. Trifling as the whole thing was in itself, the incident had far-flung repercussions, for "Shenandoah" was one of several Confederate raiders that inflicted damage to the tune of \$6,300,000 on shipping belonging to the Federal (or Northern) States of America.

When the matter went to arbitration at Geneva in 1872,

the court found that Great Britain was liable for all acts committed by "Shenandoah" after her departure from Melbourne. Damages were paid, but the Imperial Government did not consider that the authorities in Victoria were in any way to blame.

None of this excited much attention at Williamstown, where the shipwrights had more than enough to do. The single slipway soon became inadequate, and, by 1864, a contract for a graving dock had been let.

The new dock took its name from H.R.H. Prince Alfred, Duke of Edinburgh, who laid the foundation stone at the beginning of 1868. Six years later the dock was open for business, and, with the exception of the period 1914-18 when six merchant ships were built under the direction of the Shipbuilding Branch of the Prime Minister's Department, the dock was operated by the Victorian Government through its Public Works Department.

First made use of by clipper ships due to load wool for homeward passage around Cape Horn, their masts protruding from what appeared to be dry land, was for a long time a feature of the low-lying country between Melbourne and Williamstown.

The turret ship, H.M.V.S. "Cerberus" was docked regularly at Williamstown, as was the old line-of-battle ship "Nelson", launched in 1814 and sold in Melbourne in 1898 for the sum of £2,400. Shipping entering Port Phillip was increasing year by year, and docking facilities offered at Williamstown had to keep pace with growing demands.

(Continued on page 22)

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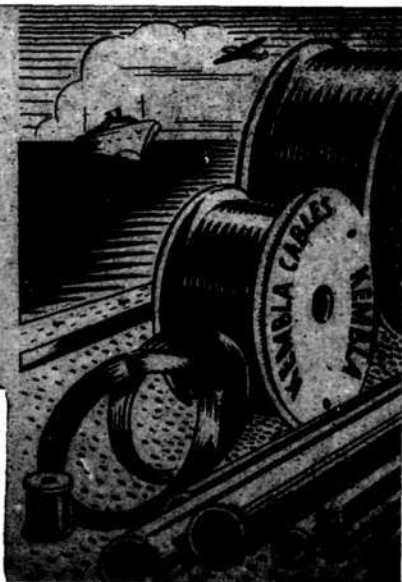
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By the turn of the century a new graving dock 750 ft. in length was being talked about. It was high time too, for, in 1900 alone, fifty-five vessels were handled by the Williamstown Dockyard.

Repairs due to collision at sea is an item appearing constantly on the books, and taken at random is the case of a U.S. auxiliary steamer, which collided with an Australian ship crowded with sightseers on the occasion of the visit of the American Fleet in 1906. Much damaged as she was, the U.S. vessel eventually sailed for home with a completely new stern constructed at Williamstown.

Australia's first two destroyers, "Yarra" and "Parramatta" berthed in the dock at Williamstown on their arrival from England at the end of 1910, and, during the First World War, the dockyard did a great deal of conversion work required to turn merchant ships into the transports needed to take Australian soldiers overseas. Dockyard employees at this time numbered about 1,500 men.

Between the end of the war and the middle of 1924 when the Melbourne Harbour Trust took over management, six merchant ships of the "Isherwood" class were constructed to Commonwealth order, besides several dredges required for local undertakings. At least one event of naval interest occurred during this period, when the Australian submarine J.4 sank alongside the Dockyard Pier, and had to be raised with dockyard equipment.

On the whole, these years provided a period of dockyard reorganisation. As late as 1927, the dockyard area still contained some of the buildings belonging to the Williamstown Naval Depot, which had

moved to Flinders seven years before. There was the old gaol, the Petty Officers quarters, and a building known as the "cottage in the corner", all of which were removed or adapted as time went on.

Whatever was doing in the dockyard proper, there was always a ship of some sort in the graving dock, or a vessel building on the two adjacent slipways. Numbered amongst them in 1930 was the famous R.R.S. "Discovery", then fitting out for another voyage to the Antarctic.

At the outbreak of war in 1939, the Williamstown Dockyard, while capable of doing repair and conversion work, was not equipped for shipbuilding on any scale. Only 178 men were then on the payroll, but even so, they managed to fit out eleven merchant vessels with protective armament in the first few weeks of hostilities.

War Needs

With the world at war again, there was work for every dockyard in the country, and, at the request of the Department of the Navy, activities at Williamstown were concentrated on installing minesweeping gear. Eight ships were converted to that purpose in the first six months, after which shipbuilding began in earnest.

In the next few years eight minesweepers were constructed in addition to such day to day work as was required by merchant shipping. What had been a State enterprise now became a national asset, and, when the Commonwealth Government bought the dockyard in 1942, the Department of the Navy came into possession of a going concern.

Construction under Commonwealth and State ownership during the war, resulted in an impressive catalogue of varied shipbuilding. The first

of the frigates was laid down in 1942, while a 9,000-ton merchant ship was also on the stocks.

The staff employed had by then risen to more than 1,000; increasing to 1,333 in the following year, by which time the dockyard was using four building berths.

The "Battle" class destroyer "Anzac", the Daring ship "Vendetta", as well as the A/S frigate "Yarra", have all come from the Williamstown Dockyard since the war. During the same period, the "Q" class destroyers "Quickmatch" and "Quadrant" underwent major conversions, while a number of other H.M.A. ships have been serviced and refitted.

Besides all this, attention has been given to friendly foreigners like the French Antarctic ship "Commandant Charcot" in 1949, and a couple of Dutch warships in 1953.

Now firmly established as a naval building and repair base, H.M.A. Naval Dockyard, Williamstown, forms a link in the naval defence chain that extends around the Commonwealth.

SAFE FLYING

THE U.S. Navy has just completed its safest flying year on record, with a rate of 2.6 major aircraft accidents per 10,000 flight hours.

During the fiscal year from the end of June, 1958, until June, 1959, overall Navy flight operations were 7.2 per cent. safer than in the previous fiscal year, when an all-time low accident rate had been established.

This is the seventh consecutive fiscal year the Navy has lowered its accident rate. The 1959 rate is one-half of the 1953 rate.

SEA CADETS IN ROYAL CEREMONY

OUTSTANDING international relations were exemplified by Sea Cadets of United States and Canada in a joint operation climaxed by their parading at Sault Ste. Marie, Canada, in honour of Queen Elizabeth and Prince Philip.

In this operation, forty Royal Canadian Sea Cadets with three officers trekked to Great Lakes, Illinois, Sunday, July 5th, as guests of an equal number of U.S. Naval Cadets, the latter unit sponsored by the Lake County, Illinois, Council of the Navy League.

At Great Lakes, and until they boarded a U.S. Navy destroyer escort for Sault Ste. Marie, the Canadian Cadets were the personal guests of the Americans who invited them to their homes for the night preceding the cruise.

At Great Lakes, facilities of the Training Centre were open for visiting and incidental instruction that the short time permitted.

Before the arrival of H.M.Y. "Britannia" and her escort of American and Canadian destroyers, the Cadets marched to the ferry which took them across the Ste. Marie's River to Sault Ste. Marie, Canada, the site of the ceremonies to follow.

From their advantage spot at the ferry landing, the Cadets saw the "Britannia" arrive and make a sharp, seamanly landing. All American and Canadian ships were full dressed. The Navy men manned the rails. From the starboard mid gangway, Queen Elizabeth and Prince Philip entered the royal barge and were taken to the opposite shore.

In the meantime, the Sea Cadets formed with local Canadian units in a parade to Bellevue Park, final site of

the main ceremony. At the entrance to the park and extending about 300 yards, the Cadets spread out in line to hold back the crowd as the escorted Queen and Prince approached. As the Royal couple passed, each Cadet saluted. The Queen acknowledged each with a smile or a nod.

SEA SCOUTS PROGRESS IN UNITED STATES

WASHINGTON. — Some brief details of the organisation of Sea Scouts in America may be helpful to their counterparts in Australia in developing the movement to a greater stature.

The U.S. Navy Sea Cadets, a brand new "sea-going" group, is utilizing the experience of Naval Reservists throughout the country. The group, only a year old and having no reservoir of trained officers and instructors to draw from, turned to Naval Reserve officers and enlisted personnel for assistance and leadership.

The thousand youths enrolled in the 37 units are enthusiastically learning about nautical skills from their Naval Reserve leaders. For the Reservists, the guidance aspect for the programme is challenging, and it is fortunate that the cadets have the colourful heritage and ways of the sea for motivation.

However, the mere presenting of the rich naval background is not the end in itself. Rather, the aim of the programme is to instill in the youths the deeper virtues of Navymen; which include personal neatness, loyalty, courtesy, punctuality, dependability, self-discipline, and a sense of responsibility for one's shipmates — all adding up to good citizenship.

The Sea Cadets programme with its Reserve leadership was made possible by the Navy League joining forces with the Navy Department. Working together, two Cadet groups were inaugurated a year ago: The Navy League Cadets, ages 12 to 14; and the U.S. Naval Sea Cadets, ages 14 to 17.

The junior group is designed to facilitate and hasten the Cadet's progress in absorbing the advanced work of the senior group.

For both Cadets and Reserve leaders, membership is entirely voluntary. For the young men, membership entails no commitment to become a member of the Naval Forces at a later date.

It is expected that the Sea Cadet movement will expand as more communities recognise its worth to the development of good citizenship in youth.

CONSTANT ALERT BY U.S. BOMBERS

Messages from Washington in early December indicated that the U.S. is preparing for a 24-hour-day bomber alert because she fears Russia is becoming better equipped for inter-continental warfare.

Preparations were revealed by the retiring Defence Secretary, Mr. Neil McElroy. He said that in addition, the military Budget which goes before Congress in January, includes appropriations to allow for stockpiling of aircraft engines and spare parts.

Mr. McElroy said, "If Russia built the missiles it could, and we build what we intend, they will have more missile capability for the period 1961-1962 and maybe 1963."

Mr. McElroy revealed that the Defence Budget will allow for spending of £18,400-million on defence.

AUSTRALIAN DESIGN ON AMERICAS CUP

NEW YORK.—Vim, one of the United States' sleekest racing yachts, left for Australia on December 1, to become a test boat for a possible Australian attempt on the Americas Cup.

The 20-year-old sloop was loaded as deck cargo aboard the City of Poona, due in Sydney on January 1.

Sir Frank Packer heads a group of Australian yachtsmen who chartered Vim for four years.

It is planned to design a yacht similar to Vim and enter her in the Americas Cup.

NEW PENNANT FOR ORIENT AND PACIFIC

The Orient and Pacific Lines' new flag will be flown in future by all the company's vessels in the Pacific.

Orient and Pacific Lines is the name given to the joint operation in the Pacific of P. and O. and the Orient Line.

The new flag, which is in the form of a pennant, is flown subsidiary to the house flag of the

company concerned and is a combination of the companies' house flags.

41 COMMANDO ROYAL MARINES TO RE-FORM

LONDON.—The Admiralty has decided to re-form 41 Commando Royal Marines as part of a re-organisation going on within the Royal Marines Forces. It will start forming in April, 1960 at Bickleigh Camp, Devon, after the departure of 42 Commando to join H.M.S. Bulwark.

This decision will not entail any increase in the total manpower of the Royal Marine Forces. A substantial reduction in the numbers of Royal Marines serving afloat and elsewhere has enabled the Admiralty to raise the additional Commando unit, to be commanded by Lieutenant Colonel J. T. O. Waters, R.M.

The original 41 Commando was first formed in October, 1942, and during World War II took part in actions in Sicily and Salerno (September, 1943), landing in Normandy (June, 1944), assault on Walcheren (November, 1944).

River Maas, Holland, and West Germany (January to April, 1945). The Commando was disbanded in 1946 with other units in the initial stages of the Royal Marines re-organisation after World War II.

In August, 1950, the unit was re-formed as 41 (independent) Commando for service in Korea. It was completely equipped by the United States forces on arrival in Japan and was commanded by Lieutenant Colonel D. B. Drysdale, D.S.O., O.B.E., R.M., in the first instance, and later by Lieutenant Colonel F. N. Grant, R.M.

MANY UNITS IN NAVY EXERCISE

CONTROL of merchant shipping which would be required in war was exercised throughout a wide area of the Pacific from October 12 to 23.

Known as "Sea Lanes," the exercise involved New Zealand, Australia and the British Forces in Malaya. Concurrently the Commander in Chief of the United States Pacific Fleet conducted a similar test of the protection of allied trade in the Pacific from his headquarters in Hawaii.

The exercise consisted basically of establishing the position of British shipping in the area, and subsequently recording its movements. Officers in the major New Zealand ports reported arrivals and departures, while aircraft of the Royal New Zealand Air Force and ships of the Royal New Zealand Navy located and reported ships at sea.

All this information flowed back to a special headquarters in Wellington, where a "plot" was built up and kept up-to-date. Similar plots were maintained in Australia and Malaya and the responsibility for recording was passed from one to the other as the ships concerned moved about the Pacific.

Daring Voyage to Weird Sea

NEW YORK.—Two U.S. Navy icebreakers will soon begin a daring voyage of exploration across the Sea of Bellingshausen — man's last unexplored stretch of Antarctic waters.

Old-time sailors considered the Bellingshausen Sea an optical illusion.

First discovered 140 years ago by Admiral Fabyan Von Bellingshausen, of the Imperial Russian Navy, the sea has always been regarded as impenetrable.

More than 10 expeditions have followed the route of the Russian admiral, but all were forced to withdraw after terrifying encounters with float-ice, and with remarkable optical phenomena.

Bellingshausen Sea is situated south-west of the Palmer Peninsula, the finger-like extension of Antarctica jutting out towards Cape Horn.

Among the phenomena reported by the nearly unsuccessful navigators are many so-called "parhelia" and "par-silenae" — Greek for mock suns and mock moons.

These and other phenomena, such as blue and purple clouds floating over the water, can be observed in other parts of Antarctica, but nowhere are they as common as in the Sea of Bellingshausen.

In the sea are two large and still mysterious islands, Peter I and Alexander I, first placed on maps by Bellingshausen, but never explored.

The first, and smaller of the two, was seen by the Russian admiral from a distance of about 15 miles.

It is entirely covered with ice, and as far as is known, was visited only once by a

Norwegian whaler 100 years after it was first sighted.

Alexander I is considerably larger and much closer to the Palmer Peninsula. All that is known about it is that it is traversed by three great mountain ranges reaching elevations of more than one mile.

Bellingshausen Sea contains very few lakes of open water, such as are found in the larger Ross and Weddell Seas.

The ice pack is exceptionally thick and seems like part of the continent.

Modern U.S. Navy vessels are expected to be able to crash through the ice for extensive exploration.

AUTHORITIES AROUSED BY PIRATES' RAIDS

Close and effective co-operation between British North Borneo and Philippine Police Authorities in anti-piracy operations in the waters between the two territories is reported in recent messages from Borneo.

At a Press conference with visiting Filipino newspapermen, Mr. J. I. Gray, secretary for the local Government, said: "The Philippines Navy has always co-operated with us in these matters."

The Commissioner for Police and Immigration, Mr. John Atkinson, said there had been a step-up lately of pirate raids on the east coast of Borneo by Filipino Moros.

(Moros are Moslem inhabitants of the southern Philippine islands.)

The heavily armed pirates had looted villages, escaping away in fast "kumpits"—small boats equipped with outboard motors—before the Borneo police could act.

Mr. Atkinson denied Indonesian Press reports that gun-running to Indonesian islands was being carried out through Borneo ports.

NUCLEAR CARRIER AND 200,000 MARINES IN U.S. NAVY PROGRAMME

WASHINGTON.—U. S. sea power was materially strengthened by Congressional approval of a nuclear carrier and a 200,000-man Marine Corps.

Both of these provisions of the recently passed Department of Defense Appropriation Act for 1960 are in complete accord with Navy League resolutions adopted at the Philadelphia Convention in May.

Although the Administration budget, as submitted by President Eisenhower, provided for a conventionally-powered carrier, Congress went one step further and directed that the carrier be nuclear-powered. Once again Congress demonstrated its insistence upon technological advancement, even when such scientific advantages come with a considerably higher price tag.

Specifically, what Congress did was to appropriate \$5 million dollars for initial procurement of the long leadtime items necessary for the construction of the nuclear carrier.

By appropriating for the long leadtime items this year the full jolt of the cost of a nuclear carrier is softened. It is planned that the next appropriations will provide the necessary additional funds.

BACK TO LADYSMITH

When a flight of Royal Navy Skyraiders flew over Ladysmith recently, it was the first time the Navy had visited the city since 1900, when a force from H.M.S. "Powerful" had gone to the relief of the town.

The aircraft came from H.M.S. "Albion" (Captain A. B. Cole, D.S.C., R.N.) which visited Durban with the Commander-in-Chief (Vice Admiral Sir Dymock Watson, K.C.B., C.B.E.) and the demonstration was at the special request of the Mayor of Ladysmith.

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PICTORIAL RECORD OF CARRIERS

Washington. — Barrett Gallagher's newly released "Flat-top" (Doubleday, \$5.95) is without doubt the best pictorial biography of the U.S. Navy's aircraft carriers, according to American reviewers.

For more than fifteen years Gallagher has been photographing carriers, and in this oversized volume he includes more than a gross of his best action shots of carriers and carriermen. His longtime association with the U.S. Navy has won him the admiration and approval of scores of Navy personnel, and to add to the authenticity of this book, Admirals Burke, Pirie, "Cat" Brown, "Jerry" Wright, and Roy L. Johnson have written significant parts of the textual material of "Flat-top."

"Flat-top" is a pictorial biography of U.S. Navy carriers from Pearl Harbour to the building of the ENTERPRISE (CVAN 65), the forthcoming atomic-powered carrier.

The big ships and their operators are revealed in almost every situation their lives incur: work and play, hard-earned victory and tragic injury; destroying the enemy or rendering sympathetic assistance to South Pacific islanders.

Gallagher has succeeded admirably in documenting the evolution of the carrier over the past two decades.

FRANCE IN 1940

"The Battle of France". By Colonel A. Goutard. (Muller).

COLONEL Goutard, whose book has been acclaimed by such men as General de Gaulle and Marshal Juin, gives us enough background to understand the strange collapse of his country in 1940. "Fundamentally", he says, "our defeat was due more to our conservatism of outlook and our unrealistic

and preconceived ideas than to any military weakness inherent in our nation". It seems that Admiral Darlan's first reaction, when consulted by Reynaud at the time of Dunkirk, was that evacuation was impossible. "But", says our author, "whatever criticisms one may have against the subsequent actions of the Admiral of the Fleet" — one remembers Sir Winston's word that he was "frisking" the side of Laval — "they in no way diminish his merit in fashioning such a good weapon for his country. He moulded the French Navy into a magnificent body". Unfortunately in the struggle against Germany the navy had a very secondary rôle. Here we learn, from both French and German records, that if the French had taken the offensive with most of their forces early in the war they could have reached the Rhine and even have crossed it. Another grievous error was that most of the road blocks were left undefended by the Belgian troops, while in a very important sector second-grade troops were thought adequate.

UNDERWATER SPORT

A novel piece of diving and underwater equipment designed in Britain should enhance the attraction of underwater sport.

The "Aquamobile", as it is called, provides "scootering" facilities along the ocean bed. It is a highly balanced and easily manoeuvrable piece of equipment, with a hull made from thick yellow fibreglass, with sealing suitable for operation down to 200 feet.

A fibreglass propeller guard carries the chromium handles by which the "scooter" is controlled, and power is provided by an ordinary 12 volt car battery giving one hour's endurance at a speed of 2½ miles per hour.

WE STILL NEED SHIPS

Owners confident their vessels will continue to command a profitable share of the international travel market

From a speech by John D. Bates, Chairman, Australian & New Zealand Passenger Conference to the Australasian Federation of Travel Agents.

A GREAT deal has been said about shipping over a great many years. This is entirely understandable because intercontinental and inter-island transport has depended solely on shipping from the time of the canoe until about 30 years ago.

In those last three decades air transport has made enormous strides, such strides indeed that to-day we are inclined to think of intercontinental travel as a mundane everyday thing and nothing less than interplanetary travel as in any way adventurous. I am glad to say that interplanetary travel is one field which sea transport will gladly leave to air transport.

I believe it is important to look ahead rather than astern, but when you want to take the long view, past and future cannot be entirely separated, and backward glances are necessary when you are looking for cause and effect.

I think I should make it clear that I speak with particular reference to the requirements of Australia and Australians as to passenger transport.

It's getting on for two hundred years since the first English tourists — or perhaps I should say the first English, Scottish, Welsh, and Irish tourists — made their way to Australia entirely against their own

wishes, in considerable discomfort on what might be described as the earliest form of "package tour".

It was not so many years afterwards that other and much more pleasant factors created a demand for regular passenger sailings between England and Australia. It is historical fact that British shipping fulfilled that need. It did so first with sailing ships and subsequently with steam.

Members of the Australian and New Zealand Passenger Conference are those very Lines which in those early days of Australian development established and built up the service which has been at the disposal of Australians ever since.

The Lines are the P. & O. Company, the Orient Line, Shaw Savill & Albion and the Blue Funnel Line.

The New Zealand Shipping Co. are also members of the Conference but their passenger carrying interests lie with New Zealand rather than with Australia.

Ships of these companies have maintained a passenger service for a hundred years and more, in good times and bad. They have been requisitioned to serve Britain and Australia in the wars that have intervened. They have kept pace and are continuing to keep pace with Australia's own phenomenal growth and development. In fact, the ships of these Lines are tailor-made for Australian needs and requirements.

When a new ship is to be built there are a hundred considerations to be thought of, pondered and decided. What

do you think is the question most often heard during this planning period? It is, "Will it suit Australians?"

This is not an exaggeration and there is nothing particularly virtuous about it. It's simply an illustration of the golden rule of every successful business — to study your customers' needs and wishes. On the regular passenger route between Australia and U.K., whether via Suez or via the Pacific, Australians predominate.

Australians like space to move about in, open decks to exercise on, swimming and sun bathing facilities, an easy informality. Other things have to be introduced gradually because opinions are divided.

Take air conditioning as an example. Conference Lines introduced this amenity into ships on the Australian run 25 years ago — years before air conditioning became known and recognised even as a desirable feature in our hotels and city buildings.

We didn't, 25 years ago, fully air condition our ships. Quite a large proportion of our passengers didn't like air conditioning and didn't hesitate to say so. That view has changed materially, but it has been a gradual change and therefore as each new ship came out, as technical improvements became available, so more and more of the passenger accommodation was air conditioned.

When the Shaw Savill's "Southern Cross" came on to the run four years ago she was fully air conditioned, as of

course the two new ships of the P. & O. and Orient Line will be when they go into service in 1960 or early 1961.

All six of the post-war ships of those two lines on the Australian run are now in process of being converted to full air conditioning for the benefit of passengers and crew. This major job will be completed in 1960.

Three at least of the Conference Lines have directly served the needs of Australian Governments since immigration became a matter, not only of Government policy, but of Government finance.

It may surprise you to know that the Orient Line 20,000 tonners built after World War 1 were designed to carry nearly 2,000 passengers—much the same number as the 40,000 tonner "Oriana" when she comes into service in 1960. This was to meet the requirements of the migration programme of the Government of the day.

When that programme virtually fizzled out during the depression of the thirties, the ships which had been built for it suffered accordingly. But that is the way with shipping; there are good and bad times

and shipowners have above all to be able to adapt themselves to constantly changing market conditions—conditions, incidentally, over which they themselves have no control.

And now to look forward. Whenever a shipping man is interviewed in this day and age, he is certain to be asked the question, "How do you regard the future of air competition?"

Up to a year or so ago the answer would probably have been, "I regard it as complementary rather than competitive." To-day I doubt very much if that is a true answer.

Air transport in the passenger field is a tremendously exciting stimulant for travel as such, especially for international travel. By the harnessing of jet propulsion to commercial passenger aircraft, speed has taken another of its prodigious forward leaps and has thus enabled operators to enjoy vastly greater utilisation and to place correspondingly greater passenger capacity on any given route than previously.

The next step I am told is to be commercial aircraft flying at supersonic speed.

These developments in air transportation are remarkable,

but whether they can be put at the service of the travelling public at a price which will render a satisfactory return on a commercial basis is another matter. And it is on this fundamental point that international air transport and shipping, particularly as far as Great Britain and Australia are concerned, follow vastly different paths.

British overseas shipping is and always has been virtually subsidised by Governments either directly or indirectly. International air transport is State-owned in both countries and so national prestige demands that the taxpayer sees to it that the money required for continuing operations and new developments in good times and bad is found.

In sea transport (at any rate unsubsidised sea transport), the fares and freight rates charged have to recover the whole cost including that of fleet replacement, with it is hoped some profit thrown in. In air transport they do not have to do so.

In sea transport, as you well know, the ports of the free world are open to all comers. In air transport no line may operate to another country unless its own country gives reciprocal rights to airlines of the other nation.

(To be continued next month.)

AUSTRALIAN OFFICERS TO TRAIN IN U.S.

CANBERRA—The names of the two Australian Service officers to attend the 1960 course at the United States Armed Forces Staff College at Norfolk, Virginia, were announced in December by the Minister for Defence, Mr. A. Townley.

They are: Commander J. D. Goble, R.A.N., Fleet Aviation Officer, H.M.A.S. Melbourne, and Lieutenant-Colonel J. F. White, commanding officer, 3rd Royal Australian Regiment.

MORE MEMBERS NEEDED IN W.A. (continued from page 7)

and I feel that the difficulty will be straightened out to Creswell's advantage as soon as possible.

"At the inspection of the Director of Naval Reserves (Captain G. D. Taner, R.A.N.), seventy-one Cadets paraded and it is hoped that shortly the Unit will be upgraded to "Frigate" Class from "Corvette" Class.

"T.S. Cunningham (Commanding Officer Lieut. W. B. Bartlett, A.S.C.C.), also has had a successful year. The difficulty of instruction on a Thursday afternoon has been overcome by a C.P.O. Instructor attending each week. This has helped the Commanding Officers immensely and now that new equipment is forthcoming, I feel this Unit will prosper.

T.S. Vancouver (Commanding Officer Lieut. J. L. Wilkin-

son, R.A.N.V.R.), has made great steps in the past months and received a good report from the Director of Naval Reserves on his recent inspection. This Unit is suffering from a lack of instructors but all thanks go to the splendid work of the Commanding Officer and his present Instructors.

T.S. Bedford (Commanding Officer Lieut. Turner, A.S.C.C.). This Unit lost in numerical strength during the first six months but has gained considerably recently, almost regaining its numbers lost. Again the Director was impressed by their bearing, dress and the cleanliness of their Headquarters and with an additional Instructor Officer appointed, is quite sound and strong.

"The Director of Naval Reserves has assured me that

all units are of high standard and the Cadets are second to none in Australia. This was most pleasing as this was his last inspection as Director and he feels that the W.A. Division will do him justice when inspected by his successor, Capt. Marks, R.A.N."

The Local Association of T.S. Creswell Sea Cadet Unit has had an active year, reported the chairman. Many members, and especially the ladies, assisted in the organisation of its social functions which started with a ball towards the end of last year.

A number of meetings were held during the year, after each of which supper was served to enable parents to get together. More parents have attended meetings and functions of the Association during the past year than formerly. This has partly been due to the larger number of cadets in the Unit, the average attendance of whom on Friday evenings, has lately exceeded sixty boys.

Some months ago the Lotteries Commission made a grant of £200 towards the funds of the Association. Some members of the Fremantle Rotary Club, as well as others, including Association members, made gifts in kind, while the ladies of the Association have helped in various ways to raise amounts towards working expenses. During the year a successful Film Night was held at the Leeuwin Naval Depot.

Parents have been present on a number of occasions when the Creswell boys, under their commanding officers, have been on parade, including Church parades, as well as at sporting fixtures and cadet social functions.

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U.S. NAVY OUTLOOK (continued from page 5)

In the missile age, survival can only be assured through mobility and concealment. Concealment, while difficult on land, is inherent in the highly mobile naval task force. The future location of the constantly moving naval units can not be pre-determined by an opponent. Mobility is inherent in sea power. This mobility will assure survival of strategic retaliatory forces necessary for maintenance of a balanced power.

Historically, the Russians have made determined efforts to gain warm water outlets to the open sea. Unfortunately, this is not their ultimate objective. They are well aware that control of the ocean regions will bestow dominance over all countries relying on the sea for survival.

Soviet control of large land areas adjacent to the U.S.S.R., other than those with nautical mutual support potential, has been effected. Further extension will require control of the ocean areas. The ocean areas connect our allies and other free peoples throughout the world. These expanses are of increasing consequence and the necessity for control over them increases concurrently. Control of these sea areas is imperative to survival and mutual support among the free nations.

The United States is in an era of atomic stalemate because of approaching nuclear parity with the attendant mutual destruction possibility. This leads to the formulation of the limited war concept with the end result being that the capability to effectively combat aggression on a small scale is now more important than ever. Political instability in many areas of the world fosters wars

of limited objectives as distinct possibilities.

These possibilities do not obviate the requirement for a strategic deterrent. However, the United States can not reduce conventional armed strength behind a shield of exclusive control of this restraint as it could when we held the advantage.

The necessary amount of a strategic deterrent can be accurately calculated—excess quantities are of negative value since they diminish limited war ability in a level budget. Resources consumed in excess production of the strategic deterrent can be more effectively utilised in the expansion of forces which will be engaged in limited wars.

A war of limited objectives will not be waged in the United States or the U.S.S.R. This will require the ability to apply accurate and discriminating amounts of force in distant locations. This requirement can be most satisfactorily met by the naval task force.

The composition might be primarily a carrier force, but could just as well be surface, amphibious or sub-surface, depending upon the objectives. One of the many advantages of the naval task forces is the ease with which the mix can be varied to accomplish a specific assignment.

There will always be hazards in halting Russian expansion. The risks taken in pursuing an effective national policy must be recognised.

Balanced military power, capable of consummating national policy objectives in any desired area, is mandatory. Implementation of effective national policy will require command of the sea.

Recent developments have shown that it was politically unacceptable to apply a strategic deterrent even though the military capability of annihilation was available. Conversely, command of the sea gave the United States the mobility necessary to prosecute a limited war within the confines of our national policy.

Advocates of strategic concepts which do not consider, or severely limit, the strategic command of the sea concept will be well advised to keep in mind former examples in order that future mistakes can be avoided.

TELEMACHUS ENDS HER CAREER

AFTER 10 years in Australian waters, New Zealand and Pacific waters, H.M. Submarine Telemachus sailed from Sydney for the last time in September to return to the United Kingdom, where she will be broken up.

Telemachus joined the Fourth Submarine Squadron which is based on Australia to provide "targets" for anti-submarine forces of the Australian and New Zealand navies and air forces, at the end of 1949. During her ten years with the squadron she made frequent trips to New Zealand, where she became a familiar sight at Auckland and other ports. She ended her last visit to New Zealand in May of this year.

Telemachus is a 1,090-ton T-Class submarine built by Messrs. Vickers Armstrong at Barrow-in-Furness. She was launched on June 19, 1943, and commissioned on September 10 of that year. During the latter part of the war she carried out patrols in the East Indies and South China Sea.

GERMAN ADMIRAL'S WAR MEMOIRS

"MEMOIRS OF TEN YEARS AND TWENTY DAYS" is the full title of a recommended book by Admiral Doenitz and it covers the period of his naval career from 1935 until the cessation of hostilities 10 years later, when, as Fuehrer of defeated Germany for the last 29 days, he was taken into custody by British and American Military Forces.

It was in June of 1935 that the Anglo-German Naval Agreement was signed permitting the German Reich a Navy equal to 35 per cent. of Britain's warship tonnage, with the exception of submarines, where the percentage permitted was 45 per cent.

In certain circumstances and after a mutual exchange of views, this last figure could be increased to parity with Britain.

Thus was reborn the U-boat menace of the Great War.

In July, 1935, Doenitz returned to Wilhelmshaven, from a cruise round Africa in command of the light cruiser Emden, to find himself appointed to the responsible task of rebuilding the German submarine fleet.

Despite political and industrial problems, with which both he and the Commander-in-Chief, Admiral Raeder, were confronted, the outbreak of the second World War saw a highly-trained, small, but efficient fleet of U-boats ready for aggressive action; with the promise of a steadily increasing flow of new construction from the shipbuilders' yards.

Doenitz was always a submariner at heart and was, in fact, an experienced U-boat captain in the Great War. He was an enthusiastic leader and commanded the respect of his

officers and men, so it was no surprise when he was appointed Commander-in-Chief of the German Navy, on the resignation of Admiral Raeder, in 1943.

Admiral Doenitz had always held the view that the U-boat arm was Germany's greatest potential asset to secure final victory and, when the Battle of the Atlantic reached its peak, we realise how close to defeat the Allied Forces came.

The influence of Goering over Hitler and the consequent preference for aircraft to submarines, undoubtedly gave our hard-pressed escort forces the opportunity to revise their convoy tactics and to find the solution to the U-boat menace.

In his autobiography Doenitz reveals the planning and the tactics of U-boat Command, built up, under his leadership and inspiration, into a highly-skilled, aggressive and successful striking force.

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COULD BUILD SUBS IN AUSTRALIA

MELBOURNE.—The Minister for Defence, Mr. A. G. Townley, said he thought Aus-

tralia could build its own submarines.

Speaking on a Melbourne television programme he said the Federal Government was

not considering buying any nuclear or conventional submarines.

"The Navy suggested in its programme that it should go into the submarine question," said Mr. Townley.

"And the Chief of the Naval Staff, Vice-Admiral Burrell, is to go overseas and see just what is available in the United States and the United Kingdom.

"Engineering Admiral Urquhart is surveying the ship-building industry in Australia to see if we decided on submarines, they could be built in Australia—I think they could."

Mr. Townley said Australia had to have conventional before nuclear submarines.

BIG WORKS PLANNED FOR NEWCASTLE HARBOUR

MORE than £1,250,000 would be spent on extensive work in Newcastle Harbour this financial year, the N.S.W. Minister for Public Works, Mr. P. N. Ryan, said in Sydney.

The work would include dredging, rock removal and wharf repair and replacement.

Mr. Ryan said reclamation of The Islands was a £4-million scheme, in which about 6,400 acres would become available for industrial development. Material dredged from Newcastle Harbour would be used to reclaim the area.

Newcastle was one of the busiest ports in the Commonwealth, and the Public Works Department could meet all demands for extra depth to cope with larger ships.

Dredging work and repairs to dredging vessels would cost about £700,000 this financial year.

Extensive rock removal from the harbour bed and new wharves, among them one at Wickham, would eventually cost £900,000.

SUB ATTACKS

CANBERRA.—Australia's vulnerability to attacks from enemy submarines formed the basis of a question in the Federal Parliament during the discussion of budget items.

Mr. D. H. Drummond (C.P., N.S.W.), asked the Minister for Defence, Mr. A. G. Townley, whether Australia had any effective means of combating the launching of projectiles from atomic submarines on the bottom of the ocean, in view of the concentration of population "in a few vulnerable spots on the seaboard."

Mr. Townley replied that Australia's anti-submarine professional men in the service were doing everything that could be done in the study of that particularly serious problem.

"As regards nuclear submarines which fire submerged missiles, I can say that

particular form of warfare is still in the experimental stage," he said.

"It is true that the United States has submarines and missiles, but they are a long

MARCH OVER MOUNTAINS

LONDON.—Across some of the most rugged and inhospitable mountains in Europe, nine young officers of the R.N. colleges' Expedition to Arctic Norway recently completed a nine day 125 mile march to the Norwegian-Swedish border.

There, in an area adjacent to the Sulitelma Glacier and well above the cloud level, they made contact with a party from the British Schools Exploring Society and camped with them overnight before starting back to their own base camp at Mo-i-Rana—a round journey of 250 miles. As a momento of the "link-up", they presented their White Ensign to the British Schools Exploring Society.

MILK IN LUMPS

ONE lump or two" can mean either sugar or milk in the Royal New Zealand Navy's Antarctic Supply Ship H.M.N.Z.S. Endeavour. During her last two cruises away from New Zealand she has used concentrated frozen milk with considerable success.

The milk comes in plastic wrapped frozen blocks of four pounds each. Dissolved in fresh water, the blocks make four gallons of milk, although the blocks themselves occupy freezer space equivalent only to that of a quart.

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OCEAN SURVEYS CANBERRA.

— Australian scientists are making ocean surveys for data to help defence measures against A-powered submarines.

Information will be incorporated in defence planning against attack by modern missile-firing submarines.

The Navy Minister, Senator Gorton, said that C.S.I.R.O. scientists will study the Indian Ocean bed during a 5,000-mile cruise.

They will be aboard the

R.A.N. frigate, *Diamantina*, for two months.

Senator Gorton said the scientists would seek information on below-surface streams and currents, animal and vegetable life, and investigate mysterious geological changes on ocean-beds.

They would also seek information on mineral deposits on ocean beds.

Senator Gorton said information collected would be used to:

Aid long-range weather forecasting.

Reveal sources of vast supplies of sea-food.

Aid defence planners. Senator Gorton said the *Diamantina* and sister ship *Gascogne* had been fitted with modern laboratories for ocean research work.

The *Diamantina's* cruise would be a preliminary to a widespread project in which ships of several navies would take part in 1960.

NAVY WAS READY ON BERLIN CRISIS

NEW YORK.—A vast U.S. Navy task force armed with atomic weapons was at a secret rendezvous ready for action during the Berlin crisis last May, a high U.S. Navy officer revealed early in December.

The Commander of the U.S. Second Fleet, Vice-Admiral William Smedberg, told the American Ordinance Association that the fleet was ordered to meet at sea on May 18.

On May 18, the Geneva Foreign Minister's Conference had reached a deadlock on plans for resolving German and European security problems.

A six-month Soviet ultimatum for the dissolution of the Allied occupation regime in Berlin expired on May 27.

Admiral Smedberg said that on May 18, Second Fleet aircraft carriers, guided-missile cruisers, destroyers, radar picket ships, submarines, fast fleet tankers, ammunition ships and an anti-submarine warfare hunter-killer group slipped quietly out of ports from Boston to San Juan, Puerto Rico.

They met without signal at a previously designated rendezvous at sea, assumed one of our new dispersed positions and disappeared.

"On Memorial Day, May 30, ships returned to their home ports, the once significant Berlin deadline date of May 27 having faded into history."

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B12, the latest of the vitamins discovered, which is necessary for maximum growth and to prevent anaemia.

FOLIC ACID, necessary to prevent anaemia.

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NAVY LEAGUE

The object of the Navy League in Australia, like its older counterpart, the Navy League in Britain, is to insist by all means at its disposal upon the vital importance of Sea Power to the British Commonwealth of Nations. The League sponsors the Australian Sea Cadet Corps by giving technical

sea training to and instilling naval training in boys who intend to serve in Naval or Merchant services and also to those sea-minded boys who do not intend to follow a sea career, but who, given this knowledge, will form a valuable Reserve for the Naval Service.

The League consists of Fellows (Annual or Life) and Associates.

All British subjects who signify approval to the objects of the League are eligible.

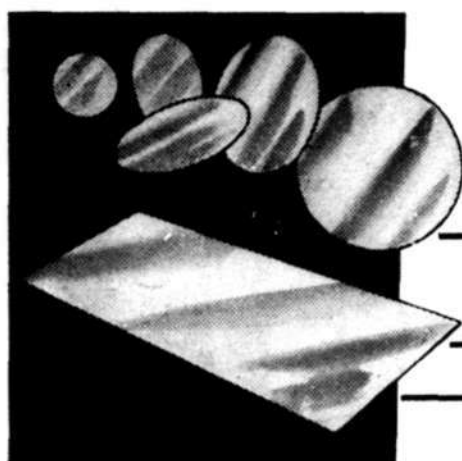
MAY WE ASK YOU TO JOIN and swell our members so that the Navy League in Australia may be widely known and exercise an important influence in the life of the Australian Nation?

For particulars, contact The Secretary, 83 Pitt Street, Sydney, N.S.W.
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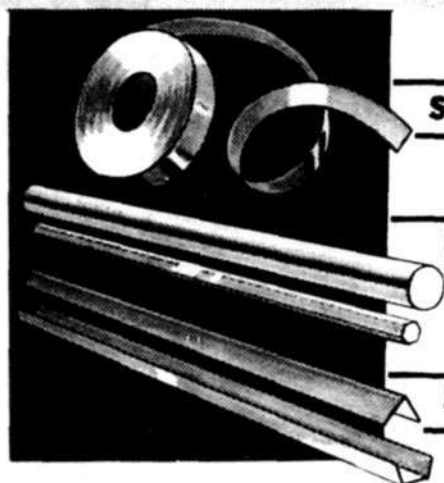


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