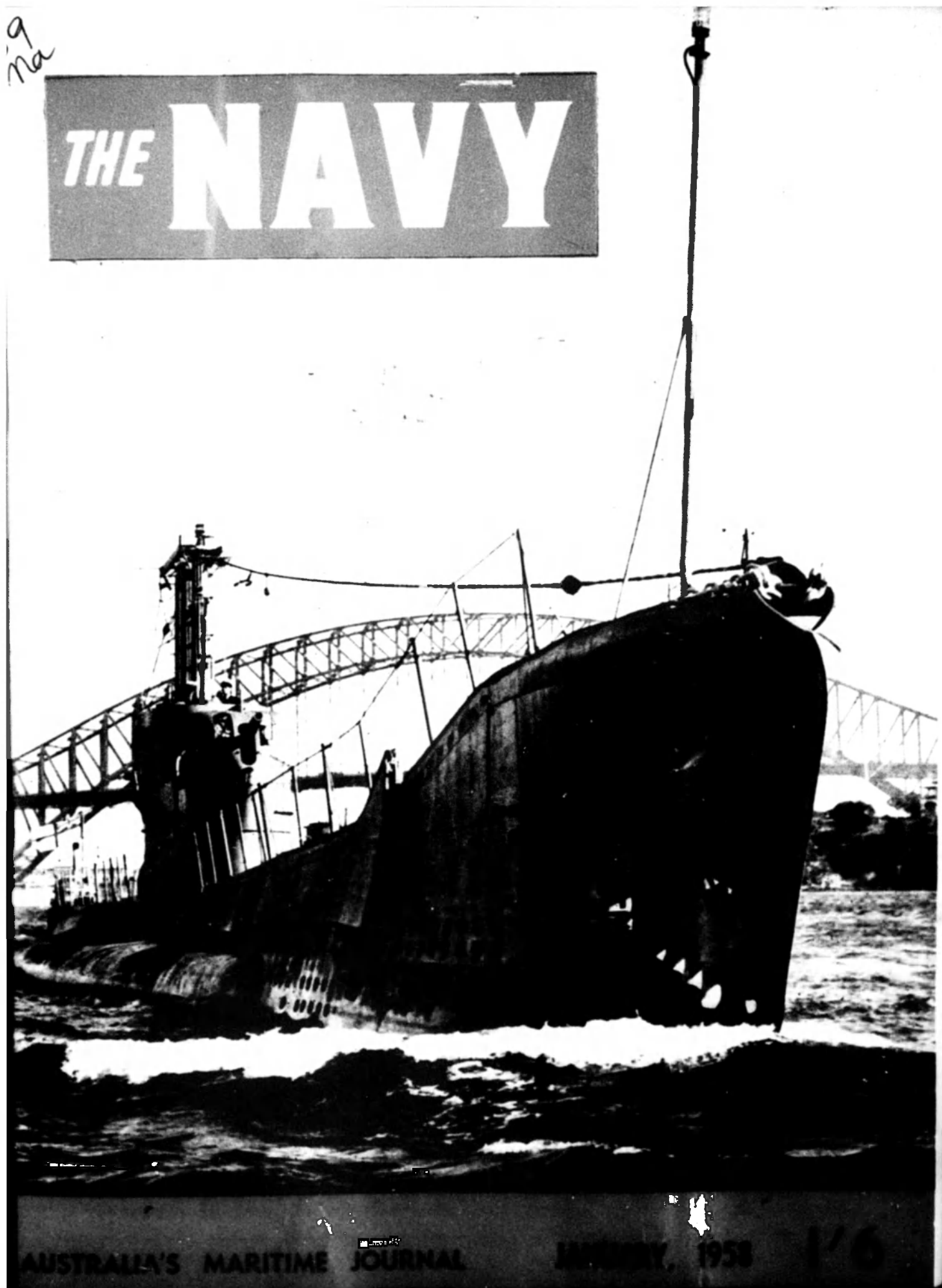


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## THE NAVY

Australia's Maritime Journal

Vol. 21

JANUARY, 1958

No. 1

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How to Get on With Russians

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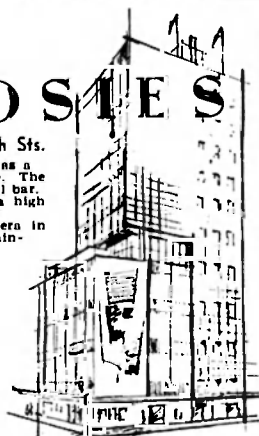
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## THE NAVY Australia's Maritime Journal

## HOW TO GET ON WITH RUSSIANS

BRITAIN's Prime Minister, Mr. Harold Macmillan, is visiting Australia this month as part of a tour of British Commonwealth countries. In a BBC broadcast on January 4, Mr. Macmillan made it clear that the problem of Russian military strength would be in the forefront of talks which he would have with the Commonwealth Prime Ministers.

"Our work for peace is dominated by the problem of how well we can get on with the Russians," he said. He made the following points:—

There have been repeated proposals for the abolition of nuclear armaments, atom bombs and hydrogen bombs. If we worked out an agreement it would save us a great deal of money and effort.

But, if as a result of such an agreement we found ourselves virtually defenceless before the greatly superior weight of Russian conventional arms — men, guns, tanks, aeroplanes, surface ships and submarines — we would bitterly regret the loss of the nuclear deterrent.

The knowledge of the immense devastation which would follow a world conflict today does deter aggressors — for in a nuclear war, neither side could be victors.

There are two ways to preserve the peace of the world: they are complementary:

- The first is to maintain the full strength of our allies. It would be fatal if we allowed NATO to be broken up. It is not just a military alliance; it also provides a moral basis for a large part of the free world.

- The second way is negotiation and conciliation. We should not be dismayed by the failures up-to-date. We are going to go on with it.

## SHIP CHRISTENING



A special mechanical device was used to smash the beribboned bottle of champagne against the bow of the new 34,500-ton BP tanker British Aviator at Wallsend-on-Tyne (England) last month. The launching ceremony was performed by Mrs. R. B. Dummett, formerly of Melbourne. Mrs. Dummett is the wife of the managing director of the British Petroleum Co. Ltd.

Mr. Macmillan said that reduction in all forms of weapons must be so planned as to reduce tensions and not increase apprehensions. They should see that the balance of power was preserved and that one side was not left with a preponderating power over the other.

One condition was vital. Agreements must be subject to an effective system of inspection and control in all countries concerned.

"Peace is the problem of the day," he added. "It is peace which will occupy us a great deal in the talks I shall be having with my fellow Prime Ministers in the Commonwealth countries which I am going to visit."

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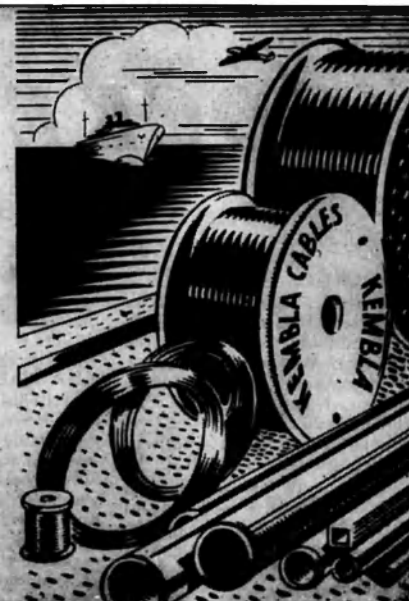
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# ROCKET FUELS

The history of rockets and rocketry is an ancient one.

**R**OCKETS were used as missiles against Alexander the Great and, similarly, nearly two thousand years later in the American War of Independence, as attested to by the line in the American national anthem, "By the rocket's red glare . . ." referring to the Congreve military rockets used by the British.

Now, with intercontinental ballistic missile rockets and earth satellite launching rockets very much in the news it is timely to find out just what makes rockets go.

The principle of the rocket has been known to man for many hundreds of years. Originally it was used by the Chinese, who invented gunpowder, and was not merely a plaything but became quite important in ancient warfare.

Even in mediaeval times it was used extensively, particularly by the Italians, who became experts in rocketry.

The inability to fire rockets with any degree of accuracy led to their being used "en masse" against an enemy and, although this certainly would have had a suitably demoralising effect, it is doubtful whether it represented a very economical method of waging war.

When the rifled gun barrel was invented, the rocket began to disappear from the battlefield. Its recent revival has been due to two factors, the development of electronics enabling accurate guidance systems to be evolved for military purposes and the desire of man to explore

beyond the stratosphere where at present the only known method of propulsion is the rocket.

To make this latter point clear, it should be understood that all internal combustion engines operate by the process of swallowing quantities of air and burning various fuels in suitable proportions with the oxygen in this air to produce heat and thus energy.

A jet engine utilises the reaction of the hot gases issuing at tremendous speed from the rearward facing nozzle to achieve propulsion, but is not classed as a rocket because, by definition, a rocket is not dependent on any external source of air to consume its propellant.

Apart from interest in the use of rockets for launching vehicles into space for various purposes (the U.S.A. proposes to launch 200 during the International Geophysical Year), it seems evident that the future of the conventional aeroplane in the military scene will soon be purely a logistic one and the tactical role will be assumed by rocket-powered vehicles. The subject of fuels for rockets is, therefore, one of great interest.

At the present stage of our knowledge of rocket propulsion, the most effective method known is the combination of a suitable fuel with an oxidiser to produce a controlled rate of combustion.

The issuing of the hot gases from a suitable nozzle produces the thrust or impulse which propels the vehicle forward.

All the older rockets used solid propellants, usually gunpowder. In this type the various components of the fuel are mixed together and require an external source of ignition to start off the reaction which is usually violent and of short duration.

The first large rockets to enter the modern scene were developed by Germany during the latter part of World War II. These were propelled by a combination of liquid fuels and oxidisers pumped into the combustion chamber at the desired flow rates to maintain the burning over a relatively long period. This type is still in the forefront of present-day rocketry.

The simplest combination, at least to understand, is kerosene or wide-cut distillate (petrol) together with liquid oxygen.

Many other fuels have been tried with varying success, but the choice is based on a number of factors and depends to a great extent on the use to which the rocket is to be adapted.

The effectiveness of the propellant combination is foremost and is expressed as "specific impulse," which is simply defined as the pounds of thrust available per pound of propellant consumed per second.

Reference to Table I will show the effectiveness of various combinations. Those having a specific impulse of 250 are considered as high energy propellants.

It is not, however, just a

matter of selecting the highest specific impulse combination without regard to other factors.

For example, it might be thought that ozone and hydrogen would be the ideal, but the dangers of using ozone are extremely high; it tends to explode with extreme violence at the slightest provocation.

In addition, to obtain sufficient quantity in a volume of reasonable space, the hydrogen would need to be compressed under extremely high pressure. At a pressure of one ton per square inch a gallon of hydrogen still weighs only .09 lb., which is less than one-tenth the weight of a gallon of kerosene.

Other materials are difficult to handle; nitric acid, as is well known, is highly corrosive, liquid oxygen has to be kept at an extremely low temperature and cannot be stored indefinitely, while high test hydrogen peroxide (HTP) (85% pure) can cause spontaneous combustion of many materials with which it might come in contact.

There are many other problems connected with the various fuel combinations, but knowledge of these problems is not readily available.

Generally speaking, it can be said that most rockets built to date have specified a kerosene or wide cut distillate (petrol) (JP1) as fuel, there being little to choose between the two excepting that the carbon/hydrogen ratio may be more favourable in the latter.

The choice of oxidiser has mainly been liquid oxygen (LOX), hydrogen peroxide or nitric acid.

With the development of rockets designed either for use with intercontinental ballistic missiles (ICBMs) or satellite placement, other fuels are being examined closely. The propellants used to launch the Russian satellite are not known, but the American "Vanguard" is designed to use as a propel-

lam in the first stage a special petroleum fuel which is basically wide-cut distillate (JP1), with liquid oxygen as the oxidiser.

This, as in most current designs, will be led to the combustion chamber by two steam-driven turbine pumps, the steam being generated by the decomposition of hydrogen peroxide. The fuel tanks will be pressurised by helium, to prevent the formation of a vacuum when operating outside the earth's atmosphere.

The second stage uses a hydrazine-nitric acid combination. The reason for this choice probably is that nitric acid will ignite spontaneously with certain fuels, one of which is hydrazine (for the technically minded unsymmetrical dimethyl hydrazine) thus providing instant and reliable firing of the charge.

It is also known that nitric acid has better refrigerating qualities than liquid oxygen which could be important under the conditions of enormous speed in the atmosphere of the second stage.

The third and final stage uses a solid propellant which, is logical, as very high specific impulses can be obtained in small volume from solid propellants without any attendant complication of pumps and fuel systems.

In fact, solid propellant development now appears to be making greater headway than liquid fuel combinations. This is claimed by its proponents to be due to simplicity which results in a very high degree of reliability.

Earlier solid propellants were hard to control and any extension of burning time appeared to be difficult to achieve.

Examples of fuel combinations used as solid propellants are shown in Table II.

The petroleum industry has an important stake in the rocket

TABLE I  
SPECIFIC IMPULSE OF  
VARIOUS PROPELLANT  
COMBINATIONS  
(100 psi)

Fuel	Oxidiser	Specific Impulse
Ethyl Alcohol	LOX	225
JP1	HTP	238
JP1	LOX	245
JP1	Fluorine	275
JP1	Ozone	260
Hydrazine	Fluorine	280
Ammonia	Nitric Acid	238
Ammonia	Fluorine	300
Hydrogen	Fluorine	380
DiBorane	Fluorine	255
Hydrogen	Ozone	400
JP1	Nitric Acid	288
Hydrazine	Nitric Acid	247

TABLE II  
SOLID PROPELLANTS

Propellant	Specific Impulse
Gunpowder (black)	70
HTP and Polyethylene	160
LOX/Symthetic rubber	225

fuel field as large quantities of petroleum fuels will be used and many of the oxidisers are petroleum derivatives.

The future of the kerosene, petrol/hydrogen peroxide combination looks good for rocket motors used for propelling hypersonic aircraft and HTP could be produced from petroleum at an economical figure if demand warranted the construction of the necessary facilities.

Ultimately the chemical fuel rocket may give way to nuclear, ionic, or even photonic propulsion. The photonic rocket is at present in the realms of conjecture, but both nuclear and ionic rockets could be built.

It seems, therefore, that space travel within our own solar system will not be limited by the ability of chemical rockets to provide the propulsive force.



# SCIENCE IN THE SNOW

**L**AUNCHING of the Russian satellites, which, for a time, drove most other news off the front pages of the newspapers, has tended to overwhelm the activities of the International Geophysical Year as a whole, of which such adventures in space are only part.

The surprising thing is not that the satellites were successfully launched, but that they were launched so soon. Both Russian and American satellites are part of the plans for the Year.

Whatever its ultimate implications — obviously very great — the satellite is primarily a "telemetering" device, a group of instruments for measuring at a distance, which automatically broadcasts a coded account of the conditions it encounters on its orbit far above the earth.

As such it belongs in the fantastic company of high-altitude rockets, which ascend straight from the ground, and "rockoons," smaller rockets borne by balloons to altitudes of several miles before ascending under their own power.

All these things, although possibly a prelude to space travel and fraught with possibilities of splendid achievement or unparalleled calamity, are also the climax of centuries of meticulous observation of the earth's place in the world around it.

Observations on the scale we now know have become possible only with extraordinary scientific and technological developments during and since the Second World War, and the equally unprecedented amassing of industrial and technical resources by the United States and Soviet Russia.

Brilliant minds have long been reaching out into space, although Russia's little "moon" is the first "platform." Eratosthenes, the Greek, by a magnificent application of geometrical principles, measured the size of the earth with great accuracy from observations of the sun as long ago as the third century B.C. But only in our own time has it been possible to break free from the pull of gravity and to create an artificial moon.

The International Geophysical Year, in which more than 60 nations are taking part, is but the latest stage of a long international endeavour to find out the secrets of our earth and its place in the cosmos.

Seventy-five years ago the researches of the First Polar Year dealt largely with the Arctic region. After 50 years came the Second Polar Year, which included the Antarctic. The third great Year, now begun, has been given the broader name of International Geophysical Year because it involves not only the poles but the whole earth, including the land, the oceans, the atmosphere, and the phenomena of the sun's activity, on which our own world and all that is in it depend.

It is a year in name only, for it began on July 1, 1957, and it will end at midnight on December 31, 1958.

Australia has not only the general interest of all participating nations, but a special interest because much work is being concentrated in the neighbouring continent of Antarctica. Here there is a long and splendid history of Australian exploration and scientific inquiry.

Our own country was a leader in the activities of the "heroic" period of the Antarctic when skill and fortitude were matched against the blizzard and the ice floe. That period is largely over. Icebreakers, tracked vehicles, planes and electric snow-ploughs have made possible feats beyond the "early" explorers and their dog teams, although the same qualities of resource and hardihood are called for.

The vast Antarctic continent is as big as Europe and Australia together, a land not only of snow and ice, but of mountains and lakes, of fascinating economic and political possibilities. These possibilities reinforce the interest in purely scientific achievement there.

## OBSERVATIONS

The primary observatories which have been set up in the Antarctic are engaged in research in meteorology, geomagnetism, aurorae and airglow, ionospheric physics, glaciology, cosmic rays, oceanography, seismology and gravity measurements. The general stations are concerned with meteorology, aurorae and airglow, geomagnetism and ionospheric physics.

From their observations, scientists may be able to make an estimate of how much ice and snow there actually is in Antarctica and thus reach conclusions on their effect on climate.

As Australians are very well aware, the meteorological happenings in Antarctica frequently modify the weather in intermediate latitudes. We should learn much more about them. Expeditions have been

(Please turn to page 12)

## MINISTER GOES SPEAR FISHING



*The Minister for Labour and National Service, Mr. Harold Holt, spears a trumpeter near his holiday house at Portsea, Victoria.*

January, 1958

# SCIENCE IN THE SNOW

from page 10

organised by Australia, Argentina, Belgium, Chile, France, Japan, New Zealand, Soviet Russia, South Africa, the United Kingdom and United States.

At the South Pole there are two permanent bases, manned and equipped by the Americans and the Russians.

Australia has three southern research stations — two are major geophysical observatories — at Mawson (24 men), at Davis (five men), in the Antarctic Territory and Macquarie Island (15 men) in the sub-Antarctic.

The Australian Antarctic

Territory, with an estimated area of nearly 2½ million square miles, was legally established by a Commonwealth Order-in-Council dated February 7, 1933, placing under the control of Australia that part of the Territory in the Antarctic Seas which comprises all the islands and territories, other than the French segment, Adeline Land, situated south of the 60th parallel of south latitude and lying between the 160th and 45th meridians of east longitude.

## TRANSPORT PROBLEM

As transport is of the utmost importance, the petroleum industry has naturally a part of great significance to play in all these projects. It has assisted both by gifts of fuel and by the preparation of special fuels and lubricants necessary to withstand extreme cold.

In July it was announced that 2,000 gallons of specially prepared 90 octane petrol, produced at Kwinana refinery in Western Australia, had been shipped to the New Zealand section of the I.G.Y. party in the Ross Sea area.

The spirit is a special high-volatility quality which vaporises at extremely low temperatures and will not freeze at a temperature of minus 108 degrees Fahrenheit, considerably below the lowest recorded Antarctic temperature.

Petroleum products in use in the Antarctic include aviation spirit, petrol for the tractors, Weasels and Snocats, diesel oil for the electricity generators at the base camps, kerosine for

heating and cooking and a wide range of lubricants and special products provide the fuel requirements for the British, Australian and New Zealand expeditions.

Activities in the Antarctic are only one part of Australia's participation in the Year, the scope of which, as a whole, is so immense and so full of material for the most fascinating speculation that it is possible to refer briefly only to some phases of it.

Geophysics is itself a vast subject, the bounds of which are difficult to set. It has been said that to-day a geophysicist should be an astronomer, a physicist and a meteorologist, and he should, if possible, know something about nuclear physics and some other branches of science.

To the layman, the abstruse information which may be gathered about the uppermost atmospheric layers called the ionosphere takes second place to the fact that it is possible to propel a satellite there at all.

It is first of all necessary to take the satellite to the requisite height by a two-stage rocket and then, by a third stage, to give it the sideways push required to attain the orbital speed which will enable it to resist the attraction exercised by the earth's gravitational field. The sections of the rocket are discarded as their fuel runs out. It was the third section of the rocket which accompanied the first Russian satellite around its orbit.

## IMMEDIATE PURPOSE

The immediate purpose of the satellites is to increase man's knowledge of the conditions within the atmosphere and of its composition, of solar and interstellar ultra-violet light, cosmic rays, meteoric particles, etc. These are happenings at "the borders of space"

where our atmosphere ends and the empty void (or empty as laymen think of it) begins.

How much of the knowledge gained will be of pure scientific interest and how much will be applicable in the practical developments of the future no one can yet say. Academic research and technological progress alike are racing ahead at such speed that the world as we know it may well be transformed before many years are out. The pace of discovery is constantly speeding up.

If the man in the street is alarmed, however, by the new skills of the scientists and the apparent tendency of science to outrun man's power to govern himself, scientists themselves regard the International Geophysical Year as an inspiring example of international co-operation by nations of widely different trainings and skills.

## UNIVERSAL STUDY

The president of the Commission for I.G.Y., Sydney Chapman, F.R.S., points out that a vital principle of I.G.Y. is that all the I.G.Y. data shall be made universally available; it will be studied long after the I.G.Y. organisation has ceased to exist.

It seems extremely probable that knowledge of immediate importance to Australia will come from the various investigations in the Antarctic — it has been estimated that more than £100 million will be spent there by all the nations concerned and a wealth of data should emerge.

What the Antarctic may have to yield in commercial terms we have yet to learn — scientists are not given to such speculation — but it is scarcely to be believed that this enormous continent does not hide riches, perhaps of kinds not yet thought of.

Meanwhile, we can take pride



British scientist Geoffrey Pratt (left), a member of the Antarctic expedition led by Dr. Vivian Fuchs (right), became seriously ill with carbon monoxide poisoning near the South Pole recently. American planes dropped oxygen equipment to the expedition to treat Pratt, who is recovering.



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# RUSSIA'S 'ESCORT' FORCES

By J. MEISTER — in London

**H**OW could the N.A.T.O. navies hurt Russia?

The main danger for the Soviets may come from Allied task forces with large aircraft carriers, from which H- and A-bomb-carrying aircraft can take off to bombard Russian industrial centres.

The activity of Allied submarines against Russian convoys will be another threat.

Obviously, Soviet Russia's seaborne foreign trade, not very important in any case, will come to a standstill in case of war.

If one includes the satellites, Russia is almost completely self-sufficient and does not depend therefore on imported raw materials. But the inadequate development of the Russian railway and road network forces a large amount of trade and

traffic in supplies to make use of coastwise shipping as, during the last war, the Germans did from the Spanish border to the North Cape.

The most important of all Russian lifelines lies in the Caspian Sea, where the oil from Baku is shipped to Astrakan and from there up the Volga to the industrial areas.

Besides local coastwise shipping, the Soviets must also supply garrisons and bases in such outlying places as Novaya Zemlya, the North Siberian islands, Sakhalin and Petropavlovsk. Much can be done by aircraft, but certainly not all: fuel oil, for instance, must be carried in tankers!

Finally, there will be large commitments to supply Russian armies which may have undertaken amphibious operations against Turkey, Japan, Iceland,

Denmark and Sweden, for example, and in the Arctic.

All these convoys form ideal targets for Allied attacks with surface vessels, aircraft and submarines. The amount of damage which might be done by surface ships and aircraft depends largely on the efficiency and strength of the land-based Soviet Air Force, and therefore will not be further analysed.

The possibilities for Allied submarines are easier to estimate. The N.A.T.O. powers have at present altogether over 230 large and 85 coastal submarines, while another 30 boats are building.

If one-fourth, or about 80 submarines, could operate simultaneously against Russian convoys, Soviet merchant shipping losses might soon reach very high figures and ultimately cut the supply lines between the homeland and isolated outposts or advanced armies.

Russia has not much experience in convoy defence. In every major war, her foreign seaborne trade has collapsed immediately, and some form of blockade-running only as continued, as during the Crimean War.

In the First World War even the trade with Sweden from ports in the Gulf of Bothnia was sometimes menaced by German action; and, although two Russian cruisers were stationed at Vladivostok, the German cruiser Emden was able to attack Russian shipping right off this port.

In the Second World War, Russian military traffic and short-distance supply convoys were somewhat better pro-

TECTED; and the convoys which the Soviets ran during the autumn of 1911 between Hango, then under siege, and Kronstadt, were fairly successful, chiefly because the Germans and Finns had at the time no fast, powerful warships available.

In the Black Sea the Soviet traffic in military supplies to Odessa and Sevastopol in 1941-42 was subjected to Axis air attack only, and this traffic was always strongly protected. There were often several destroyers and small craft for one single freighter.

But in the summer of 1942 the Soviet Navy felt unable to attempt the evacuation of the remains of the garrison of Sevastopol; and in 1943, when the Russians landed near Eltingen on the Kerch Peninsula, the naval forces, under the orders of the then Commander-in-Chief of the Soviet Navy, were again not prepared to protect the supply lines of the troops landed, who were blockaded by the Germans.

After one month of heavy fighting the Russian bridgehead was destroyed, and this failure cost the Russians over 100 ships and 10,000 men.

Allied naval officers were doubtful as to the efficiency of the Soviet destroyers and escort vessels which participated in the Murmansk convoys. These judgments were confirmed by the results of Russian anti-submarine warfare.

Of the eight German submarines destroyed by the Russians between 1914 and 1917, six fell victim to Russian mines, one to gunfire, and one to an aircraft.

Strangely enough, the war of 1940-45 produced almost the same figures, five German submarines mined and three sunk by gunfire and depth charges!

Of the 15 Axis submarines in the Black Sea (three Rumanian, six German and six Italian pocket submarines) only

## CARRIER GOES INTO RESERVE



*The aircraft carrier Sydney is to be laid up in "mothballs." This follows a Federal Government decision to reduce the number of warships in the entire fleet.*

one Italian pocket submarine was sunk, by Russian m.t.b. attack while in port. Soviet anti-submarine equipment and tactics were very poor.

In the Black Sea, for example, they had only one submarine chaser with asdic; she was soon identified and then systematically hunted down by the German submarines.

Later in the war, the Russians received almost 200 American lend-lease anti-submarine vessels, from frigates down to patrol launches; and while using this modern material, of which most has since been handed back or scrapped, the Russians may have improved their methods.

The torpedo boats of "Shtorm" type, built before the war, the first surface vessels constructed by the Soviets and originally designed for escort purposes, are now serving as training vessels.

The bulk of Soviet escorts is at present made up of 10 war-time-built torpedo boats of the

"Bird" class, about 200 units of the "Artillerist" and "Kronstadt" types, and several hundred launches of "MO" and similar, but more recent, designs.

After the war, Soviet Russia obtained seven German destroyers and some smaller escorts, five Italian destroyers and torpedo boats, and 24 Japanese escorts; but all these vessels were either worn out, slow or only intended for coastal work.

The Russians needed a last, modern escort ship, not ocean-going, but able to work in almost all weathers everywhere off the Russian coasts.

For these purposes they have recently built the 900-ton "Kola" class and the 1,200-ton "Riga" class vessels, which have elaborate radar installations, though the anti-submarine and anti-aircraft armament seems somewhat weak.

It is interesting to note that these new escorts have still a few torpedo tubes, which are prob-

(Please turn to page 30)

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# NEWS OF THE WORLD'S NAVIES

## R.N. ECONOMIES

LONDON: The naval outlook during the past month has been heavily clouded by news of the effects within the Services of the Government's policy of economy.

For some time the fate of the Naval Reserves has been in the balance and in this direction the "axe" fell heavily. With one blow it swept away the honoured title of "R.N.V.R." In two wars a tradition was built up by those who served in this Reserve. It is natural that there should be misgivings. But the economy pressure of the times, coupled with the need to adapt naval reserves to the requirements of the future, made re-organisation inevitable.

This re-organisation, announced by the First Lord of the Admiralty at a Press Conference, takes into account the following points: (a) the requirement for reservists, on mobilisation, to be ready to join the Fleet without further training; (b) the need to review the tasks which volunteer reservists can reasonably perform on mobilisation, particularly having regard to the approaching end of National Service with its two years' valuable active experience; (c) the ever-present need for economy.

The main feature of the re-organisation is the amalgamation under the title of "Royal Naval Reserve" of present Volunteer Reserves; the R.N.R. and the various Reserves having the letters "V.R." in their titles, with the one exception of the R.N.V.S.R. This, it is visualised, will simplify peacetime administration and mobilisation procedures and enable better use to be made of existing training facilities.

## NEW RESERVE

Broadly speaking, the new R.N.R. will exist primarily to meet seagoing requirements such as bringing Fleets up to war complement and bringing forward ships from reserve, and officers and ratings will be appointed to various classes of ships according to their training and experience.

Men with seagoing background will form one section, or Group A of the Reserve, and men (mainly specialists) training for appointments and not necessarily required for sea service will be placed in Group B.

Finally, there will be a Group C, composed largely of local men and women who can fulfil specific mobilisation billets near their homes.

Economies in general training will, however, be insufficient to keep expenditure within acceptable limits," says an Admiralty statement, "and it has been decided, regretfully, to reduce the Sea Training Centre at Hull to one devoted solely to the training of communications personnel." Other economies will be effected by withdrawing most floating drill ships, which are expensive to maintain.

The measure of the economies is of the order of an ultimate reduction of £600,000 from the present total of £1,800,000 spent annually on the Reserves.

## THE FAR EAST

Other measures of economy made known recently are the intended closure by November, 1959, of the Naval Dockyard at Hong Kong. This will not mean the ending of the Navy's 100 years' association with Hong Kong, though it will con-

siderably reduce the labour force there. A number of ships will continue to be based on the port and a small servicing yard will be maintained on Hong Kong Island. In addition, other ships of the Fleet in the Far East will visit Hong Kong from time to time, as in the past.

Apart from the need for economy, the operation of the carrier task group system, which will lessen the requirement for fixed bases, has undoubtedly influenced the Admiralty towards this decision.

In the Far East, also, further economy is to be effected by lapsing the appointment of the Flag Officer, Malayan Area, and the merging of the duties of this command with those of the Commander-in-Chief Far East.

Such economies are beginning to make it possible for the Admiralty to reduce the Navy's manpower, and about 950 long-service ratings and Royal Marine other ranks are to be discharged prematurely under the Compensation Scheme announced in July last. The announcement by the Admiralty of these retirements was the first public indication that the scheme is now operating.

## NEW SHIPS

With so much talk of economy, it was more reassuring to learn shortly before Christmas that the ship strength of the Royal Navy was materially increased by the acceptance of four new anti-submarine frigates: H.M.S. Malcolm, Palliser and Exmouth, of the "Blackwood" class, and H.M.S. Tenby of the larger and more expensive "Whitby" class. The name-ship of the "Whitby" class has been estimated to have cost £3,081,000.

The frigate building programme, at any rate, is not likely to be materially affected by economies. The Exmouth is the eleventh ship of the "Blackwood" class to be completed, and the Tenby is the fourth of her class. Another frigate, H.M.S. Rothesay, has been recently launched from the yard of Messrs. Yarrow & Co. Ltd., Scotstoun, Glasgow, and in the slip now vacated the prototype of the new general purpose frigate, the Ashanti, will be laid down.

## SOVIET ICEBREAKER

Moscow has announced the launching of the ice-breaker Lenin, 16,000 tons deadweight, in which a nuclear power plant is to be installed.

No details are reported of the system to be adopted, but it is believed that the plant will be of the pressurised water type.

High operating costs might well be acceptable in a ship of this type — quite apart from her prestige value — since her

importance will lie in keeping the northern sea route open.

For this her powerful engines — it is reported that they will develop 40,000 s.h.p. — and her endurance without bunkering are vital points.

## FRENCH FLEET

The colonial sloop Dumont-d'Urville, back from the Pacific, has been put into Reserve prior to her condemnation. The last survivor of this pre-war class of 10 ships is now La Grandiere. Dumont-d'Urville and a sister-ship, Admiral Charner, sank two Siamese destroyers, Cholbury and Songkla, and disabled the coast-guard Dombury during the battle of Koh-Chang, on the 17th January, 1911.

It is envisaged, for the first time since 1910, to reconstitute an "Atlantic Fleet." In January, a light Force including the Fleet Escort Guichen as flagship, one modified Surcouf and three Surcouf type and one submarine will be detached from

Toulon to be based at Brest, while heavier and more numerous units resume the traditions with the Ocean Fleets of the past.

Clemenceau, the first aircraft-carrier built on the Continent since the war, was launched on 21st December.

## 14-NATION REGATTA

An international regatta, the first of the kind, is arranged for 2nd August, 1958. More than 40 sailing ships from 14 nations are expected to compete in a race from Brest to Canary Islands, these vessels being the training ships of most of the maritime countries.

It is hoped that the Duke of Edinburgh will give the start in Brest Roads, where more than 1,000 craft will gather.

The French competitors will be the schooners of the Naval School, L'Etoile and La Belle-Poule. Both built at Fecamp in 1932, they are 97 feet long by 21 feet wide, made of oak, and rigged with a top-sail.



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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## FURTHER DEVELOPMENT AT KWINANA

WORK has begun on a £1 million catalytic reformer at BP's Kwinana refinery, near Fremantle, W.A. It is hoped to complete the new plant by the end of the year.

The British Petroleum Co. Ltd. has already spent £10 million on building the refinery, the largest in Australia.

In addition, there was the cost of dredging the entrance to Cockburn Sound, building Medina township, and the provision of electric power, water and sewerage services, all of which were undertaken by the Western Australian State Government.

The project was almost wholly Australian, with a peak force of 3,500 men turning an area of low, sandy scrubland into an industrial plant unequalled in Western Australia.

The refinery came "on stream" in February, 1955.

Already work has begun on new oil storage tanks. These will increase the storage capacity of the refinery by 17,500,000 gallons and are part of a £1,300,000 expansion scheme which calls for a catalytic reforming plant of the latest design.

This will up-grade low-octane motor spirit and enable the refinery to blend a greater number of products.

Kwinana was built in just over two years. Now tankers loaded with petroleum products are sailing from its jetties for many parts of Australasia, with occasional shipments to South-east Asian ports.

Near the refinery is the completely self-contained township of Medina.

Attractive homes, schools, modern shops and everything that goes to making a happy community are now found where not so long ago bushland ruled supreme.

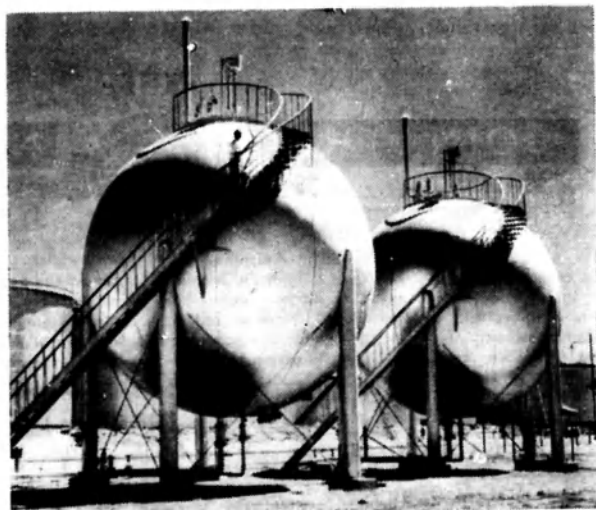
The refinery comprises three major sections: The jetty, tank farm and oil processing units.

In addition, there are the utilities such as the steam generating plant, cooling water and separating system, laboratory and the maintenance workshop.

Ocean-going tankers use the jetty to discharge crude oil, while other tankers load refined products.

Products are sent by pipeline to bulk installations at Fremantle.

Kwinana has a designed throughput of 3 million tons of crude oil a year.



Not a scene from a science fiction film, but a photograph taken at the BP refinery at Kwinana. The two spherical pressure vessels, known as Huttonspheres, are for storing liquefied butane.

THE NAVY

## They hitch-hiked a ride from the ocean

By RONALD CREASEY

ONE night not long ago, an apprentice on the Australian ship River Norman cooled off in a canvas swimming pool and climbed out of its seaward side. Seconds later he swam in Borneo's shark-infested waters.

Under such circumstances, one's expectation of life dwindles at an alarming rate. The River Norman steamed on with none on board aware of the incident.

But consternation rocketed when the Hewsang radioed: "Have picked up an apprentice who fell from your ship half an hour ago."

The Hewsang's lookout had heard Gyles Bridson, of Canterbury, Melbourne, calling for help. Being a good swimmer had kept the lad safe while he exchanged ships at sea.

Christmas Day, 1955, was a wet one for Arne Nicolaisen. At midnight on Christmas Eve he fell from the Hoegh Silver Spray off Florida.

His ship searched unsuccessfully.

Fear of being Christmas dinner for sharks prompted ideas of drowning deliberately, but the will to live is strong and Arne changed his mind.

Ships passed, but his cries were futile until after a 30 hours' wetting. On Boxing Day the tanker British Surveyor lowered a lifeboat.

Premature news of the man's "drowning" had reached Oslo and whitened his mother's hair.

An unexpected naval draft occurred in 1908 during a Philippine Sea typhoon. An American battle fleet steaming from Manila to Tokyo wallowed heavily in true battle-wagon style. The Minnesota's wet deck

was as walkable as an ice rink. James Wilkinson was on it when his floating home shipped a "green one." It covered the warship to the superstructure before floating the naval rating overboard.

His frightening misfortune was seen, but rescue efforts in such weather are suicidal. The man was abandoned.

Hurled up and down by giant seas, struggling as only desperate men can, he was suddenly struck by something solid. It was the battleship Vermont, whose crew dragged him to safety.

Late in the sailing ship era a rough sea ditched an apprentice. Unable to rescue him, his ship eventually sailed on and berthed.

No sooner was the gangway rigged than the other apprentice paled and screamed that

he'd seen his friend's ghost. The lost boy was the first person to board. Saved by a faster ship which was bound for the same seaport, he awaited arrival of his own ship.

In the 1920's I was in the Mexican oil port Tampico in the tanker Scottish Borderer. A day later a ship of equal speed arrived. A man on her told us we had passed a speedy schooner in moonlight off Key West.

Puzzled, we asked him how he knew.

He had hoped to attract attention of either one from the sea surface. We had passed a hundred feet from him, but swallowing a little salt water at a critical moment prevented him from shouting.

He had fallen ahead of us from the tanker Swiftarrow and hitch-hiked on a following ship.

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Man's endurance in frightful plights is amazing. In 1955 the Columbian destroyer Calda lost ten men in a storm. Twelve days later, clinging to a piece of timber, one was found semi-conscious on the coast near the Caribbean port of Turko.

He, too, lived to tell the tale. Some who go overboard put neither themselves nor others to any trouble. They re-board effortlessly.

The barque Inverness, in a Cape Horn gale, had a man blown from the main royal yard (perhaps this is an unclaimed deep diving record).

Blown away from the wind's direction he entered the sea unharmed. Making considerable leeway the ship blew down towards him and, rolling heavily, scooped him up.

During the First World War patrol ship scarcity brought some old cruisers to the northern patrol force between Scotland, Denmark Strait, Ice-

land and the Faeroes. The cruisers were not good "sea-boats" in the screaming climate of the area.

While H.M.S. Colombo took severe punishment her butcher was swept overboard and returned on a subsequent wave.

More recently an Aberdeen trawler's deckhand was washed away. Radio brought a shore based lifeboat and R.A.F. planes to the search. The next of kin was informed of her widowhood and later the trawler steamed homewards.

Alongside the berth the chief engineer investigated a large bundle beneath the trawler's boat. It was the unconscious missing man.

Engine-room heat dried and warmed him, and appropriate sea-going "medical comforts" revived him. A message to his "widow" ended her sorrow.

In 1953 a distressed person was rescued by the C.S.R. sugar ship Fiona.

After collecting an aboriginal patient an aircraft got lost in drizzling rain. She had been heard circling above Queensland's sugar port of Lucinda, and radio requested ships to keep a lookout.

A watchkeeper on the Fiona was climbing to the standard compass to take bearings when he thought he heard the whimper of a baby.

He threw a lifebuoy with attached light, stopped the ship, and a boat's crew cruised around. Pilot and patient had been lost with the aircraft, but, white from long immersion, the patient's attendant was saved.

### SHIPS AGROUND

A 100-mile an-hour gale off the English coast on January 9 drove three ships aground and sent others running for shelter.

The Royal Navy submarine Taciturn went hard aground in the entrance to Campbelltown Loch.

# THE NAVAL SITUATION

By REAR-ADMIRAL A. D. NICHOLL, C.B., C.B.E., D.S.O.

— in London.

## TODAY

**T**HE Naval situation to-day is, of course, part of the world strategic picture. To get the naval situation in proper perspective we must first of all look at the general defence situation, then see how naval power fits in and finally where the Royal Navy comes in.

The ground work of the defence picture is familiar to everyone, but it is as well to recall some basic facts.

First, the Communist powers aim to dominate the world. Their leaders have said so quite plainly in their writings and every move they have made since the last war confirms that they have not abandoned this basic aim.

The Soviet leaders say they do not want war. I for one believe them. I am quite sure they would like to achieve their aim by other methods. But at the same time they have built up and are maintaining huge, fully mobilized land, sea and air forces which are ready to attack at any moment if the Kremlin gives the word.

It was the fear of those forces which caused the countries of Western Europe, Canada and the United States to band together under N.A.T.O.: for Turkey, Iraq, Persia, Pakistan and Britain to form the Baghdad Pact and for the eight countries of the South East Asia Treaty Organization to get together in the Far East.

Our strength gradually began to build up, and it was by military measures — sometimes by one power, sometimes by more than one — by standing up to the Communists with

military forces, that we prevented them from achieving success in the various thrusts they have made in the last few years.

N.A.T.O. put a physical barrier of land and air forces in Western Europe.

The Baghdad Pact and S.E.A.T.O. are agreements for mutual military support in the event of any member being attacked.

The Berlin air lift was a military operation which might have led to war.

Military measures and intense lighting stemmed the Communist advances in Indo-China and Korea, and who knows what the military position of Soviet Russia might now be in the Middle East if Britain and France had not intervened, and stopped the lighting between Israel and Egypt.

### EFFECT OF H-BOMB

The advent of the hydrogen bomb ushered in a new state of affairs. It looks as if both the Communist powers and the free world have the power to do vast damage to each other and that even sudden aggression with nuclear weapons could not prevent devastating retaliation by the other side.

And so, as the last Government White Paper on defence said quite frankly, as at the present time we cannot defend ourselves against nuclear attack, our policy must be to prevent war.

In this policy the main deterrent to war is strategic air power armed with nuclear

weapons — power that is mainly wielded by the United States, but in which Britain takes a small though increasing share.

With nuclear war beginning to look more and more like mutual suicide, the dangers of a third world war seem to have receded, but this makes it more probable that the Communists will try to achieve their aim — which they haven't given up — by methods short of world war, by nibbling tactics whenever they think the West will not be provoked into nuclear retaliation.

(Please turn to page 24)

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# FROGMEN'S UNDERWATER INSPECTION



Navy frogman Bill Davis jumps off H.M.A.S. Voyager while Bill Warburton waits his turn. The frogmen carried out an underwater inspection of the Voyager and the destroyer Warramunga in Sydney Harbour.



## MOUNTAINEERS

*"Makulu," by Jean Franco, published by Cape (U.K.).*

This interesting book is the log of a party of French mountaineers who in 1951 made a reconnaissance of the glamorous Himalayas.

Their object was to prepare the way for an ascent of Makulu, the fifth highest peak in the world, nearly 30,000 feet up.

As a result of the reconnaissance the summit was scaled by the entire party in three days.

Although no great dramas nor tragedies befall the climbers, the author himself more than makes up for that lack by the direct and intelligent way in which he describes the personalities not only of his own party but also of the natives whom he met en route.

There are one or two charming and amusing encounters, and some useful information about the culture of the local inhabitants.

Unlike many diarists, the author does not pad his narrative with imaginary dialogue and irrelevant descriptions.

As a result, the subject speaks for itself; and its voice is emphasised by a number of excellent photographs. This is a first-rate specimen of sober reporting.

—J.H.B.P.  
—From the London "Navy"

## SECRET MISSION

*"The Ship with Two Captains," by Terence Robertson; published by Evans Brothers (U.K.).*

This very readable book deals mainly with the important work carried out by the British submarine Seraph before the Allied invasion of

North Africa in November, 1942.

After a fortnight's reconnaissance of the proposed landing beaches, Seraph successfully landed Major-General Mark Clark and a party of United States and British officers near Algiers, where they discussed with friendly Vichy France leaders the co-operation they could give to the Allied landing forces.

A few days later the submarine embarked General Giraud at a rendezvous off the South Coast of France.

The General insisted that he would have nothing to do with the British and to overcome this unexpected difficulty a United States naval officer was placed in nominal command of the Seraph for the occasion.

The author, a well-known journalist, naturally enough takes full advantage of this unique state of affairs, though in fact Lieutenant Jewell remained in operational command throughout the operation.

—G.P.  
—From the London "Navy"

## OLD SALTS

*"The Elizabethan Seamen," by R. R. Sellman; published by Methuen (U.K.).*

It seems that these "Outline" books are a "reference library for boys and girls"; but surely if the others are anything like the volume before us, "The Elizabethan Seamen," they must appeal to many adult readers also.

We are taken behind the scenes of the Navy at that time when, as Hawkins showed, the shipwrights and dockyard officials swindled the Queen wholesale, charging her for timber

she had already bought and committing various other crimes.

In that age of insecurity it appears that a trader of any size always carried guns.

Trade had its vicissitudes; when the Muscovy Company's unused monopoly of the North-West was abolished a hard-up and bard-bitten sea captain called Frobisher set out for the unknown Arctic with three ships whose tonnage totalled 60.

He brought back an odd piece of black rock which was said by some optimists to contain gold.

So the Queen, less well advised than usual, subscribed to the company, provided a vessel for the next voyage and ordered it to load up with gold ore.

What happened in this case and in many others will greatly entertain the readers of this book.

—H.B.  
—From the London "Navy"

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# THE NAVAL SITUATION TODAY

from page 21

tion, and here I may say what folly it would be for us to tell the Communists the circumstances in which we would use or not use this or that type of weapon.

Now where does naval power fit into this?

In the first place, naval power is an essential part of the deterrent. The whole of the defence plans of the free world are based on the assumption that they will continue to control the sea, and it is quite clear that Russia has the means to present a tremendous challenge to our sea power if war should come.

The word "blitzkrieg" cannot be applied oppositely to war at sea, which is a strangulation process rather than a knock-out blow.

It is, of course, possible that a nuclear war would be of very short duration. But who knows? And what is the position after both sides have "committed suicide" as the popular phrase has it?

Our last Government White Paper on defence said that the role of the Navy in nuclear war was uncertain. I have the temerity to disagree. Obviously, there are a host of uncertainties about what would happen if both sides started throwing hydrogen bombs about. But there would be vital tasks for the free world's navies from the word go.

I have just returned from observing the recent large-scale N.A.T.O. manoeuvres in the Atlantic, which were designed to deal with exactly that problem — the navies' immediate tasks in a nuclear war.

First, there would be the navy's part in nuclear retaliation. It would be the task of the allied carrier striking fleet to reach a position from which it could launch nuclear attack on enemy targets, concentrating principally on the ports, bases, airfields and arsenals from which the threat to the allied shipping would emanate.

In this way, an offensive strike at the enemy would be combined with a valuable contribution to the defence of our convoys. In addition to these strategic tasks, the carrier force can use its striking power to hold up the enemy's advances and support allied troops defending their homeland.

## EXERCISE "STRIKEBACK"

All this was the basis of an exercise called "Strikeback," in which nearly 110 allied warships took part, with a striking fleet consisting of six American and three British carriers.

Striking back at the enemy would, of course, be only part of the naval task. There would be two further immediate things to be done, closely linked with one another. All the allied shipping under way when the balloon went up and the bombs started to come down would have to be brought under control and protected.

Its cargoes would have to be unloaded, and its unloading port might be in ruins. An immense and flexible organization would be needed between the naval authorities and the civil organizations connected with shipping, fishing fleets and ports to prevent chaos.

At the same time, the ports of the United Kingdom and Western Europe would be full of ships. They must be brought under control, put into convoys and shepherded away from the threatened areas.

It would be vital to preserve them for the later cargoes which alone would enable the allied countries to survive. These were the problems of Exercise "Sea Watch" and Exercise "Stand Firm," which took place at the same time as "Strikeback."

## ORGANISATION SOUND

Admiral Jerauld Wright, the Supreme Allied Commander Atlantic, is well satisfied that in general the organization is sound, the communications system works, the large forces are well handled and the allied ships work excellently together.

Nothing is more important than that our naval forces and maritime air forces should be able to work together with the unity of a single force.

It is, of course, patently obvious that in view of the numerical preponderance of the Russian submarine fleet over the allied anti-submarine resources, the allies would face very grave risks at sea in any war in the next few years. These exercises showed the way in which the allied naval build-up must continue if the risks are to be reduced.

The recent statements about our grave shortages in ships and equipment by Admiral Eccles and Air Marshal Reynolds — speaking, of course, with their N.A.T.O. hats on — and endorsed by Admiral Wright wearing his, were no more than the sober truth.

Of course, it's a question of expense.

We all know that armed aggression is only one of the dangers, that Communism has to be fought in social and

economic fields as well as in the military sphere.

It is easy to say that we are spending too much on welfare and ought to spend more on defence. One of the things that would be most dangerous to our security would be a divided country. It would be fatal if defence became a political shuttlecock.

We got a clear illustration of that in the matter of the age of entry to Dartmouth. The age of 18 was accepted, not because the Navy wanted it, but because that was the only age acceptable to both political parties.

## NAVY LEAGUE'S ROLE

Politics has been described as the art of the possible. But that doesn't mean that a body such as the Navy League should take the financial rulings of the government of the day so far as naval defence is concerned with meek approval. Human beings are as they are, and it is sadly true that the non-meek get the most attention in a hotel or shop.

Behind closed doors the Admiralty fight like tigers for the tools to enable them to do the job. As the naval advisors of the government, it is their duty to do so. But only a body such as ourselves can back the Admiralty up in public, can work on public opinion and find expression in Parliament constantly reminding our countrymen that we live in an island; that our continued existence depends upon the arrival of ships across the sea; that we could be starved into submission very quickly if we had not the means — the defence means — to bring the ships in.

In the history of war from the earliest times, two things have hardly changed at all — the infantry soldier and the merchant ship — and it is only fantasy to think that there will

be any fundamental change in the way we get our bulk supplies of food and such things as oil.

As long as ships sail the seas they will need warships to protect them. And in this task, the navy has to think of the dangers, literally of next week or next year as well as those of the years further ahead.

How convenient it would be if we didn't have to bother about the immediate future and could concentrate on what we can be sure we will need in ten years' time. How convenient it is for the critics to say that this or that type of ship is out of date and should be scrapped.

We know we are moving to the guided missile ship which will take the place of our present cruisers and destroyers, but as the Parliamentary secretary of the Admiralty explained not long ago, the "Tiger" class cruisers which are now being completed will very usefully fill a gap in the years immediately ahead.

Again, it is far too convenient for military commentators to assume that the so-called position of nuclear stalemate has been reached, that both sides have ballistic missiles which they could launch to-morrow if necessary to obliterate cities on the other side of the ocean.

The Russians claim to have launched an intercontinental ballistic missile which can hit any target in the world accurately; but their statement was studiously vague.

The successful launching of the Earth Satellite indicates that they have solved the launching problem, but the accurate hitting of a target when the missile comes down is a separate and most difficult problem.

There is no fundamental change in the strategic position. It has always been envisaged by the West as extremely probable that within a limited number of years both Soviet

Russia and the West would possess intercontinental ballistic missiles and would each have the power to deal the other catastrophic damage irrespective of which side struck the first blow.

Even if we assume the Russian claims to be true, it does not alter the fact that the West already possesses the power to retaliate from such widely dispersed sites and airfields that Soviet Russia would virtually have to bombard most of the world to prevent the West's counter-attack.

Moreover, a minor but significant portion of the West's power would come from carriers which, due to their mobility, are not subject to attack by ballistic rockets.

It was interesting to note in the Soviet statement a claim that they now had air defences which could completely protect their country from bomber attack — a nice comforting tail-piece for their own people.

## NUCLEAR RETALIATION

Some people think that with our limited resources, Britain should not attempt to play a part in the nuclear retaliation, in fact that we should leave it to the Americans and concentrate on conventional weapons. I think the position is illustrated by the situation in the old frontier days in America a hundred or more years ago where there were a lot of bad men about.

Then the gun, the six-shooter, was known as the Great Equaliser. It didn't matter if you were only five foot two and of small physique, your gun made you the equal of the bandit or bully of six foot four — provided you had good nerves and could shoot straight.

There are bandits and bullies about in the world to-day, but perhaps the hydrogen bomb has become the great equaliser.

Britain, with her 50 million



people, is not as big or as strong as Soviet Russia with her 250 million. Of course, we are not alone, but among those who are determined to stand up to anyone who threatens us, it's very useful to have more than one who has good nerves and can shoot straight.

Such a partner is even more valuable when, as in Britain's case, he is outstandingly expert in making good "equalisers." It is good to know that two very fine new aircraft, the Scimitar and the Sea Vixen, will be in service in our carriers within a year, aircraft that have the performance for nuclear war.

In my recent visit to the Fleet I found plenty of confidence about the future so far as the quality of our equipment is concerned.

Our people feel pretty pleased with themselves as they see all the American carriers fitted with the three brilliant British devices which have revolutionized the operation of carriers — the steam catapult, the angled deck and the mirror landing sight. In addition to the greater

efficiency, there has been a very great increase in safety, for which we can all be very thankful.

The Ark Royal, for example, has had well over 4,000 consecutive landings without a single mishap. There are plenty of other safety devices for these valuable young airmen of ours and they are supremely effective.

#### GRADUAL CHANGES

Changes in the Navy are bound to be gradual. When you go to sea with the Fleet alter a lapse of a few years you don't notice any drastic changes, though I must say there were one or two peculiar-looking ships about like the Darings.

One wonders how the trends will go in the future. Guided missile ships, American ones, are already on the sea but they, of course, are merely adapted cruisers.

How long will the carrier remain? Obviously, some of its present functions will in future be done by missiles such as the bombardment of shore targets or ships and anti-aircraft de-

lence. But I can't see how some of the functions can ever be done except by an aircraft with a man in it — things such as reconnaissance and close support for troops; indeed, nearly all the tasks of air support in limited war.

My last ship in the Navy was the Duke of York at the end of the war. We had just won the war, and we had the enchanting prospect before us of England, home and mother. Morale was sky high.

During the last two months, I had ten days in the Mediterranean Fleet and a fortnight with the Home Fleet. So far as the spirit in the ships was concerned, I must say I didn't notice much difference from my Duke of York days. I got the very strong impression that if there is a job to be done, it will be done.

During Exercise "Strikeback," our ships were badly hit by Asian flu but they treated it in the same way as any other type of casualty — a difficulty to be overcome.

The frigate Undaunted had so many men on the sick list she couldn't man her engines, but an engine room staff was sent over from the Eagle and she carried on.

On board the carrier Bulwark there weren't enough hands to work the flight deck. Marines, cooks and stewards took on the job and Bulwark's aircraft continued to fly.

In the Ark Royal, they had well over 400 casualties at one time — a fifth of the ship's company. But everybody lent a hand where it helped most and the flying continued.

The Navy will only flourish if it has the support and affection of the whole country, and I'm sure it is our job, each one of us, to do everything we can to see that the Navy gets that support and affection.

—From the London "Navy"

THE NAVY

# LINKS WITH THE PAST

**A**LTHOUGH they came late in the story of Australia's development, the four great new oil refineries of the Commonwealth have close links with the vivid past. All are in localities whose histories go back to the earliest days of colonisation . . . in one case well beyond it.

This is not, of course, only coincidence. Australian refineries, dependent on sea-borne petroleum, are naturally situated at ports, or within easy distance of them, and the ports were the first centres of population developed by our pioneering ancestors.

Of the four sites the most historic, if not the best known, is the Kurnell Peninsula, on Botany Bay, New South Wales, location of the Australian Oil Refining Pty. Ltd.'s plant.

The name Botany Bay was once almost synonymous with Australia, not certainly in a very happy connection: the convicts who were "bound for Botany Bay," as the song reminds us, had no reason to look forward to their arrival in New South Wales with any particular enthusiasm.

It was rather unfair that Botany Bay, a very innocent and until recently largely undeveloped place, should have this odium attached to it. Thousands of air travellers have looked down on this great sheet of water: on one side there are the Bunnerong power house and important paper and chemical plants, on the other there is the long curve of the Kurnell Peninsula, until re-

cently a remote and rather inaccessible region. The name still has power to arouse our interest.

Kurnell's first association in our own history is with the greatest of all our navigators, James Cook. It was in an April dawn of 1770 that Cook, in the Endeavour, beat up against an outblowing wind into Botany Bay and landed on a date which is still a matter of conjecture.

His ship's log shows it as April 29, but allowance had not been made for the crossing

#### BY A SPECIAL CORRESPONDENT

of what is now the international date line: the date on which Cook's party landed on Australian soil, therefore, appears to be April 30.

At 3 p.m. Cook, accompanied by Joseph Banks, the botanist, and Banks' assistant, Dr. Solander, left the ship for the shore.

The present site of Kurnell is land originally granted to John Connell, the second settler in the district. The name Kurnell is possibly an aboriginal corruption of Connell. Other views are that it is a version of Cronulla or Kurra-ulla.

As a national shrine, Kurnell is now visited by thousands of motorists every week, but until the coming of the refinery it was almost inaccessible.

On May 6, 1899, the New

South Wales Government, through the enthusiasm of Thomas Holt, a public-spirited pastoralist, dedicated 248 acres as public reserve at and around Cook's landing place. It is now a well-kept park with picnic facilities around the shores of Botany Bay and tracks leading to the ocean front.

Monuments at Kurnell and Botany Bay tell a silent but eloquent story. They stand today in the public shrine:

The Landing Rock: Here Isaac Smith, a midshipman and the cousin of Cook's wife, stepped on to Australian soil.

Cook Obelisk: Here the aborigines had their first encounter with Cook's party. Although outnumbered 20 to one, two aborigines, armed with spears and woomeras, attempted to repel the landing. Muskets frightened them off.

Cook's Well: It was here that Cook found fresh water.

Cape Banks: The northern headland of Botany Bay which Cook named in commemoration of the collection of flora gathered by Banks.

Cape Solander: The southern headland of Botany Bay, named after Daniel Carl Solander, the Swedish botanist who was assistant to Banks.

Sutherland Point: Forby Sutherland, of Endeavour's crew, died of tuberculosis at Botany Bay and was buried there.

The landing was commemorated as long ago as 1822 when Governor Brisbane affixed a tablet in a beetling rock 25 ft.

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above sea-level . . . it is still there. As the centenary approached, Thomas Holt built a sandstone monument and in 1881 he arranged a visit by Prince Albert and Prince George (afterwards King George V) to Kurnell. Each of the princes, then on an Australian tour, planted two trees.

The Swedish community has erected a monument to Solander and Sir Edward Hallstrom has presented a memorial to Banks. The Duke and Duchess of Gloucester have also planted trees.

Although Victorian colonisation came comparatively late the day, the refineries at Alton near Williamstown, and at Corio Bay, Geelong, stand also on historic ground, for both these places were among the first settled by the pioneer colonists bringing sheep and cattle from Tasmania.

#### GEELONG'S CLAIM

Geelong has always felt that it had better claim than Melbourne to be the capital of Victoria. At one stage it appeared that Williamstown would indeed be the capital. Its status was indicated by the fact that it was named William's Town, in honour of King William IV, the Monarch, whereas Melbourne was merely called after his Prime Minister.

Lack of fresh water, however, forced a move up the river Yarra to Melbourne, though Williamstown, at the river's mouth, long remained the port and is still an important maritime centre.

By 1810, Williamstown, called Koort Boork by the natives, had attained some eminence with 10 weatherboard houses and a few tents and turf huts, plus two inns named significantly in honour of the two chief associations of the place, the Ship and the Woolpack.

With the great gold rushes of the 'fifties, Williamstown became a place of extraordinary activity; many reminders of those days in the form of old bluestone buildings still remain.

What is said to have been the largest block of stone ever quarried in Australia, incidentally, measuring 7 ft. x 7 ft. x 5 ft. 6 in., was cut from the quarry at Newport and hauled by 26 horses to South Melbourne, where it was cut into six landing stones for the public offices in Perth.

The gold rush brought not only wealth unprecedented but many odd lags, as the convicts were called, from Van Diemen's Land. The criminal elements of the mushrooming community were accommodated in five prison hulks, the Success, Sacramento, Deborah, Lysander and President, anchored off Williamstown.

It was the prisoners from these hulks who built the celebrated old stone breakwater, reconstructed to accommodate the tankers bringing crude oil for piping to the refinery at Altona. There are grim associations with the breakwater, for it was while inspecting it that John Price, the stern prison disciplinarian, was set on and beaten to death by the convict workers, seven of whom were hanged.

With the building of the Pentridge Stockade, the prison hulks were taken away. The last of them, the Success, was turned by enterprising showmen into a sort of floating Chamber of Horrors and toured the world.

In Sydney, the Success was scuttled by certain persons "who resented her presence on account of her shady reputation," but she was raised to sail again and indeed survived a second sinking later, following a collision with an iceberg. She was built of teak at Moulmein.

Burma, celebrated for the old pagoda of the famous ballad.

It was from Williamstown that, last century, several citizens were shanghaied to form part of the crew of the piratical craft Shenandoah. Like all old ports, Williamstown is full of memories of brave and colourful days.

Geelong was a pastoral settlement from the earliest years of Victorian colonisation and, for all its growth as an industrial city in recent years, it is still "the pivot" of the rich Western District, one of the great areas of Australian wool-growing. The year 1836 saw its beginnings as a village.

David Fisher, who pitched his tent on the north bank of the Barwon River, built the first house . . . "of weatherboards of Van Diemen's Land timber." In 1838, Geelong was proclaimed a town by notice in the Government Gazette in Sydney (what is now the State of Victoria was then still part of the colony of New South Wales). The upset price of allotments was £5 an acre.

Geelong, too, has its full share of picturesque history and curious incident. One early mystery, indeed, has never been solved. In 1837, Joseph Tice Gellibrand, of the Port Phillip Association, and his barrister friend, George Brooke Legrew Hesse, left Point Henry on the shores of Corio Bay to explore land along the Barwon and Leigh Rivers and eventually make their way to Melbourne. They were accompanied part of the way by a guide who, for unrecorded reasons, returned to Geelong. They were never seen again.

#### GUNFIRE AT CORIO

Corio Bay, which an early enthusiast claimed was "capable of containing in equal safety 60 times the number of vessels which the famed Sydney Cove

can contain," has had its adventures, too. In 1869 Geelong was thrown into a state of great excitement by the burning of the clipper ship Lightning, laden with wool, copper ore, tallow, colonial wines and other cargo for Britain.

It was decided that the only way to save the cargo was to sink the Lightning and the Volunteer Artillery valiantly rushed a cannon to the Steamboat Jetty opposite Mack's Hotel. All the battery's shots lodged above the waterline, however, and the ship was eventually sunk by the more orthodox activities of carpenters.

#### "TORPEDOES" — BULLOCKS

The problem of removing the cargo and getting rid of the wreck remained. Captain Lawrence, of Melbourne, vigorously attacked the problem by attaching to the hull, with the aid of a diver, 16 "torpedoes," otherwise oil tins, each containing 150 lb. of powder from which an insulated wire led to a "galvanic battery" on shore.

Nine thousand people turned up to see and hear the big bang when the mayor closed the circuit. But there was only a minor upheaval and a thud and a lot more demolition was necessary before Geelong got rid of the Lightning and her cargo. The iron mast, lying on the shore, was finally dragged away by a team of 16 bullocks.

Geelong was interested in transport early in the piece. An enterprising citizen imported the first steam car, a Locomobile, in 1901. The first petrol-driven car . . . antedating the Ford Motor Company by about a quarter of a century . . . was built at the Vulcan Foundry which made the chassis and body; the engine was a de Dion Bouton.

Ford and International Harvester have helped make the name of Geelong as Victoria's

second industrial city. To the Shell Refinery on Corio Bay come cargoes more valuable than any dreamed of in the old days.

No less historic in its fashion is Kwinana (W.A.), site of the refinery operated by BP.

On June 18, 1829, Captain James Stirling, R.N., officially proclaimed the Colony of Western Australia. Appointed Lieutenant-Governor, he had arrived earlier in the month with the first settlers in the transport Parmelia.

Of Cockburn Sound, on which stands what is now Kwinana, about 17 miles south of Fremantle, Stirling said it was the best anchorage on the western coast of Australia.

Today, the two sea-going tugs at Kwinana which handle the tankers are named Parmelia and Cockburn.

A semi-wilderness until the coming of the refinery, the Kwinana area is already an industrial centre of great importance to Western Australia and to the Commonwealth as a whole. It already includes a steel rolling mill and a cement works. It owes its name, oddly enough, to the State ship Kwinana which caught fire and was finally wrecked south of Fremantle in 1921.

For years the Kwinana (aboriginal for "pretty maiden") lay a total wreck. The hope expressed by the wife of the then Premier of Western Australia at her naming . . . "May your enterprises bring wealth and prosperity to the people of Western Australia" . . . seemed scarcely likely to be fulfilled. But perhaps it was an omen after all.

At any rate, the name Kwinana has survived in that of the largest refinery in Australia and today it stands for West Australians as a symbol of the vigorous secondary industrial growth of their great State.

## UNO WILL MEET ON SEA LAWS

An international conference to deal with the final report of the United Nations International Law Commission on Law of the Sea will be held in Geneva on February 24 and is expected to sit for nine weeks.

The conference has been convened by decision of the UNO General Assembly.

All members of UNO have been invited to attend and 15 intergovernmental bodies concerned with fisheries or other maritime matters have been invited to send observers.

The Commission's report covers the three fields of sea law: high seas, territorial sea and continental shelf.

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## LEGEND—OR FACT?

A FORMER Royal Navy man, after 60 years of research, is trying to explode as a myth one of the Navy's most cherished anecdotes — Nelson's message before Trafalgar, the "Sailor" (South Africa) reports.

Mr. Ernest George Walder, 78, a former yeoman of signals, maintains that Nelson could not have signalled "England expects every man will do his duty" before going into battle in 1805 to defeat the French.

"I am convinced the signal is a legend. It would have needed at least 12 separate hoists, would have taken an hour to send, and longer still to pass round the fleet," he says. "In any case it could not have been seen."

Mr. Walder began his investigations in 1897, while serving

in Nelson's own flagship, the Victory.

He has checked the logs of some of the 26 other British ships at Trafalgar over the years, and has found no reference in any to the "England expects" signal.

Mr. Walder retired from the Navy in 1921, but spent another 20 years working in a signals establishment as a civilian.

The present commanding officer of the Victory — now a museum piece in Portsmouth Dockyard — defended the signal as being "mentioned in all the narratives of the battle."

The Admiralty later weighed in with still heavier salvoes. They quoted Flag Lieut. John Pasco, signals officer in the Victory at Trafalgar.

They say: "Mr. Pasco de-

scribed it all. Nelson told him: 'I wish to say to the fleet that England confides that every man will do his duty.'

"Mr. Pasco suggested substituting 'expects' for 'confides' to save time."

Lieut. Alfred Rowe, of the Navy League, said: "We hoist Nelson's signal on Trafalgar Day each year. With good signalmen it takes seconds to hoist. And we need only four hoists."

But Mr. Walder brought his personal experience into play.

"I have hoisted one such signal myself. In Nelson's Victory, too. That was Trafalgar Day, 1897.

"We used the methods of Nelson's Day for fixing the flags to the balyards. It took an hour."

This new controversy shows signs of reaching the proportions of the "Shakespeare did not write Shakespeare" problem.

## LANDING ON—THEN AND NOW

By CAPTAIN R. S. D. ARMOUR, O.B.E., R.N. (Retd.)

WHILE watching deck-landing training in an escort carrier during the war, an Admiral, whose name will always be associated with the Fleet Air Arm's attack on the Italian Fleet at Taranto, turned to me and said: "If you go on watching every landing on your ship you'll go round the bend with an anxiety complex one day. I never used to watch them more than I could help."

Well, as he had been a gunnery officer and I an aviator, our views on this sort of subject were apt to differ. But next day I began to think he might be right.

A young pilot in a Corsair lighter arrived over the ship from a nearby naval air station to make his first six deck-landings in this aircraft, well recognised as a difficult one for the purpose. This was in 1944, when all deck-landings had to be made with the crash barriers, as they were then called, in the raised position across the flight deck. This applied even when training new pilots.

In came the Corsair at such a high approach speed as obviously to spell disaster.

It passed low over the after end of the flight deck, and I had just time to dodge round to the fore end of the bridge before seeing it floating over the bows with its propeller slowly revolving. It then opened up and climbed away, apparently none the worse. Not so our two wire barriers, which had both been cut neatly in two!

With some apprehension, the Corsair pilot was ordered back to his base, where he landed

safely, with his aircraft completely undamaged.

After a period of intensive dummy deck-landing practice on the airfield, the same pilot came out in the same aircraft and made six perfect landings on the same ship.

Twelve years later, and only a few months ago, I was asking an R.N.V.R. pilot, who has 36 summers behind him, how he had got on with his deck-landings in a Seahawk jet during his fortnight's annual training.

He told me that neither he nor any of his pilots had had any difficulty, and that the angled deck and mirror landing sight made the whole business infinitely easier. He added, sotto voce, that he himself had flown previously a total of only 21 hours in Sea Hawks.

These two reminiscences emphasise the tremendous stride forward in deck-landing technique with the advent of the angled deck and the mirror landing sight.

### Low Accident Rate

The landing accident rate in carriers is less now than it has ever been — over 5,000 consecutive landings were made recently without mishap of any kind. With the angled deck, the pilot knows that normally he will not have to face a barrier in his landings and that he can go round again if necessary. The mirror sight gives him a constant and stabilised visual aid in his approach to the deck, of which the jet aircraft itself, unlike

the old propeller types, allows him a splendid view.

The combination of the three has reduced landing intervals to about 20 seconds.

Hence, those who not so long ago derided the carrier as being out of date and quite impracticable for the operation of modern jet aircraft have had to eat their words. It is well that this should be so, for the defence of the free world, under N.A.T.O., may greatly depend on our last, mobile carrier task forces.

To the old aviator in nostalgic mood, however, these modern innovations smack of the occult, and seem to have left behind some of the personal element.

In the nineteen-twenties, when carriers for a time were without any form of arrestor gear, landings were not so standardised, and the individual skill of the pilot was, perhaps, more easily recognised.

Having no wheel brakes, flaps, tail parachutes, or other such appurtenances, the aircraft was stopped on the deck purely by the pilot's judgment of landing speed against the wind speed down the deck.

There were those Fairey IIIFs in the old Glorious which were often landed-on over the gaping space left by the after lift, which was delivering the previous aircraft to the hangar below.

There were those neat Flycatcher pilots who, to save time and the landing interval, arranged their touch down on the deck so that their aircraft's "run on" would end on the forward lift without further taxiing.

Continuing . . .

## RUSSIA'S ESCORT FORCES

from page 15

ably meant as a deterrent against eventual attacks by allied surface forces.

Altogether Russia may have to-day almost 100 large and several hundred small escort vessels, submarine chasers and patrol launches, 400 of which are said to be in the Baltic.

Compared with pre-war days, therefore, the situation has much improved both in types and in numbers. But, owing to complete lack of any real experience of submarine hunting on a large scale, and of handling of convoys under heavy and repeated submarine attacks, spots of the Soviet Navy.

The Soviet and satellite merchant fleets of about four million tons would not last long under heavy Allied attacks, and

the loss of several hundred thousand tons per month would soon cripple the Soviet supply system.

If the Allies were also to find means to destroy Soviet tanker tonnage in the Caspian Sea by air attacks, mines and perhaps other weapons, Russia might soon be deprived of her main supply of oil, and find herself on the surest and fastest road to lose the war!

The more submarines the N.A.T.O. powers have available, the bigger are the chances that this remains one of the weakest the Soviets will realise that they cannot win a third world war, and the bigger, therefore, are the chances that this war will not start.

—From the London "Navv"



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Before the era of palisades — the inclined boundary fences on either side of the flight deck — there could be exciting moments towards the end of the aircraft's run when the rudder control had gone, and of its own volition it might alter course 90 degrees to port or starboard — sometimes ending up at the deck edge, and sometimes in the "drink."

On some such occasions the observer and telegraphist air-gunner could be seen "abandoning ship" while the issue was still in the balance. In one rather lurid landing, however, the pilot decided to leave and the observer to stay!

"Scoring a D" was another pastime with the pilot who came on a little too fast but decided he would just make it and need not go round again. His aircraft might (but some-

times did not) come to rest forward of the fore lift after a stern chase by most of the flight deck party, who were trying to arrest it manually.

One observer, in such circumstances, decided to vacate his Blackburn "Ripon" while it was still rolling along the deck at about 30 knots. While he hurtled along in its wake, the pilot took off again for another shot and was much surprised a few seconds later, when he called up on the intercom voicepipe to offer his apologies, to find himself quite alone!

When the athwartship wire arrester gear arrived in 1931, "scoring a D" could also be achieved by hooking the last wire at speed. This old aviator can testify that in a night-landing this variation of the game was much overrated.

Before ending this soliloquy on the "good old days," it is only fair to add that in spite of more sport being enjoyed by all, and not least by the large party of "goofers" inseparable from a carrier's flight deck, the loss of life and Government property was extremely high when compared with to-day, in spite of the aircraft being easier to fly.

The latest apparatus and flight deck drill, therefore, have not only overcome the formidable problems associated with much heavier and faster aircraft, but have also brought the safe deck-landing of jet aircraft into the orbit of the average pilot, and within a much more acceptable tolerance in regard to accidents.

August 5 this year saw the 10th anniversary of the first deck-landing made on a British aircraft carrier. Though it may be imprudent to prophesy another four decades' existence for the Fleet Air Arm in its present form, its immediate future must surely be seen to be a very bright one.

—From the London "Navy"

## MARITIME NEWS

### ORION TO RESCUE

The Orient liner Orion on January 9 interrupted its Pacific cruise to aid the small islands trading vessel Yatu Lau, which was in difficulties after being battered by a hurricane.

A New Zealand Air Force flying boat found the vessel drifting about 200 miles south-east of Suva.

At the request of the Suva harbour master the Orion changed course to go to her aid.

The Yatu Lau, which had 21 persons aboard, had lost its three small boats in the hurricane.

The starboard side of its deckhouse was stove-in and its radio and main steering engine were out of action.

The Orion transferred food and other supplies to the Yatu Lau and gave it mechanical aid to get under way again.

Those aboard the Yatu Lau were stated to be well and in good heart after their ordeal. They had been short of food and ate ravenously from supplies provided them.

### HAVEN FOR RED SHIPS

The U.S. Navy on January 17 allowed two storm-battered Russian ships to put into the closely guarded U.S. military base at Midway Island.

The Russian ships were the General Panfilov and Odessa, bound from Vancouver to Vladivostok with grain. Both were low in fuel and supplies.

The U.S. Coast Guard cutter Bering Sea made a 500-mile dash to decide whether "an emergency" existed.

The U.S. Navy granted the British freighter Ripley permission to enter Midway base without investigation.

The Ripley almost ran out of fuel and water while fighting the same North Pacific storm as the Russians.

# PAMIR INQUIRY FINDING

**A** MARITIME board at Hamburg has found that the sail manoeuvres of the barque Pamir when she foundered were "contrary to the accepted sailing rules."

The Pamir, a 3,020-ton four-master, sank in an Atlantic hurricane on September 21, with the loss of 80 lives.

The maritime board held a 10-day inquiry at Luebeck on the loss of the ship.

Giving the findings, the chairman, Mr. Eckart Luhmann, said: "The possibility exists that the lack of familiarity of the captain, Johannes Diebitsch, 61, with the particular sailing conditions and the stability of the Pamir and the limited sailing ship experience of the first officer may have had adverse effects."

Mr. Luhmann said that Captain Diebitsch was standing in is master of the Pamir on this voyage for the regular master, Captain Hermann Eggers, who was ill.

contrary to the accepted sailing rules, even if we assume the hurricane warnings were known to the master.

"Her sailing manoeuvres and the position of her sails in the last few hours, however, were contrary to these rules, and had a very adverse effect."

Mr. Luhmann said that when the Pamir met hurricane Carrie she was carrying her foresail, all her top-sails, several jibs and stay-sails.

The board said there was no indication that the condition of the ship or of her rigging was in any way responsible for her loss.

It said that the Pamir, on account of the wind force, wind pressure on the sails, unstable cargo of loose barley and lack of ballast, was not stable enough to weather the hurricane.

She developed a heavy list to port and the barley cargo probably shifted to port.

In addition, water entered the portside deck structures. This caused her to capsize.

The board said the rescue operations after the sinking of the Pamir were hampered severely by the fact that most of the lifeboats were damaged, and the provisions in them washed away.

Much of the signal equipment in the boats failed.

The board made these recommendations:

Only captains and officers with long experience on sailing ships be appointed to sail training ships.

New skippers and mates should be given full information about the stability of ships.

Grain should not be stowed loosely but loaded in bags.

Lifeboats should be made of unbreakable plastic, painted bright colours, and lined with metal radar reflectors and have waterproof radio equipment.

## RUSSIAN NAVY "MOVING INTO THE MEDITERRANEAN"

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Captain Diebitsch had been at sea since 1912, and had served for 12 years in sailing ships, including a year and a half as an able seaman in the Pamir before World War I.

The first officer of the Pamir, Rolf Koehler, had had no previous experience on sailing ships when he went on board the Pamir in 1955.

Mr. Luhmann said: "Retrospectively, one could say that if the Pamir had hove to on September 19, 1957, or taken a different course, she might have avoided meeting hurricane Carrie.

"The course she took was not

**A** North American Newspaper Alliance correspondent claims that Russia is creating a Mediterranean naval squadron — the first in Soviet history.

The correspondent says that behind the move is an attempt to neutralise the political impact in the Middle East of the powerful U.S. Sixth Fleet.

He adds: "The recent extreme Communist touchiness about Western military and civilian air flights near Albania is almost certainly due to the expansion of the Soviet naval base at Saseno, at the 'neck' of the

Adriatic, according to North Atlantic Treaty Organisation officers.

"Expert Allied naval opinion here is that the Russians have undertaken a major expansion of the Saseno base.

"It may already be the largest, most heavily fortified submarine facility anywhere in the Mediterranean.

"Strong suspicion also exists that Syria has given Russia permission to establish a modern naval base at its port of Latakia, not far from the Turkish frontier.

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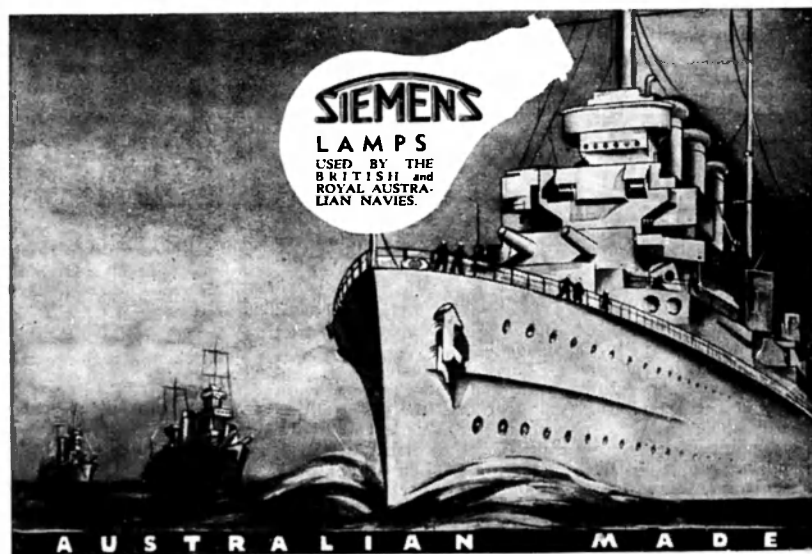
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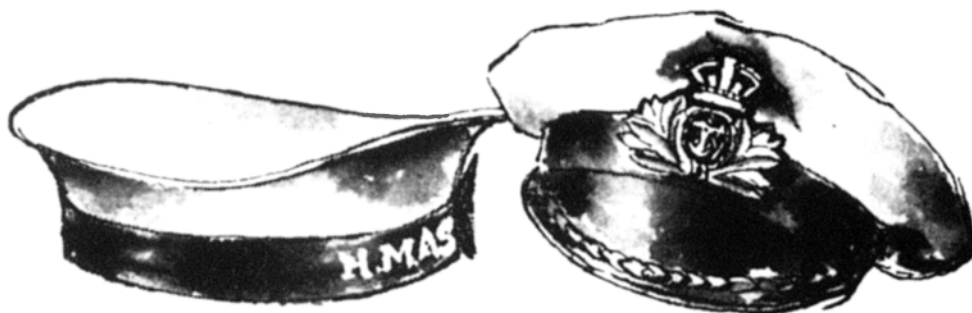


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# THE NAVY



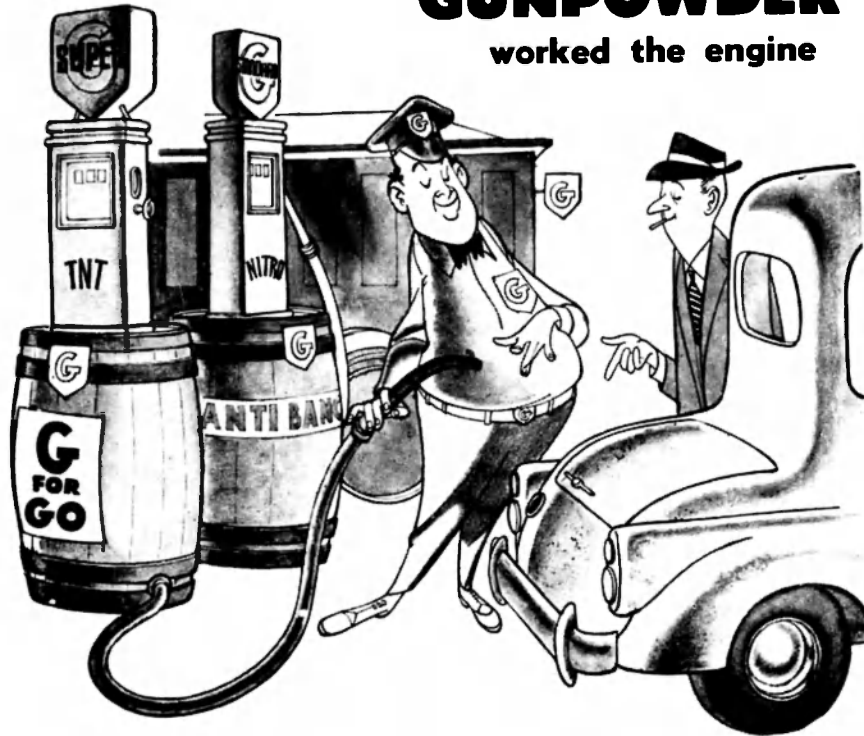
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FEBRUARY, 1958

1/6

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## THE NAVY

Australia's Maritime Journal

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FEBRUARY, 1958

No. 2

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## THE NAVY

Australia's Maritime Journal

## We go to SEATO 'Empty-handed'

**A**USTRALIA goes to next month's SEATO meeting with shamefully empty hands.

To this military treaty organisation of nations we will appear virtually as a disarmed country. Our Navy has been cut to practically a token force; our Army is an insignificant, although expensive, war machine; our Air Force is still saddled with obsolescent aircraft, and decision about re-equipping it with modern first-line planes seems as unlikely as any long-sighted Government thinking about the fast-vanishing Navy.

We can bring little to this important meeting except words. We certainly cannot offer any assurance that we can fulfil our treaty obligations if called upon to do so.

SEATO has a very real significance for Australia. The Communist bloc has been showing significant interest in South-East Asia.

An obvious target for Communist pressure is Indonesia, and a Communist Indonesia would offer to Australia the greatest threat since World War II ended.

It could place us within easy striking distance of Communist aircraft, and, perhaps most importantly, it could bring Communist submarine bases almost at our door.

In a "local" war, who could claim Russian or Red Chinese intervention if unidentified submarines cut our sea-lanes or acted as platforms for rocket bombardments of our coastal cities?

If we are to remain active members of any military pact we must urgently review our defence set-up.

We must never forget that Australia is a maritime nation: that our security lies principally in our defence at sea.

We may not be able to contribute much to the immense development of scientific warfare which is now going on. But we can and should contribute at least with up-to-the-minute

BEST OF OUR FEW



*H.M.A.S. Melbourne, one of our few warships in active service. Her fighter aircraft are obsolescent. She is our main naval contribution to SEATO military strength.*

"conventional" anti-submarine ships and aircraft.

Realistic thinking and action is needed now. Next year could well be too late.

A fleet takes a long time to build. And if we judge by the time it is taking to build our Darings it will be a long time indeed.

Our naval shipbuilding programme should have been tackled with foresight years ago.



# GIFT PACKS

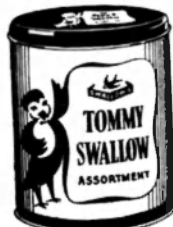
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# JANE'S "FIGHTING SHIPS"

By A. HAGUE—in London

**F**IRST published in 1897 as a small recognition manual with coded annotations of major details, Jane's has grown throughout the years into what is now accepted as the premier naval handbook of the world, if that term can be applied to the massive volume that yearly presents itself to the naval minded. In this, its anniversary edition, it takes pity on those who use it and appears in a vertical form somewhat more suited to handling than its original shape.

This seemingly simple transformation has involved more work on the part of its producers than ever before, and it is pleasant to note that the First Sea Lord in his introduction tenders the Royal Navy's congratulations and good wishes to a volume that has faithfully recorded the fortunes of the world's navies for the last 60 years.

As usual, Jane's gives as up to date a review of naval strength as is possible consistent with the time lag inherent in printing so large a volume.

Devoted to cold fact, it relies on the foreword to point out the salient details and differences and leaves the reader to make his own discoveries of the routine changes. He is aided this year by the disposals in the last 12 months being noted in the text somewhat more fully than has been the case before. This is a practice to be commended and extended where possible in the future.

Turning to the fleets themselves and commencing with the Royal Navy one finds a somewhat brighter picture of new construction and relubricating of

old, not so much as could be desired and some of it still only in the projected stage but nevertheless an improvement.

Pictures and plans of the *Victorious*, shortly to commission after a seven years' spell in dockyard hands, reveal her as the most un-British carrier in appearance for many years. Replete with new ideas and equipment she at least will present no recognition difficulties for years to come.

Sketches of the final form of the "new" cruisers are shown, though the prospect of the much vaunted new wine of modern six-inch and three-inch guns in 17 year old hulls with no prospect of replacement in the foreseeable future is not pleasant.

**I**N the smaller craft the escort situation looks a little brighter with the information on the new guided missile ships and general purpose frigates published for the first time. This impression will be reinforced when the Editor can fill in some of the gaps in the table of launch and completion dates.

Four of the new "Porpoise" class submarines are now shown to be afloat, and much is made of the fast *Explorer* and her sister, despite the fact that these are no more than last unarmed targets.

In the fleets of the Commonwealth, Australia shows its newly built and acquired ships, with the thought that a short while ago she announced that in American rather than British future trends in arms would be

followed to ease supply in the event of war.

One wonders what form the R.A.N. will display in its new ships in the 1967 edition.

The Royal Canadian Navy sports an impressive display of anti-submarine force with its newly-acquired carrier and her own design of escort vessel.

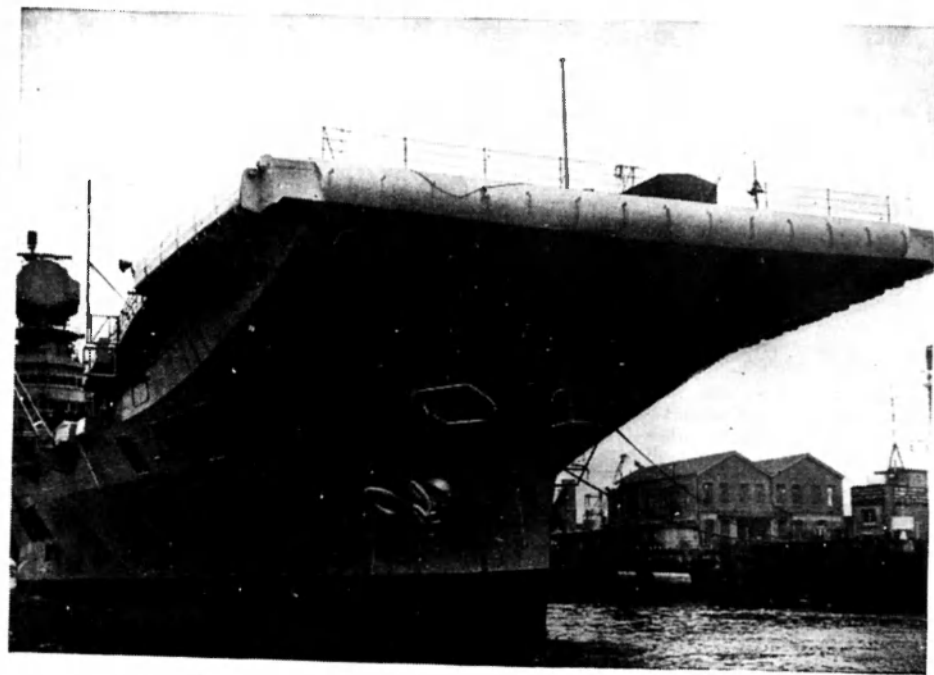
India gives promise of strength to come with the list of ships converting or building for similar purpose in British yards.

New Zealand and Pakistan also are shown as expressing their intention to build up anti-submarine forces in the future by building or converting existing tonnage, and the South African Navy exhibits an accession of strength now and in the future that bids fair to rival the growth of the Royal Canadian Navy in recent years.

Abroad, France furnishes sketches of some of her new ships and some excellent photographs of her most recent frigates and destroyers.

The two new intermediate carriers, one of which was floated recently, are shown. These are the first such ships to be designed and built in France, their predecessors being conversions or purchases abroad. The new helicopter carrier, a type also projected for the Royal Navy, appears as a vessel of unusual appearance displaying some of the liner-like characteristics of the *Jeanne D'Arc* which she is to replace as a training cruiser.

In frigates and escorts 47 completed and projected vessels show a healthy realization of the vital A/S role and also the differing approach of British and



*H.M.S. Victorious: a Rebuilt Aircraft Carrier*

French constructors to the same problem when one compares the excellent photographs of the two classes in the relevant sections. In the submarine pages, France displays the largest building programme outside the U.S.A. and Russia, an endeavour to make up for the long "holiday" since 1940 in submarine construction.

In this edition we see properly for the first time the new German Navy, the *Bundesmarine*, arising phoenix like from the ashes of its predecessors. Literally in this instance, for a major part of its craft consist of salvaged or recovered remnants of the wartime navy. It is ironic that the larger ships of this force will soon consist of war built ships of the Royal and United States Navies.

Italy shows the southern version of anti-submarine ships in her new destroyers and frigates and the light cruiser conversions to killer-ships. In so doing there is illustrated one of the less usual methods of mounting a twin gun, with the barrels vertically paired.

Also shown in some of these ships is the new Italian A/S weapon akin to our own Limbo, although the presence of depth charges in the most modern A/S ships seems to indicate a slight lack of faith in the new weapon or a very specialized use thereof. Our own new frigates, and most existing ships, have long abandoned the depth charge.

That annual headache to the Editor, and many others, the Russian section, produces some

excellent photographs of new construction that if nothing else underline the fact that the Soviet Fleet is no longer content to keep its surface ships screened off in its own bases but ventures forth on longer cruises than for many years. The text of this section can only reflect the difficulty in obtaining accurate information to supplement the photographs.

The third large national section of Jane, the American must also embarrass with information, but too much rather than too little. An excellent series of photographs in these pages displays the extent to which the U.S.N. has turned to all types of guided missiles for all, or nearly all, warships.

Good photographs also illustrate the giant vessels of the

"Forrestal" class and here even the Editor has had to admit defeat and turn the book on end to get the plan in. The photographs of Thetis Bay show the first practical application of a ship for helicopter borne assault troops as demonstrated in the Marine Commando landings at Suez. Very full illustration is given of the new A.S. ships, while the other side of the picture is shown by the impressive list of nuclear submarines built, building or projected.

In this edition two data lists, old friends of former years, reappear. Captain Manning's historical index of ship names is well known and its reappearance will be of interest to many. The revised pennant lists shown for all NATO countries will be of great value, especially in view of the number of identical small craft now seen off our ports which can only be individually identified by their numbers.

In this respect it is regrettable that the main list prefacing the British section could not include the European N.A.T.O. numbers as well, the difference between a French and British C.M.S. is small enough to warrant their numbers being listed together for easier reference. A new venture this year in the British and American sections is a tabulated list of the naval aircraft of each service with its basic details, a very welcome feature now that aircraft are a prime arm of the naval service.

The U.S.N. section also lists guided missiles, as yet the same cannot be done for the Royal Navy as there is insufficient information regarding its only weapon in that category.

In a volume of this size with its attendant burden of proof reading the mistake categorized as "a printer's error," misplaced or missing letters and figures, is inevitable.

This year the enormous task of completely re-setting the book has resulted in more than usual appearing, no doubt this will be rectified in the next edition when one hopes there will be a little less work to be done in rearranging material.

Photographs and illustrations, of which over 800 have been inserted in this edition, are generally good, some are excellent. But it must be recorded that a few are not, due probably to hurried preparation in the days before going to press.

The producers of the book are to be congratulated on reducing the age of photographs. Except for the Iron Curtain countries and insignificant ships, it is difficult to find a photo taken before 1950 and those which are must be retained for want of replacement: silhouettes are of the usual standard and well up to date, though the titling does not, in some instances, keep up with the text. Plans are being steadily replaced when possible and are clearly drawn to a uniform scale.

(From the London Navy)

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# THE QUEEN MOTHER'S VISIT

Australians this month welcomed back again with sincere affection Queen Elizabeth the Queen Mother, whom they took to their hearts 30 years ago when she visited Australia as the young Duchess of York.

The Queen Mother delighted everyone with her informality and charm.

Among her engagements in Sydney, Her Majesty visited H.M.A.S. Penguin, the Naval Depot at Balmoral, where she had lunch before going to see a surf carnival at Manly.

She returned from Manly to Circular Quay in H.M.A.S. Quiberon.

The pictures on these two pages show (below) Her Majesty making a broadcast to the people of Australia from the study at Government House Sydney, and (right) Her Majesty speaking with six-years-old Des. Ferguson, a pupil of the Wahroonga School for the Blind.

Des. presented the Queen Mother with a posy after she had visited the home of Mr. and Mrs. Mervyn Seaman, at the Housing Commission's Dundas Valley project.

Mr. Seaman watches Des. present the posy.

Other Royal Tour pictures are overleaf.





## PRESENTED TO THE QUEEN MOTHER



*At Canberra, Queen Elizabeth, the Queen Mother, at Government House, received five outback children. Pictured with Her Majesty here are, from left, Rocco Magnoli, 11; Judith Hurst, 9; Patricia Underwood, 9; and Mrs. Hurst, the children's chaperone. The others were Ruth Daylight, 14, and Peter Lacey, 12. The children were from the Australian Inland Mission hostel at Hall's Creek.*



Some of the 42 WRANS from H.M.A.S. Harman leave their plane after their arrival at Mascot. They took part in a parade at Balmain Naval Depot when the Queen Mother visited the depot. It was the first WRANS parade in Sydney since their reintroduction in 1951.

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THE NAVY

# The Antarctic isn't Lonely Any more

By SIR HERBERT WILKINS  
In an A.B.C. Guest-of-honour talk

**T**HIRTY-NINE years ago, when I first visited the Antarctic, conditions of living there were not as they are today.

Then Antarctica was a lonely place. Then, for company, you might find yourself talking to yourself and even answering yourself back in no uncertain terms. And, if you stayed there long enough, you might even get to the point of passing yourself by without speaking.

But today things are different. Thousands of people have circumnavigated the Antarctic Continent. Hundreds of men, but no women, have visited the South Pole — and that brings up a question.

Are you at the Pole when in an aeroplane 100 feet above the snow, when you are actually standing on the snow, when you are living in a dugout 100 feet

beneath the surface, or must you be on the land which, at the South Pole, is 8,200 feet beneath the surface of the snow?

You figure that one yourself.

More than 1,000 men will spend next winter on the great white continent. About half that number will be Russians. But, as far as I know, the only significance of that is that the Russians, among 15 other nationalities, are engaged in co-operative scientific investigations.

What the future will bring forth in the way of occupation of Antarctica no one knows, but of one thing I am certain — Australians should steadfastly maintain their claim to sovereignty of their section of Antarctica. Why? Because the economic potential of the Australian sector is more promising than in any other sector.

In the edge of land just peeping on from beneath the mass of ice above the land there are traces of many precious and semi-precious minerals — such as gold, silver, lead, copper, iron, magnetite and others, some of which seem to be in paying quantities if the problem of easy transportation through or beneath the ring of pack ice can be solved.

The width of this ring of pack ice around the Antarctic continent varies from place to place, from season to season, and from year to year. But it appears to be lessening in area. In 1919 we passed through 800 miles of pack ice before reaching land. This year we passed through only about 90 miles of heavy pack, which was studded by many comparatively small icebergs.

Icebergs, you must know, vary in shape and size. The largest iceberg I have seen measured 120 miles long and 30 miles wide. But the Americans, who do everything in a big way, reported having passed along one side of an iceberg for more than 200 miles.

Now that iceberg would have quite an effect on a city like Adelaide if it was stranded on a beach nearby. But there is no chance of that.

However, ice does have a great deal of influence on the weather, especially in Australia. It is well known that the distribution of ice in Antarctica has an effect on the weather in Australia, and a knowledge of ice influence as it changes from year to year will not only help us to know

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what to expect in the type of weather, but after a long period of study it might make possible the forecasting of climate.

Climate is what may be the long-term average of weather. Weather itself is what was yesterday — what is today and what will be tomorrow. Knowledge of forthcoming weather is valuable, but a knowledge of forthcoming seasons would be more so.

As to living conditions in the Antarctic today, they need not be any more unpleasant than they are elsewhere.

Today we have mechanized conveniences for keeping homes warm or cool as the case may be, and while in the Far South you may find extremely low temperatures, you need not necessarily feel cold.

Feeling cold will depend on how well you are provided with proper housing, how long you must stay away from shelter and the properties of your clothing.

You may have heard the ancient ditty which, slightly revised, goes like this: "Hit ain't the fact of walking that hurts your blooming feet, it's the 'ammer, 'ammer 'ammer of your boots upon the 'ard, 'ard, street." Well, it ain't the deep down temperature wot freezes your nose and toes. It's the bloomin' wind blowing through the 'oles in your clothes!

If it is calm in the Antarctic you have very little trouble with the cold, but when it is windy then it is a different matter. And a great deal depends upon how long you stay out in the cold. You can strip naked in a temperature of fifty below zero and stay that way for a minute or so without any trouble, but if you stay that way for fifty minutes, you would probably freeze to death.

Of course, there are many people who ask: "Why live in the Antarctic? What good is

it?" Well, you might answer: "What good is a newborn baby?" It has potentials unknown and possibly of great importance. We must not be impatient, but must wait and see.

**I**n the case of the baby, it may take generations before we know how influential it may become. It may take centuries — 500 years of observation at least — before we will know the advantages of the collected information about the Antarctic. We should not expect too much too soon.

In both cases, we should comprehend that the facts of today are not necessarily the facts of tomorrow, or even next day. In Captain Scott's and Sir Douglas Mawson's time, they slugged it out on foot over the ice and snow and I suppose you remember that Sir Douglas performed one of the most heroic feats ever performed in the Antarctic. When his companions were lost one after the other he alone struggled home — falling into one crevasse after another. But realizing and

fulfilling his responsibility to live and deliver the information he had, and which had cost so much money and effort, he did not give up.

It would have been so easy to have given up in despair, but Sir Douglas won through and, still living, carried on with his important work.

Today, men on the Antarctic continent depend mainly on their mechanized inventions to travel. The responsibility for success is not so much upon the leader, but upon the skill of his mechanics.

The same condition applies more or less in the matter of reaching the coast of the Antarctic continent. I believe it will soon be possible to do that at any time of the year.

In the past, with wooden ships, the passage through the pack ice was slow and difficult. Now with great ice-breaking ships, with engines of tens of thousands of horsepower, we barge into the pack ice, but not always conquer it.

This year in the biggest and strongest ice-breaker of the U.S. Navy, a great hole seven feet long and two inches wide was gouged in the hull of the ship by the ice. Fortunately, the

ship forced itself upon the ice and stayed there until the hole was patched.

Now, how much more safe and simple would it be to avoid the ice by going beneath it in a submarine! The possibility of this was suggested about 300 years ago. Then it was thought to be in the realms of fantasy.

Twenty-seven years ago when I proposed to take a submarine under the Arctic ice, it was thought to be suicidal, or ridiculous at least.

But in 1931, we did take the submarine to within 350 miles of the North Pole, and in 1957 the American Navy took the atomic-powered submarine "Nautilus" to within 150 miles of the pole, and thus proved sub-ice submarine travel to be a reality.

In neither case were the vessels stopped because it was impossible to reach the Pole. They stopped to carry on scientific investigations. I predict that within the lives of many who are now listening there will be submersible travel to the home of the blizzard and that tourists will be tramping around among the penguins in their native state.

I recently visited all of the stations in the Ross Sea area. The American station is at McMurdo Sound. This is the distributing area and from there planes fly supplies to the inland stations.

Near McMurdo is Scott Base, the home of the New Zealanders, and the headquarters of Sir Edmund Hillary.

Then there is Little America — Little America V. This is not on the sea but near the sea where the ice floating on the sea is 2,100 feet deep.

Byrd Station lies further inland 5,000 feet above sea level, and beneath the base we found there was 5,000 feet of frozen sea water. It was quite a surprise and might indicate that Antarctica is not a continent but a group of islands.



## REEF ADVENTURES

"Escape to Adventure." By Noel Monkman. (Angus & Robertson)

There are some books which, although devoid of literary merit, command reading because of their subject matter, and this is just such a book.

It is very much an escapist book, in the main dealing with under-water adventures by the author in the tropical waters off the Great Barrier Reef.

Primarily a photographer "shooting" commissioned subjects, Mr. Monkman invests his successes with a scientific aura which has the trappings of high drama in the piscatorial and insect worlds. This book is recommended, if selective, reading for those intrigued by the mysteries of the depths of the warm water seas and the super-heated jungles — if you should ever want to catch a crocodile the author tells you exactly how to do it after explaining that this ferocious beast is almost always misnamed alligator.

— B. J. H.

## ESCAPE OF THE AMETHYST

"Escape of the Amethyst." By C. E. Lucas Phillips (Heinemann)

In reply to Amethyst's signal that she had reached the safety of the open sea and the company of units of the Fleet, the C-in-C, in his "Welcome Back" signal ended with the words:—

"Your bearing in adversity and your daring passage to—

night will be epic in the history of the Navy."

To which I am sure that every reader of this book will echo with me a most sincere "Hear, hear."

Whilst it was the most dramatic escape that — quite rightly, in my opinion — caught the imagination of the whole free world at a very drab period of our national history, this book emphasises what was far greater, i.e., the really splendid conduct of all Amethyst's officers and men under intolerable conditions of discomfort, psychological strain and maddening inactivity.

It shows only too clearly also the Communist mentality, the lies, the spurious charges, the interminable wrangling and the complete impossibility of negotiating with such men.

In contrast, the assistance given by the Nationalist Army at the start of the episode was outstanding.

This book shows up the Service at its best, and I strongly recommend it. Younger readers will be inspired by it, and — in addition — for the older "China birds," there are passages that will bring back nostalgic memories of the China Station and the Yangtze River in happier days. Not least of all to your reviewer, who had commanded the Concord only a few months previous to the date when she made that dramatic dawn rendezvous with the Amethyst at the mouth of the Yangtze.

— W. S. D.

(from the London "Navy")



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# WHAT'S HAPPENING ABROAD

By "GEIGER"—in the London "Navy"

It seems now that the defence run-down is not likely to affect naval manpower quite as severely as was just thought.

When the Minister of Defence announced his five-year plan in the spring of last year no precise figures were given to show what he had in mind for the Navy. An overall figure of 375,000 for the three armed Services was given and on this basis it was roughly estimated that the ultimate goal for the Navy was likely to be about 85,000 officers and men.

A statement by the First Lord of the Admiralty now suggests, however, that this was a pessimistic estimate. In a speech on Clydebank shortly before Christmas the Earl of Selkirk is reported as saying that by the end of the five-year period the Navy will be rather bigger than it was just over 20 years ago.

In saying that it would be "rather under 100,000" the First Lord was, however, referring to the period 1929-1935 when the active regular manpower of the Royal Navy never rose above the 100,000 mark and on one occasion (1933) dropped as low as 90,300.

Exactly 20 years ago the strength was about 112,000 and by 1939 it had risen to 133,000.

Perhaps the Defence White Paper, now being prepared, will give a clear indication of what the minimum manpower is likely to be.

## Loch Fyne Festival

From Scotland I hear that Loch Fyne will this summer be the focal point for a week-long Sailors' Festival.

Foremost among those concerned in this project is the Church of Scotland minister, the Rev. J. J. Whyte, who has

been previously mentioned in these notes. In his parish at Ardishaig the Reverend gentleman visualized a gathering of warships and an elaborate programme of entertainment on the lakeside for thousands of Scotsmen.

He and other planners who met recently on board the R.N.R. Club Ship Carrick at Glasgow decided that the Festival shall coincide with the Glasgow Fair week, 21st-27th July, and with the support of the Admiralty and the Flag Officer Scotland they hope to raise at least £1,000 for the King George's Fund for Sailors.

## Flag Flies Again

A flag which had not been flown for 125 years was recently seen fluttering over the National Maritime Museum at Greenwich. This was the flag of the old Navy Board established by Patent of 21st April, 1515.

The flag, showing three gold anchors against a red ground, is to be used in future as the Museum's flag and will be flown on the 103-foot staff, formerly the mizzen mast of H.M. Royal Yacht Victoria and Albert, when the Trustees meet.

The Navy Board first met in Greenwich or Deptford, but later established its first office on Tower Hill. Later, the office was moved to Walsingham House in Seething Lane on the site of the dissolved monastery of the Crutched Friars, and then to Somerset House in 1786. The Board was finally abolished in 1832.

Since its inception, the Museum has used as its badge the design of the old three-anchor seal of the Navy Office. Like other public buildings the

Museum flies the Union Flag on official occasions, but it has also been flown on important anniversaries, such as Trafalgar Day, and for Museum functions. It is now intended to confine the use of the Union Flag to the usual public occasions and to use the Museum Flag on days which have a special maritime or Museum importance.

## Flood Victims

Although no H.M. Ship was within easy reach when floods devastated areas of Ceylon, the Navy, as always, was ready to assist victims.

As the R.N. base organization at Trincomalee is being reduced, only limited immediate help could be offered in the Trincomalee area, but medical and material assistance was given.

This was done as H.M.S. Cockade was steaming at 24 knots from Singapore loaded with relief stores. Food and other supplies brought by the Cockade were made available by the Navy at Trincomalee, and much of it was flown into the devastated areas by helicopter.

The appreciation of the people of Ceylon has been expressed by their Prime Minister in a speech of thanks, and presentations were made by him to the Royal Navy, Royal Air Force, Indian Air Force and Army, and the United States Navy, as a token of Ceylon's gratitude.

The presentation to the Royal Navy took the form of a Kandyan silver tray, fashioned in the shape of a map of Ceylon with a border suitably beaten to include a number of elephants.



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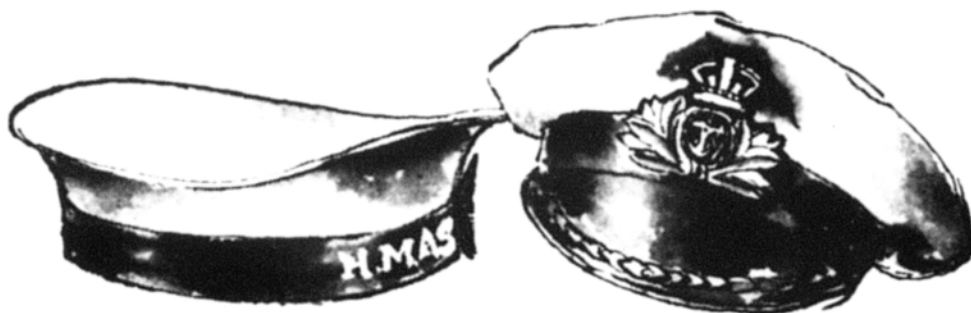
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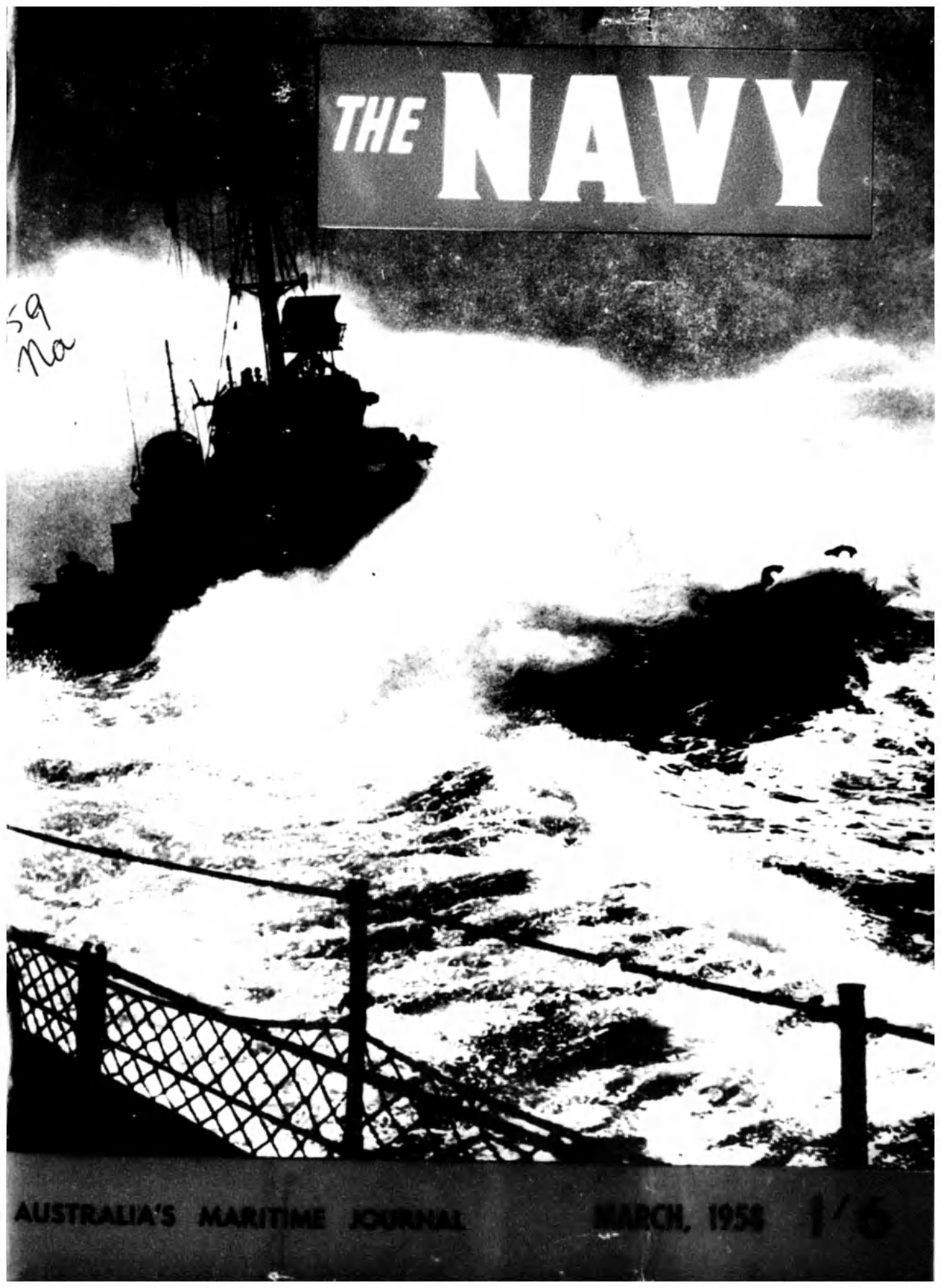
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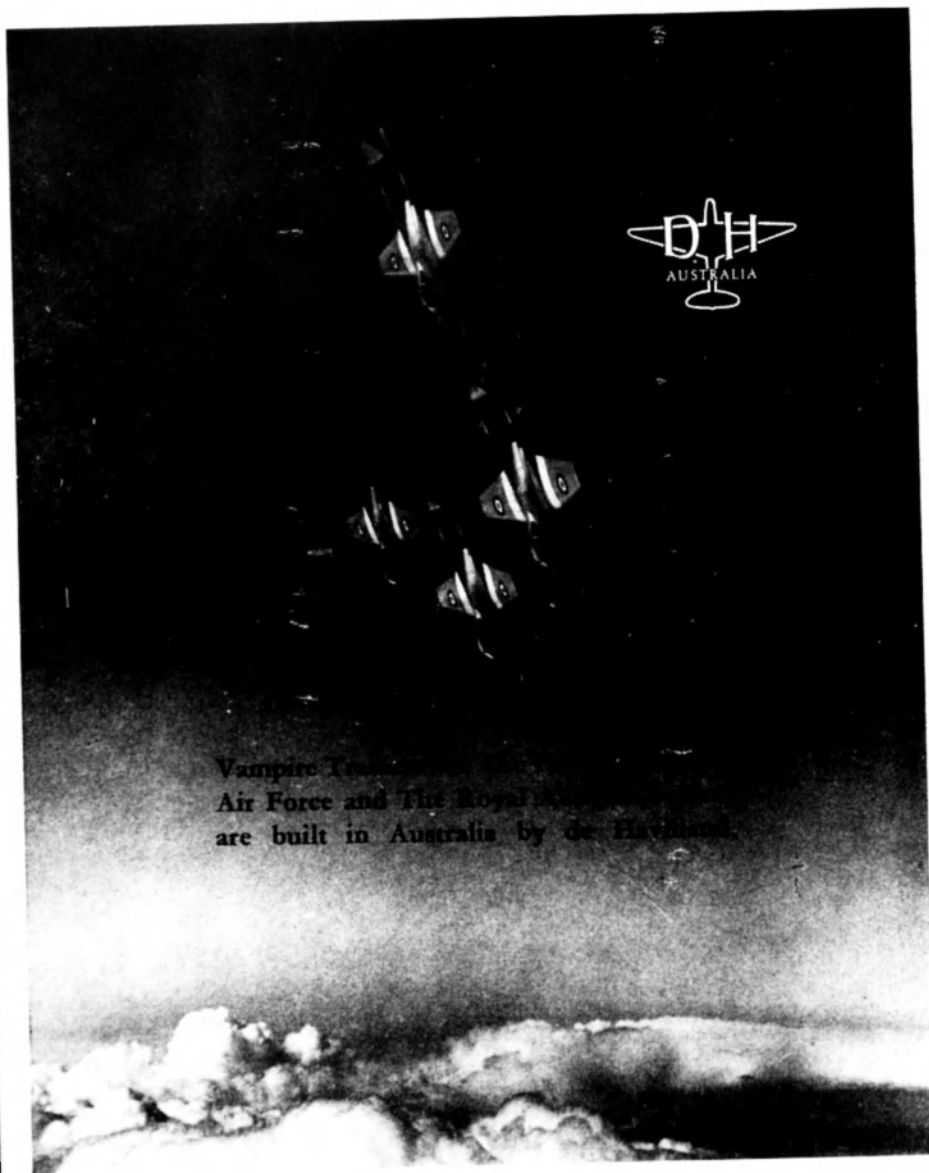


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## THE NAVY

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## THE NAVY

Australia's Maritime Journal

## IN 1968, A NAVY OF SIX SHIPS?

A special correspondent in the "Sydney Morning Herald" recently gave the public a shock when he revealed that on present Naval policy the R.A.N. Fleet in 1968 will be reduced virtually to three Daring class ships and perhaps two or three anti-submarine frigates now building.

Lack of manpower is given as one of the main reasons for the deliberate shrinking of our active naval forces. But it is not by any means the only reason.

The manpower shortage — of which the drift away from the Navy of senior ratings is the most serious factor — can be solved by the application of known principles of human relations.

The "vanishing navy" is also the result of indecision on the part of our naval planners, admittedly faced with the tough pressures of rapidly changing naval concepts.

Nuclear power is now revolutionising ship propulsion and with it ship design. As Lieutenant-Commander Wintle says in an article in this issue, the atomic submarine has assumed the role of the world's most important ship, and thinking naval men are already envisaging underwater warships with speeds of 60-70 knots.

The whole war strategy has been upset by the immense destructive power of a single hydrogen bomb, and the nearly perfected weapon which can deliver it with paralysing suddenness — the intercontinental ballistic missile.

These technical and strategic changes, however, are no excuse for standing still in bewilderment.

The navies of the world have very real and very important roles to play in either limited or all-out wars.

Russia and the United States, who lead the world by leaps in the development of new

weapons, are significantly spending much money and scientific effort on their navies.

We in Australia cannot be expected to conduct our naval development at their pace, but we will be expected by our allies to fulfil our obligations under the SEATO and ANZUS pacts.

A navy takes many years to build. Our naval planners should be using foresight and common sense and right now begin to build the Australian Fleet of the future. We have already lost far too much time.

## German Shipping

FOLLOWING the sale of the French liner Pasteur a few months ago to the Norddeutscher Lloyd, it has now been announced that a recently formed Hamburg company has purchased the Empress of Scotland, which the Canadian Pacific withdrew from service after their two new vessels came in last year.

The Empress was built in 1930 by Fairfield as the Empress of Japan for the Line's Pacific service but renamed in 1942 after Japan entered the war.

The new owners are the Hamburg-Atlantic Shipping Line, which is understood to be a joint venture of the Hamburg-Amerika Line and the Italo-Greek Home Lines.

The Empress is to be refitted in Hamburg and is expected to go into service in June of this year. German reports say that she will sail under the German flag, will be managed by the Hamburg-Amerika Line, and will maintain a service between Hamburg and American East Coast ports in conjunction with the Home Lines vessel Italia, also managed by the Hamburg-Amerika Line but flying the Panamanian flag.

The purchase price is stated to have been £1 million, and the cost of refit is estimated at about £1½ million, to be financed by a loan from the City of Hamburg.

This is another step in the re-entry of the German Lines to the North Atlantic passenger trade and it forms an interesting parallel to the re-establishment of Hamburg-Amerika Line passenger services after World War I, when it was American capital which provided the ships for the Line to manage.

The present move, involving the link with the Home Lines and the Panamanian flag is, however, causing some misgivings in Britain.

(From the London "Navy")



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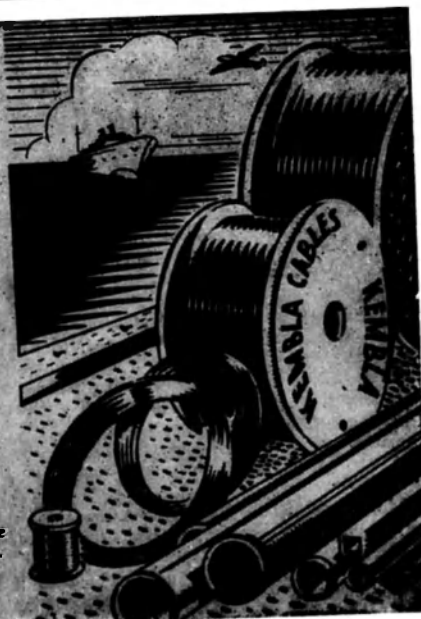
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# NUCLEAR POWER FOR SHIPS

By LIEUTENANT COMMANDER L. A. WINTLE, R.N.—in London

"The transition from oil to atomic fuel at sea is as inevitable as was the change from sail to steam . . ."

**T**HE first step on the downward path to comparative oblivion is taken when a maritime nation begins to ignore its ships or fails to make full use of them. The truth of this dreary fact has been demonstrated by nation after nation throughout the last 4,000 years. "History book stuff, not applicable in this day and age?" Not so. To-day the maxim has greater point than ever, and to Britain more than to any other in the past. In maritime affairs we have come to a fork in the road, and have to decide whether to be towed along the primrose path by our friends (who must naturally be allowed to decide whether to stop, go, or even cast off altogether) or whether to use our native skill in order to reap the benefits of the new marine age.

Nuclear power is already at sea, though not in Britain, and the transition from oil to atomic fuel at sea is as inevitable as was the change from sail to steam: the effect will be equally far-reaching.

The Nautilus has been at sea with the U.S. Navy for three years, and in exercise her range, speed and performance have delighted her supporters and confounded the sceptics. She is virtually uncatchable, yet can catch virtually anything that floats — no longer can the "Queens" rely on their speed to cross the Atlantic unscathed.

Yet the Nautilus is only the prototype, and practical, thinking men are already working in terms of underwater speeds of 60-70 knots.

With its ability to stay submerged for an unprecedented

length of time, and while submerged to travel vast distances at high speed, the atomic submarine has assumed the role of the world's most formidable ship.

Rockets do not need air on firing, and a submerged vessel provides a far steadier platform than does the already anachronistic surface missile ship.

The inevitable conclusion is that not only against ships, but against land targets as well, the atomic submarine is supreme, and may rightly be regarded as the ultimate weapon.

Learning from the Kaiser's near success with unrestricted U-Boat warfare, Hitler designed his navy as a raiding force, with no fewer than 57 submarines in commission when war began.

The Russians, as quick to take a point as anyone, have built up a raiding force of more than 500 submarines, and on December 5 their first atomic fuel ship, the ice-breaker Lenin, was launched.

She will be fitted with a reactor of similar type to that in the Nautilus.

Can we doubt, or, if doubting, can we afford to risk that they have not also got atomic submarines? Without subscribing to the suggestion implied by the Russians in launching their satellite that anything we (the West) can do, they can do better, it is nevertheless beyond the bounds of reason to suppose that their flair for scientific achievement has not been allied to their predilection for submarines.

The menace, therefore, is an armada of atom-fuelled sub-

marines, against which, on account of their great speed and endurance, the only effective defence is the smaller, faster, atom-fuelled "killer" submarine — the "destroyer" of the new era.

With our sea defences secure, we can not only avoid losing a future war through immediate starvation. We can also protect ourselves against atomic bombardment from the sea — a natural line of attack against an island by a country having command of the sea.

**P**RECAUTIONS against bombardment by land-based rockets and planes remain an obvious necessity, but if we cannot catch and kill the atomic submarine, the United Kingdom will be found to be another Singapore, with all its defences pointing the wrong way.

Indeed, it would appear most sensible for the Russians to concentrate on frightening us with threats of nuclear bombardment from their country, giving us ample proof (with Sputniks) of their ability to make good their threats, while preparing to attack us more cheaply and effectively from a comparatively short range at sea.

Neither the Distant Early Warning System, nor any other of N.A.T.O.'s elaborate, expensive and far-flung anti-missile/aircraft defence systems have the ability to detect a submerged rocket-launching vessel.

It is not often that expense incurred in the development of a military weapon can be directly repaid by the com-

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mercial benefits which ensue, but the ship-borne atomic reactor is a classic example of how a virtue can be made out of a necessity.

The merchant ships of the world are waiting for atomic power, for eventually only those having it will be an economic proposition. This huge demand will reduce the initial cost, and work now put in on development and operational experience in the cause of defence will produce the unit the world will want to buy.

Even if we are content ingenuously to rely on others for the development of our arms, surely we must draw the line at being dependent on them for the specifications of a product that we wish to sell in competition with them.

Britain has started research on a nuclear reactor for ships which the Atomic Energy Authority believes will be superior to that in the Nautilus, not only in performance but in adaptability and cost.

Its nickname is "Neptune," and not long ago it became "critical."

We are a long way (four years plus) behind, but the prize is not always to the first in the field.

For example, America produced the first "clipper" ship design, but we beat the world with it. On the other hand, we were first with the railway train.

THE opportunity (exemplified in "Neptune") is there, and the Admiralty has been quick to see it both from a defence and commercial point of view. But there are snags.

The (very reasonable) cry in the N.A.T.O. countries is for "interdependence," or "all for one and one for all." We are also striving to economize.

The suggestion has, therefore, been put about that we should be content (if allowed) to copy the Nautilus and drift in tow

down the primrose path, rather than go ahead with trying to produce something better.

The dangers here are twofold: that interdependence might rapidly deteriorate into complete dependence on our friends — not only for rockets, but also for the ships and equipment from which they may be fired — and that not only ourselves, but the whole Western World may lag well behind Russia in the development of a machine which has become the prime factor of military and commercial maritime progress in this atomic age.

There is no doubt of our ability to exploit this opportunity to the full. With the "Calder Hall" type of reactor we lead the world, and although the initial cost was high, success has bred demand at home and abroad (where they are already selling, to our considerable profit), so that in one year the cost has been halved.

Money for development and experiment will be forthcoming, not necessarily at the expense of other vital items, provided that a sufficiently large section of the public is convinced that it would be a false economy not to invest.

Indeed, the problem of finance is not so much a question of "Where is the money coming from?" as of "Where is it going to?"

Since the war we have spent more than £238 million on various abortive schemes, including £31 million worth of enthusiasm for V-VI African groundnuts, £3,000,000 for development of an aero gas turbine (abandoned), and £10 million for development of Swift lighter aircraft (not to be used).

Last year we imported peas from America for which we paid £1 million in dollars; we also spent £12 million in subsidizing potatoes, in spite of the fact that a special organiza-

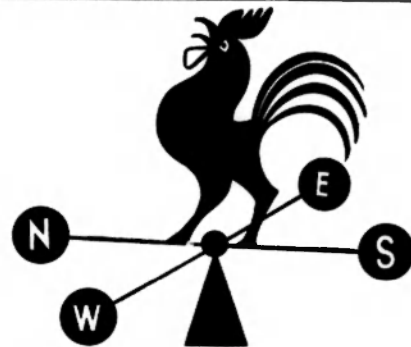
tion exists to avoid this sort of thing.

Currently we are faced with an expenditure of £17 million for further extensions and improvements to the recently completed London Airport. The North-Eastern Tube from Victoria to the north-eastern suburbs of London is to be built at a cost of £50 million, although it is known beforehand that it will run at a loss.

None of the above can compare, in terms of national

priority, with the need to get atomic power to sea under the British flag, whether considered from the defence or the commercial viewpoint. But if any of them were axed, there would be an immediate outcry from large sections of "public opinion," because the public knows about peas, potatoes, airports and tubes. Moreover, it wants them, and what the public wants, it gets.

(From the London "Navy")



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# WHAT IS BRITAIN'S ZETA?



*Right: Two of Dr. Thonemann's team at Harwell, Mr. Bendel Pease (left) and Mr. Robert Carruthers stand in front of the large transformer of Zeta; above: Technician Mr. David Goodall operates a small scale model of Zeta to show how hot gases travel round inside the torus, which in this case is the glass tube.*



By **SIR JOHN COCKCROFT**  
Director of the U.K. Atomic Energy Research  
Establishment at Harwell

**A** great deal of information has just been released in Britain and the United States on a subject which will be new to most people and which seems to offer startling possibilities — the control of thermonuclear energy or fusion.

Great interest has been roused by some work at Harwell with a machine called Zeta, and I would like to explain the reasons for carrying out such work and its possible implications for the future.

Fusion is something which has been talked about by scientists for a long time.

In the Cavendish Laboratory 25 years ago, we discovered that the nuclei of heavy hydrogen, speeded up by high voltages, could join with or fuse together with other nuclei of heavy hydrogen to form helium, producing other atomic particles and energy in the process.

We know that processes of this kind provide the energy and the heat of the stars, and it has long been the ambition of scientists to emulate the stars and to produce in the laboratory temperatures so high that useful energy can be produced from power reactors.

Zeta itself is a kind of very large doughnut, called in scientific circles a torus, but instead of the ring being about half an inch in diameter, like an ordinary doughnut, it has a diameter of just over a yard.

In this machine the scientific achievement which has aroused such great interest is that temperatures of about five million degrees centigrade, roughly a third of those at the centre of the sun, have been produced and have been held for a few thousandths of a second.

These temperatures have been repeated every 10 seconds for very long periods of time.

This has been done by inducing electrical impulses in a gas inside the torus and causing it to constrict into a very small space in the centre of what is in fact a continuous cylinder.

These conditions have been calculated by our scientists to be those in which we could expect fusion or the joining together of atoms to take place, and when this happens the power is released.

Zeta stands for "Zero Energy Thermonuclear Assembly," and it really is zero energy because at the present time we get out of it only about one millionth of a millionth of the power we put in.

*Scientists at the Zeta control desk.*



## TAMING THE H-BOMB

British Commonwealth scientists at Harwell, under Australia's Dr. P. C. Thonemann, are now working towards the next stage of their dramatic development of taming the hydrogen bomb for electricity generation.

Although its practical application is officially regarded as a long way off, time may show that Dr. Thonemann and his team may have given the world a virtually inexhaustible supply of power.

The U.K. Atomic Energy Commission recently officially released information about the first stage of this vital research work.

The scientists envisage using deuterium as fuel. Five gallons of water yield one gramme of deuterium and costs only 2/- to produce.

It contains energy equivalent to 10 tons of coal.

The world's resources of coal and oil are estimated to last for another 100 years and its supplies of uranium and thorium for about 200 to 300 years.

Supplies of deuterium from sea water will be available for 1,000 million years.

But it is the first stage of a long and promising programme.

If we increase temperature from five million to 25 million degrees we will increase the power perhaps a million times, and if we get up to 100 million degrees we could almost break even.

The next stage will be to design further equipment based on our experience with this machine which will have the objective of breaking even.

Then we might go ahead to the stage where we can produce much more power than we put in.

But that is going to take a long time — perhaps 20 years or longer — because there are so many stages of development which we will have to go through.

We shall have to build a successor to Zeta and possibly other machines, and then we shall have to design something which will be an engineering machine and on which engineers will be able to carry out improved designs.

That stage is a long way off, but when we get to it we shall have reached a stage where the world will have an inexhaustible supply of fuel which can be taken from ordinary water.

# OUR VANISHING NAVY

A steady stream of senior naval ratings, carrying out their demobilisation procedure, now is flowing through R.A.N. shore establishments Penguin, in Sydney, and Lonsdale, in Melbourne.

It will swell as 1958 progresses to cause the Royal Australian Navy one of its biggest problems since the end of World War II.

These are the men who signed on for 12-year engagements in 1946, or for six-year engagements at the time of the Korean crisis.

Their departure, depriving the Service of many senior able ratings, leading ratings and petty officers, is forcing the Naval Board to pay off modern warships and put them into reserve.

Australians must view with grave concern this serious shortage of manpower in the R.A.N.

Few countries in the world are so dependent for their survival on control of the sea.

From a purely military point of view, it is extremely likely that any enemy attack will come

We republish, by courtesy of the "Sydney Morning Herald" this article, which appeared in that newspaper recently following the Federal Government's decision to reduce the number of warships on active duty with the Royal Australian Navy.

The article appeared in the Herald as a series of two articles by a Special Correspondent.

from the sea. Long range bombers or I.C.B.M.s hardly have the same chance of destroying our capital cities and industrial ports as submarines firing missiles with nuclear warheads. Half a dozen of them could do the job — and Russia has 5000 submarines.

The present problems of the R.A.N., therefore, concern us all, and they come under two basic headings — manpower and weapons.

The main reason for the manpower problem is the

failure of senior ratings, who are the backbone of the Service, to re-engage. In the Army and the Air Force the re-engagement rate is reasonable; in the Navy it is negligible.

In peacetime, fundamentally, the Navy has to face a great human problem which the other Services encounter to only a small extent.

It maintains two ships in Far Eastern waters at all times, and even those ships based on Australian ports carry out prolonged cruises. Seagoing personnel are separated from their time, sometimes as long as a families for long periods of year, and they are confined on board in relatively cramped and uncomfortable quarters.

Army and Air Force personnel, on the other hand, can take their families with them if sent to places like Malaya, and it is not unusual to find them installed in comfortable houses with native servants. They pay no income-tax there; sea-going naval personnel do pay tax when at sea.

It is significant that among the valuable senior naval ratings who fail to re-engage are many married men.

It is realised in the Service that no one can overcome this human problem of separation: no one suggests that wives and children go to sea. But many officers and men feel that the Service will have more chance of remaining strong, as well as happy, if their particular hardships were ameliorated by compensation.

The Allison committee, which is considering problems like this at present, could well recommend a special sea-going allowance for men actually serving in ships, and a great improvement in living conditions on board. More housing for naval families is urgently

needed. Amenities at shore establishments should be extended.

The Navy already has done something to make life more pleasant for the sailor. It was forced to.

Examples include the line new ratings' blocks recently finished at H.M.A.S. Watson, the half-hearted attempt to provide a Fleet Canteen near Garden Island, and the replacement of hammocks in ships by bunks. Other examples: new types of kit lockers, gay interior colours in ships, iced water drinking fountains, even in the Daring class ships, and air-conditioning on the mess decks.

Shortage of money from the Government is not the basic reason for lack of action. The higher direction of naval policy is at fault.

It seems apparent that the Naval Board, after World War II, decided to commit the money available to build ships, in the belief that it could find the men to man them without extra inducement.

This policy has proved wrong.

Recruitment of new men, of course, does go on and naval recruiting figures compare favourably with those of the other Services. But recruitment alone will not solve the difficulties.

Men entering the Service now usually sign on for a period of six years. With a negligible re-engagement rate, the strength of the Service can be computed simply by multiplying the recruiting rate by the length of engagement. If one assumed the favourable recruitment figure of 1,000 men a year, the effective strength of the Service would be 6,000 men. (1,000 x 6).

Put in a slightly different way, there are now under 10,000 men in the R.A.N. Even if we assume that they are all just starting six-year engagements, it would mean that in 1961 they would all have left

the Service (the rate of re-engagement is negligible).

Therefore, the 1964 strength of the Navy would only be the sum of its recruits in those six years (1,000 x 6). And most of those men would be ineffective because inexperienced and only partly trained.

The problem, therefore, is an urgent one, and concerned mainly with increasing the re-engagement rate of senior men. It seems an inescapable conclusion that the authorities need more money to do the job.

The officer-structure of the R.A.N. is also far from satisfactory at the moment. It is now feeling the reduction in numbers of permanent Service officers accepted for training during and at the end of World War II. There are plenty of young sub-lieutenants in the Service, but there is a shortage of watch-keeping officers of lieutenant's rank. There are, in fact, almost as many lieutenant-commanders in the R.A.N. as lieutenants.

The Navy, in the last three years, has undergone a revolution in its officer structure to try to fit itself to the atomic-guided missile age. The old rigid

specialisations and coloured distinguishing stripes have gone.

There is now one General List of Officers, and they are all, in theory at least, executive officers eligible for the highest positions in the Service — with one important qualification. Some positions, like that of Chief of Naval Staff, may only be held by officers with command experience at sea and only a select band of officers, on what is called the Post List, receive this experience.

The main way of achieving the integration of its specialists lies in the training of junior officers. All now receive a very broad training in addition to specialist training.

It is divided into three phases: Shore training at the Royal Australian Naval College, sea training in H.M.A.S. Swan, and final training in England at the Royal Naval College, Dartmouth, where officers meet their R.N. contemporaries.

It would seem from the favourable number of applications received for training at the R.A.N.C. that there is no great long-term officer problem for our Navy.

All the main units of the R.A.N. are post-war ships or

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have undergone major conversions since the war except the surveying frigate, Warrego, the training ship Swan, and the Tribal class destroyer Warramunga.

And yet, because of the chronic manpower shortage, some already are in reserve and others will follow.

The R.A.N. already is a small service, compared on a population basis with Britain and the United States, and it can ill afford such losses.

The U.S.N., with its marines, is almost a million strong, supported by a population of 170 million; the R.N. numbers about 120,000 for a population of some 50 million; the R.A.N. has less than 10,000 men for our population of just under 10 million. (To compare with the United States it should be 60,000; to compare with Britain it should be 21,000).

Australia already has faced charges of failing to pull her weight with ground forces in S.E. Asia. We could hardly object to similar criticisms of our naval strength.

The ships of the R.A.N. are, at present:

H.M.A.S. Voyager, a Daring class ship, completed in Sydney

in March, 1957. She has a complement of about 300 and an armament of six 4.5-inch guns, anti-submarine mortars and torpedoes.

H.M.A.S. Warramunga, a Tribal class destroyer of World War II vintage, with a complement of about 220 and an armament of 4.7-inch guns, torpedoes, and not-so-modern anti-submarine mortars.

H.M.A.S. Anzac and H.M.A.S. Tobruk, both Battle class destroyers with complements of about 220. They are armed with two 4.5-inch guns, numerous 40mm. guns, anti-submarine mortars and torpedoes.

Quiberon, Quickmatch, Queenborough and Quadrant—four modern Q-class anti-submarine frigates. (Quadrant is in reserve; she paid off last year. Her hull and engines are unserviceable). These frigates have complements of about 170 and are armed with two 4-inch guns and very modern anti-submarine mortars. The Navy converted them at a cost of £1 million each, from World War II vintage Q-class destroyers.

The aircraft carrier H.M.A.S. Melbourne, hub of the R.A.N. fleet. Melbourne is fitted with a semi-angled deck, steam

catapult and mirror deck landing aid.

The Navy used our second aircraft carrier, H.M.A.S. Sydney, as a training ship for seamen, stokers and other ratings.

The Navy has not modernised her, and, now that she, too, is to go into reserve, it is most unlikely that she ever will be.

She lies alongside Garden Island and is hardly fit to go to sea. The Navy should sell her.

Other ships in commission are H.M.A.S. Swan, an old frigate converted for training cadets from the Royal Australian Naval College, and H.M.A.S. Warrego, a surveying frigate doing valuable work at present charting the waters in the Cape York Peninsula area.

Ships building for the R.A.N. are two more Daring class vessels, Vendetta and Vampire, to be finished in 1958-59, and four more anti-submarine frigates.

The building of these Daring class ships in Australia does not seem to be justified. Originally, in about 1947, authorities estimated their cost at less than £2 million each; in fact, each has cost £8 million.

Originally, all were to be completed by 1952; in fact, they will not all be ready until 1959.

Australia could have bought these ships from Britain for about half the cost here in Australia — and they could have been available much earlier.

The R.A.N. has, in addition to the ships already described, smaller craft including ocean minesweepers and tugs. In reserve, at the moment (but soon to be joined by Sydney, Warramunga, Anzac, and probably, later this year, Quickmatch) are the two Tribals, Arunta and Bataan, the cruiser Hobart, and (mentioned before) Quadrant. Hobart, refitted at a cost of £1,500,000 between 1917-1956, was never completed. She

lies in Sydney Harbour with some of her machinery still unassembled inside her, and with her main engines slowly seizing up from lack of maintenance.

The Navy should sell her, too.

These, then, are the main ships of the R.A.N. Their total complements add up to close on 4,000 officers and men, or almost half the strength of the service as a whole. Their radar and gunnery equipment is as modern as the Royal Navy's; their torpedoes and torpedo-control equipment are old fashioned; their anti-submarine equipment and weapons are equal to the best in the world.

But the recent announcement that more ships are to go into reserve shows that the Navy is fighting a losing battle in finding men to man them. What of the ships themselves and their future usefulness?

Melbourne's useful life is appreciated as lasting until 1963; Sydney's will theoretically expire in 1961 or 1962 (though it is quite certain she will never re-emerge from the mothballs now planned for her). The Darings are expected to be in service until 1978, though needing major refits by 1968; the planned life of the Battles expires about 1970, that of the Tribals in 1962, and that of the converted Q-class in 1968.

Broadly speaking then, by 1968 our present fleet will be reduced to three Daring class ships, plus, perhaps, two or three of the anti-submarine frigates now building.

It took us almost 10 years to build the present Darings so, presumably, if we mean to replace them with more Australian-built ships we will soon have to lay down more keels. Even if we are more sensible, and order our ships from Britain, we still have very little time.

At the moment, in the eyes

of our allies, our most valuable naval possession is not the fleet that is causing us so much trouble to man and maintain. It is Australia's most important single defence installation — the Captain Cook Dock and the Garden Island Dockyard.

In other parts of the world no doubt we shall see giant aircraft carriers, guided missile cruisers and submarines — all nuclear-powered — come into service. We may not aspire to such costly ships for our own fleet, but it is nevertheless the duty of the naval staff to define precisely the limited role of the R.A.N. and to plan ahead for the new ships we will need.

The Navy's present problem is shortage of the right men: in the 'sixties unless there is plenty of clear thinking in high places, it may well be shortage of the right ships.

**FOLLOWING** the publication of these articles, the "Herald" published a letter to the editor from Engineer Rear-Admiral (ret.) Alec B. Doyle, which stated:

In the articles on "Our Disappearing Navy" ("Herald," Jan. 22-23), your special cor-

respondent has done a national service in publicising the serious shortages of men and ships in the Royal Australian Navy.

But, with respect, I suggest that in some matters of policy he has expressed opinions which indicate inadequate knowledge of those matters. I shall deal only with one of these, about which I have particular knowledge.

Being then Third Naval Member of the Naval Board and Chief of Construction, it fell to my lot in 1944 to discuss with Admiralty officers proposals for a naval shipbuilding programme for Australia, and to submit a programme to the Naval Board which was approved by all authorities concerned and adopted by the Australian Government.

In barest outline, the facts justifying this programme are given below; they could be amplified and supported were space available.

● Developments in World War II and the nearness of Britain to enemy countries, made it clear that naval shipbuilding and repair facilities must (in common with other

Please turn to page 10



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## PACT EFFECTIVE IN JULY

Commonwealth and State legislation will be necessary to implement in Australian waters the International Convention for the Prevention of Pollution of the Sea by Oil, the Australian Department of Primary Industry's "Fisheries Review" states.

**A**USTRALIA signed the Final Act at the inaugural conference in London in May, 1954.

The conference was held on the invitation of the United Kingdom. Thirty-two Governments were represented by delegates, and 10 countries, the United Nations and F.A.O. sent observers. Australia sent four delegates.

The coming into force of the convention was made dependent on its ratification by ten Governments. Article XV also stipulated that five of these

must be Governments of countries each with not less than 500,000 gross tons of tanker tonnage.

The convention was to become effective twelve months after these conditions were fulfilled.

Belgium, Canada, Denmark, West Germany, Ireland, Mexico, Norway, Sweden and the United Kingdom ratified, and when France did so last July, the coming into force of the convention was secured for July 26, 1958.

The convention is expected

to be effective in perpetuity, but contracting Governments may withdraw after having participated in it for five years.

The five countries with the necessary tanker tonnage are Denmark, Norway, Sweden, U.K., France.

Large quantities of persistent oils, such as crude oil, fuel oil, heavy diesel oil and lubricating oil, are released into the sea when the oil tanks of tankers are washed and when dry cargo ships discharge oily ballast water.

Sheets of oil persist for long periods on the surface of the sea, are carried considerable distances by currents and winds, and are frequently deposited on the shore.

Fish are killed when their gills become clogged with oil.

It is also probable that oil affects marine organisms on which fish feed.

The objective of the convention is to prevent oil pollution by preventing the discharge of oil into the sea by ships under the jurisdiction of contracting Governments, which are obliged to enforce the provisions of the convention.

The convention does not provide for the establishment of a commission, but a bureau, provisionally set up and maintained by the United Kingdom, will serve as an administrative centre.

The discharge of oil, or any oily mixture which fouls the

surface of the sea, is prohibited in zones defined in the annex to the convention.

The prohibited zones in relation to tankers are all sea area within 50 miles of land, with certain exceptions such as in the Adriatic Sea, the North Sea and parts of the Atlantic (where the zone is 100 miles). The Australian zone for tankers extends for 150 miles from the coast, except between the point opposite Thursday Island and the point on the West Australian coast at 20 deg. S. Lat. where the general 50-mile zone applies.

Ships other than tankers are to discharge oily ballast water or tank washings as far as practicable from land. From July 26, 1961, however, the prohibited zones for tankers will apply also to them.

**T**HE convention applies to sea-going ships registered in any of the territories of a contracting Government except

ships of under 500 tons gross, whaling ships, naval vessels, and ships being navigated in the Great Lakes and tributary waters. One of the seven resolutions agreed to by the 1954 conference, however, expresses the expectation that contracting Governments will apply the convention, as far as practicable, to all classes of sea-going ships under their jurisdiction.

From July 26, 1959, all ships registered in a territory of a contracting Government (and being ships to which the convention applies, are to be fitted with installations to prevent the escape of fuel oil or heavy diesel oil into bilges, the contents of which are discharged into the sea without being passed through an oily-water separator.

From July 26, 1961, facilities are to be installed in main ports for the reception of residues from oil ballast water and tank washings from tankers and dry-cargo ships.

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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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March, 1958

THE NAVY

## OUR VANISHING NAVY

requirements for the defence of the British Commonwealth) be developed in other Commonwealth countries, and not be confined to Britain.

● The history of shipbuilding in Australia prior to World War II was one of boom and bust: several over-ambitious attempts had been followed by collapse and the dispersion of the skilled personnel that had been built up. Skilled personnel became few; for the industry promised little scope. Supporting industries for the provision of machinery, equipment, guns, torpedoes and special stores did not exist; neither did the special skills and knowledge necessary for the rapid development of these industries in an emergency.

Consequently, when World War II came, Australia found not only her own small Navy, but also large allied fleets drawing on her utterly inadequate repair and maintenance facilities. We did not have even a reasonable nucleus.

● An adequate nucleus of skilled personnel, and the minimum requirements of repair and maintenance facilities and their widespread supporting industries, cannot be developed and maintained without at least a small and continuous naval building programme. A merchant shipbuilding programme will not supply them satisfactorily for naval work.

It was essential that a programme be arranged that would (a) permit continuous building without excessive demand on our resources, or giving us unnecessary ships (b) (c) give Australian shipyards and supporting industries experience of the new and very different techniques and materials that were being adopted in post-war naval construction.

The Daring destroyers provided all these requirements.

Your correspondent's figures and statements, purporting to show the extent of excess costs and delays through building in Australia instead of in Britain, are dangerously misleading, because grossly over-simplified.

Excessive costs and delays in naval building in the post-war period occurred in both Britain and Australia because priority was then given to almost any peacetime requirement, and materials and labour were scarce. It cannot be emphasised too often that once an orderly building programme has been approved and begun, any subsequent hold-up in its progress (whether for political or financial reasons) inevitably increases costs; and excessive delays cause excessive costs. Any builder knows that.

The building of destroyers in Australia produced excellent ships but it did much more than that — it also trained personnel and developed supporting industries and a capa-

city to service any fleet that could not have been developed (and cannot be maintained) without a continuous naval building programme.

Australia can build the ships she requires in reasonable time if the work is given the necessary priority and funds, and if orderly progress is not interfered with.

### FRANCE'S NEW CARRIER

Clemenceau, the aircraft-carrier recently launched at Brest, is the third ship to bear the name of the Prime Minister of France in 1917-18.

The first one was a battleship of the "Richelieu" class, laid down at Brest in 1939, but destroyed prior to the arrival of the German troops in 1940.

The second was a light aircraft-carrier of about 16,000 tons whose first elements were assembled at Brest in 1951, but her building had very soon to be cancelled, owing to a new crisis of "cuts."

The third one is at last afloat, and her trials are expected to take place in 1959.

Tartu, the last of the modified Surcouf type Fleet Escorts, has undergone her trials.

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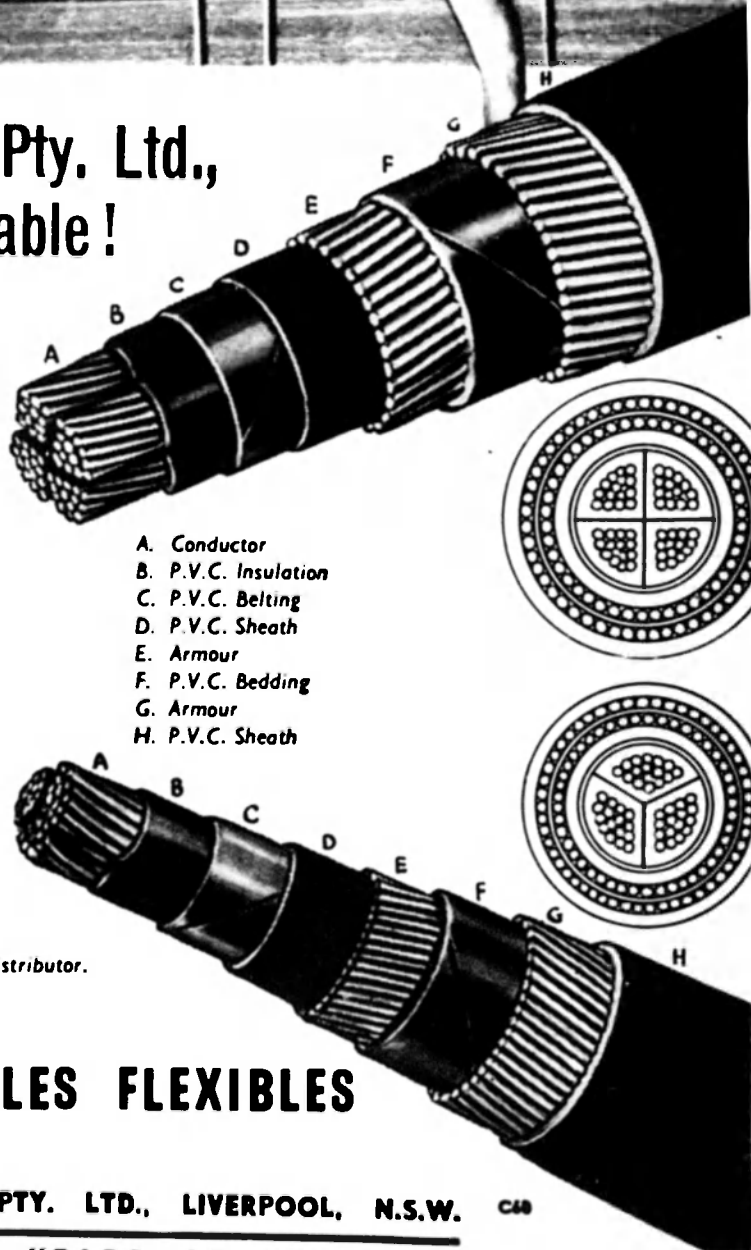
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