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Circulating throughout R.A.N. Ships and Establishments.
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ARTICLES:
Russian Shipbuilding
What Does the Future Hold for New Guinea?
Officers of To-morrow—
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GUNSLINGING IN INDONESIA

Gunslinging is a dangerous occupation. It is dangerous not only for the gunslingers but also for anyone in range.

This is how any thoughtful person must view the Indonesian revolt.

What the Indonesians do is their own affair, so long as it does not hurt or threaten others. If they want to quarrel among themselves it is no concern of ours, or of any other country. Nevertheless, it is uncomfortable to have gunslingers exchanging shots — no matter how poor their marksmanship — outside our front fence.

Shooting affrays have a bad record of growing into more serious conflicts. The shooting across the 38th parallel in Korea led to the engagement of the military forces of four major powers — the British Commonwealth, U.S.A., France, and Communist China — and of many other countries. The shooting in Indo-China spread to such an extent that it ended France’s influence in South-east Asia.

The seriousness of the present shooting lies in two factors: first, it is the closest armed conflict to our shores since the Dutch-Indonesian conflict; secondly, it is no secret that the Communist countries have a strategic interest in the Indies — as also has America.

A country split by civil war is a tempting target for the attentions of big opposing powers. The shooting across the 38th parallel in Korea led to the engagement of the military forces of four major powers — the British Commonwealth, U.S.A., France, and Communist China — and of many other countries. The shooting in Indo-China spread to such an extent that it ended France’s influence in South-east Asia.

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Meanwhile, we in Australia can do little more than hope that if the Indies shooting grows to serious proportions Britain and the United States won’t be too busy elsewhere — as they were when we lost a quarter of our army at Singapore.

The Navy is our first line of defence, but our Navy has been whittled down to such a degree that even taking on the Indonesian Navy (heaven forbid the necessity) would be a highly dangerous adventure.

This is a cutaway drawing of the launching vehicle that placed Vanguard II, the second United States satellite, in orbit around the earth.

The rocket measures 72 feet, two feet longer than the Jupiter-C which launched Explorer I. The 6.4-inch test sphere began orbiting 9 minutes 45 seconds after take off from Cape Canaveral, Florida.

By then, the three-stage launcher had increased its velocity to 19,000 miles per hour. The numbers on the drawing identify the following parts of the rocket.

1. Disposable nose cone.
2. Vanguard I satellite
3. Third stage engine
4. Guidance equipment
5. Second stage tank
6. Second stage engine
7. First stage tank
8. First stage engine

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RUSSIAN SHIPBUILDING
By J. Meister

With the Navy protects the merchant fleet, the latter provides the former with supplies, carries troops for amphibious operations, and furnishes reconnaissance auxiliaries. Soviet Sea Power depends, therefore, not only on warships, but also on merchant ships, inland shipping and the fishing fleet.

The basic factor is shipbuilding capacity. More than 500 building and repairing yards are known to exist in Russia, and another 100 in the Satellites. The most important are located at Leningrad, Reval, Riga, Liepaja, Odessa, Nikolaev, Mariupol, Astrakhan, Stalingrad, Vorkinsk, Saratov, Perm, Gorki, Kollnora, Spask, Vladivostock, Komsomol, Severodvinsk and Murmansk, and at Wiimar, Bowch, Warenmunde, Danzig, Elbing, Gdynia, Stettin, Budapest, Varina, Kolnorn and Galizau in the Satellites.

Russia's present annual building capacity can be estimated at about 150,000 tons of warships, 150,000 tons of ocean-going freighters and tankers, and another 100,000 tons of ocean-going freighters and tankers, and another 100,000 tons of trawlers, fishing boats and special vessels, almost 100,000 tons of self-propelled river and lake craft, and up to 500,000 tons of dumb barges, mostly for inland navigation.

Compared to the 100,000 tons (about 50 per cent of its self-propelled) which the Russian merchant fleet was able to build just prior to World War II, this output shows a notable increase.

In 1928, when the Navy was launched, 39 vessels, 45 other fishing vessels and some tugs and special vessels of over 350,000 tons, and for the period 1926-40 the plan provided for 595 ships of 3,110,000 tons, including 122,000 tons for Russian account.

China intended to build in 1957, at least 111,000 tons of merchant ships.

The East German yards since 1947 have built over 1,000 fishing vessels and large numbers of tugs, river passenger ships and cargo vessels, and more than 90 per cent of these ships had to be handed over to Russia.

The bulk of the ever-increasing shipbuilding output of Hungary, Bulgaria, Romania and even Czechoslovakia also goes to Russia.

Altogether the Soviet bloc's annual building capacity may be as much as 1,500,000 tons, of which over half is self-propelled. It is interesting to note that practically no warship building has been observed in the Satellite yards.

Back in 1911 the Russian merchant navy consisted of only 1,500,000 tons, carrying 11 per cent of world's foreign trade, and in 1925 it was reduced by World War I and the revolution to a mere 200,000 tons of old and worn-out ships.

The first five-year plan provided for the construction of a new merchant fleet comprising ships built at Leningrad and Odessa as well as in Germany, the Netherlands, Denmark and Sweden. The 660,000 tons of merchant ships available in 1932 was able to carry 5.8 per cent of Soviet seaborne trade in Russian bottoms. Tonnage continued to increase until World War II, notwithstanding the fact that Soviet yards were very busy with warships. Orders placed abroad, and also second-hand tonnage, filled the gap, and in 1937 a total of 1,120,000 tons was reached.

In 1939, 872 vessels of 1,300,000 tons were registered in Soviet Russia, with a carrying capacity of over 40 million tons, compared to 4 million in 1924. Of this, 56 per cent was carried in the Caspian Sea, 26 per cent in the Baltic, 21 per cent in the Arctic, 19 per cent in the Black Sea, 8 per cent in the Far East, and 6 per cent in the Arctic. About 50 million tons, or 90 per cent of Soviet foreign trade, was despatched by ship, and almost 6 million tons passed through Leningrad.

Another 1,200,000 tons of shipping fell into Russian hands when the Soviets invaded the three Baltic countries in 1940.

The losses suffered during World War II, more than 500,000 tons, were, however, largely compensated by over 150,000 tons of U.S. lend-lease vessels, including 8,000 Liberty ships and tankers, 400,000 tons of German vessels received after the surrender, and more than 100 Finnish merchant ships, and many requisitioned Rumanian and Bulgarian vessels.

Please turn to page 9

WHAT DOES THE FUTURE HOLD FOR NEW GUINEA?

If you use the words "New Guinea" nowadays, most people will think at once of West New Guinea, and start an argument about the rights and wrongs of Indonesia's claims.

This is, of course, important; indeed, it could be decisive. It could be held that, in the long run, friendship with South-East Asia might suggest to Australia the wisdom of even giving up what we were convinced was our rightful claim to New Guinea. But this is merely regarded as a logical lunacy by the more hard-headed observers of the New Guinea scene, and the problem that faces Australia there has many other facets.

The Australian part of the island of New Guinea comprises slightly under the geographical area and slightly over half the population.

If you regarded the island as an elongated rugby football, you might observe that we administer a slightly smaller eastern half. There is no marked seam from north to south down the middle; the international border was more or less arbitrarily fixed along the 111th parallel of longitude.

In addition to mainland New Guinea, Australia administers a screen of islands to the east, of which the New Hebrides with New Britain are the most interesting and important.

Mainland New Guinea, too, is divided roughly into two, the lower half of east New Guinea is Australia's colony, in the strictest sense. This is our old possession of Papua. The northern half is the former German New Guinea, the area our forces occupied in World War I, which we held as a League of Nations mandate and which, though now administered as one unit with Papua, is still only held in trust to the United Nations.

On the map this looks to be a large land-holding, and those who do their strategic planning...
off the map might well regard Australia's future in New Guinea as bright with economic promise.

But look at a physical map of the area and the snags at once become only too evident. Mainland New Guinea is especially mountainous in the extreme and, in those areas where the steepest slopes do not predominate, rain has filled the plains with water and turned them into swamps. Indeed, as many a Diggei remembers, rain is one of the dominant factors. Rain is one of the worst gifts, in fact, of a typical tropical climate. The academic geographers hold that, since so little of the coast of the New Guinea area is suitable for cultivation, extreme care must be exercised with regard to all agricultural development. The native has been paid to this. The soil-investigation section of the CSIRO has done so good a job I was told in Canberra, that their methods have been copied all over the world. Much thought has been given to typical crops which might be grown in New Guinea. But as soon as you leave the laboratory to take to the tracks, you come up against political problems. Indeed, as many a Diggei remembers, rain is one of the most unfavourable circumstances, the ultimate return is never likely to be stimulating. Take gold, for example. Economics amates like myself have always thought of New Guinea gold-mining as a potentially valuable asset to the island. But it is a sobering fact to learn that though at the end of the war some seven million Papuans, all told — they are very widely scattered and it is not easy to set up experiments. But the reason why, for example, it is still uneconomical to think of having a high school in Port Moresby and why the brightest Papuan children are being sent here to Australia for further education, even at the risk of this permanently unsettling them. Permanent unsettlement is, however, likely to be the lot of a number of peoples in the second half of this century anyway. No native people can be brought into contact with aeroplanes, tractors and bulldozers and be expected to remain Rousseauist.

The question of New Guinea development, it left as a possibly developmental question, is thus largely a question of acceleration or deceleration. The snag is that it is unlikely to be left just to planners. As the West New Guinea situation shows, purely objective factors are regarded as unimportant where sentiment is involved; the Indonesians who have the area at heart are unlikely to think less than about development as scrupulous blue-printers in a Govern ment office in Canberra or Port Moresby.

This is one more question-mark hanging, like Damocles' sword, over the future of all the islands. Shortly after the war, there-
Officers of Tomorrow

THE BP Tanker Company has 300 navigating apprentices selected for training as officers.

In the course of their four-year indenture period they are taught all practical and theoretical aspects of an officer's responsibilities.

This, with the experience they gain in performing a variety of deck duties, prepares them for their first professional examination, which qualifies them to become navigating officers.

A BP spokesman, explaining the company's officer training scheme, said: "It has become increasingly clear in recent years that the navigating officer of today must not only be a good seaman but also a specialist in several fields of learning."

"There is now a considerable amount of technical knowledge to be assimilated. New advances in electronic techniques are constantly being applied to the navigational aspect of seafaring, while the carriage of cargo—oil in particular—is tackled as a scientific problem."

"The company is careful to choose only those who will be able to carry on their shoulders the responsibilities which future years will bring. It is no longer enough for them to know the basic formulae of navigation and the way to splice a rope."

"They must, in addition, acquire a thorough understanding of the wider principles involved in navigational processes and a background of practical work aboard a modern ship, where the use of scientific equipment goes hand in hand with proved practices of seamanship.”

Pictured above are BP Tanker Company apprentices receiving instruction from the bosun on splicing a ten-inch mooring rope on the 29,000-ton oil tanker British Adventure; and, right, an apprentice on the British Sovereign cleaning the binnacle."
THe bulk of this volume consists of discussions, from various points of view, of the strengths, weaknesses and probable future of N.A.T.O., of developments in the methods of warfare to be foreseen in the nuclear age, of the reduction of the British Armed Forces in conformity with the policy decided upon by the Government, and of various aspects of the administration of the Services.

Altogether there account for 11 of the 50 chapters, and are worth close consideration by those who have the welfare and future of the Services at heart and are perhaps, like myself, more than a little apprehensive about the political situation.

In his defence policy, "New Approach" the Editor deals with the present financial problems. His finding is that the Government policy is not so much new as a frank recognition of the ineluctable fact that we have been spending more on defence than we can afford, and must spend less.

The White Paper made no mention of the hundreds of submarines being built by Russia or of any adequate provision lor dealing with them in the event of war; nor about the reduction of the British forces in Germany, and the decision not to proceed with the development of a super-sonic manned bomber aircraft.

Such missgivings are inevitable whenever reductions in the armed forces have to be made, and it is not to be supposed that they are absent from the minds of those on whom the responsibilities of framing the Defence Policy lie.

The choice has to be made between two evils, and the choice cannot be postponed in the hope, perhaps, that Providence will make it easier soon.

Man's material ingenuity has increased the proportion of his military that should be devoted to defending himself against destruction by an equally ingenious enemy. Our defence expenditure in the past per cent of its gross product in the last 10 years, and the proportion in countries of potential aggressors cannot be greatly different.

That liability may well come to be recognized as being a deterrent as effective as the hydrogen bomb. Then, indeed, will be the time for a New Approach to Defence Policy.

In his "N.A.T.O. and the European Scene," Colonel the Hon. E. H. Windham points out that it is surprising but nevertheless true, that there are still Americans who resent that the United States took part in two World Wars. Remembering Pearl Harbour, it is difficult to see how anybody can imagine that they could have kept out of the Second World War, but the last remains that some people apparently do.

The Atlantic Coast and its hinterland tends to look towards Europe; the Pacific Coast and hinterland look across the Pacific, while the Middle West tends to shut its eyes to external facts altogether. The hope for the future must be that new Americans are beginning to feel their power, they will develop the necessary responsibility to use it for the common good.

Referring to the importance of the hydrogen bomb, military history tells us that when a new weapon has been invented it is only a matter of time before a counter to it is discovered, and it is clear that if any effective defence is discovered there will be a certain advantage in being able to concentrate it in a comparatively small area.

It may well be easier and certainly less expensive to defend one large concentrated target than to defend a number of smaller widely dispersed ones. For instance, "Talos," the A.A. guided missile which we have been promised, costs over £70,000, without launching platform or warhead, and when we consider the number required in position and in reserve to deal with even one saturation raid, the advantage of being a concentrated target from this point of view becomes apparent — especially when it is emphasized that "Talos" is one of the cheaper missiles.

The intermediate-range ballistic missile (I.R.B.M.) is alleged to involve an initial cost of as much as £3,000,000 before we begin to embark upon its hydrogen warhead. But there are good reasons why we should indulge in this missile. The capital cost of the plant had already been incurred in making the earlier atomic bombs, so that its production is now comparatively cheap, and being in possession of the capital equipment, we may as well use it.

It is an established fact, generally recognized, that the N.A.T.O. forces on the Continent will make use of all varieties of missiles in the event of an attack from the East and in a general war nothing will be better. This is, of course, the principal safeguard against such a war breaking out. N.A.T.O. policy is not to prepare to fight a war, but by an overwhelmingly strong build-up of defensive strength, to prevent one breaking out.

In discussing the question necessary for fighting a conventional war such as the Korean campaign and the Suez incident, it is the man on his feet who will be needed to bring about the pacification of an area of unrest in minor operations, and from the purely British point of view we should do well to bear in mind that Napoleon's Marshal Bugeaud said nearly 150 years ago: "The British infantry are the best in the world, but luckily there are so few of them."

May we never find at any time in the future that we have once more, as so often in the past, provided ourselves with too few.

Major-General K. R. Brazier-Greath deals with "Limited War" and the effect of New Factors, and shows that with near nuclear parity the recourse to global war as a deliberate act of policy could only be contemplated if there was a reasonable chance of destroying the opponent's nuclear warheads.

The chances of either side achieving this appear to be
Iol nuclear stalemate is apparently reads for instant retaliation, since both are presumed to launch simultaneously. Weighing similar weapons and knowing they would immediately reply with approaching power, a balance of terror is drawn. The nuclear deterrent loses in which global war may lie exhaustion of all other means of war. It would persuade them to cast moment has arrived. Ideas on when the critical point is near "progress" proceeds at its comfortable pace. The Navy, Oxford Street, Sydney, "The Big Friendly Stores" of economy and efficient will be obtained. Of these the most interesting development is the construction of submarines to fulfil special functions stemming from the higher underwater speeds now obtainable. Of the most arresting are those designed to exploit the advantage of higher underwater speeds, from all the oceans of the world, and of the speed and maneuverability and too extensive to be ignored. Particularly effective air-launched "Petrel" missiles can be used in the attack for the destruction of such weapons in ship. Of the minor navies, it is noted that the two destroyers recently launched for Rolling Thunder have been named Almirante Williams and Rivieras, to the two for Colombia in hand in the types of the "Provision" and two for Peru in hand to be known as a helicopter assault-landing ship (L.P.H.A.) to carry 15 aircraft and accommodate about 200 personnel. The construction of a nuclear-powered cruiser of 11,000 tons to be armed with 15,000 tons is on hand and is to be achieved by putting the ship in its present form. No amount of "fiddling with it will cure the trouble. A11 entirely new look is required, and this could only be achieved by putting the contract under a single Ministry, working to a single policy and with a single aim. All that is wanted is an entirely new look, and the American "Terrier" has shown its effectiveness against Russian and American naval torpedoes and guided missiles and also effective in operations in heavy seas. The "Hawk" specializes against the threat of Russian "Lulu," which is fitted with a nuclear warhead and is claimed to have a lethal underwater range. "Thoughts on the new British Defence Policy," by Vice-Admiral B. B. Schofield, shows how critical the situation is. The new British action is notmaculated, and while forced to preserve this expensive weapon the nations may find it useless. We shall be back almost where we started.

With the teeth of the deterrent, limited war in Europe may be regarded by the Communist powers as a safe and profitable adventure. Another in Europe, there is little doubt that the Franco-British action precipitated events before the Russians were ready. But Communist policy has not been reversed, and the Middle East must now be considered the most likely area for limited war. Great Britain will never again participate in such a war alone, but as part of a United Nations contingent. Economic and political must result in standardization and integration with our Allies to make independent action no longer necessary. But national pride would suffer. Perhaps the time has come to swallow the pill, because national prestige, as well as being the most expensive, has been shown in NATO. to be the biggest obstacle to effective international cooperation. "Foreign Navies" are reviewed by Vice-Admiral B. B. Schofield, who shows how certain nations may be emasculated by nuclear propulsion and guided missiles. Although the strategic mobility of carrier groups and their capacity has not been reduced, they will remain a mobile weapon, being dominated by nuclear propulsion and guided missiles. The loss of a nuclear-powered radar-picket submarine of the Montague class, which was recently commissioned at Avoch, is still considered a blow to British power. It is estimated at £75,000,000 per ship has prevented other countries from attempting to build them.

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The Soviet merchant navy maintains at least 14 training and re-fitted ships and as such, they are now eighth on the world’s list and may soon obtain an icebreaker. The Soviet tourists abroad.

Some smaller, non-passerger ships were used to transport prisoners and used as troop and labour transport ships. The number of passengers was limited to two or three per ship. However, this explains the importance of the Russian icebreaker fleet.

Besides some smaller harbours, the icebreaker fleet can be got through and linked to the Russian economy. Finally, it must be remembered that the often quoted possibility of transferring warships through the canals from one theatre to another will be very limited.

The main lifelines of inland shipping are the Baltic, the White Sea through the “Stalin” Canal, and the Arctic through the so-called “Mary” system, a canal built at the beginning of the 19th century and which is now replaced by a larger channel. The “Lenin” Canal permits navigation between the Volga and the Black Sea and the Volga-Moskva Canal forms the link with the capital.

The Navy

April, 1958

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The Navy

April, 1958
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could have disastrous and immediate results. This happened in 1941 when the German troops bombarded and destroyed the locks of the "Stalin" canal.

It must be admitted, nevertheless, that Soviet inland shipping plays an important role in the Soviet Russian economy, and that it represents a notable effort.

FINALLY, a word must be said about the fishing fleet. Back in 1939, the Soviets had 119 trawlers (England 2,475) and 3,150 smaller fishing boats with a catch of about 1,500,000 tons of fish, or 9 kilos per capita.

Of the 3,700 self-propelled fishing vessels which Russia owned in 1941, many were sunk during World War II, but since the war the Soviets received about 50 trawlers and 130 smaller fishing vessels and seine boats have been built abroad, mostly in Finland, East Germany and Sweden, for Russian accounts. Relatively few fishing vessels have been built in Russia, except for the predominance of the "high priority" warship-building programme.

Since 1950, however, the bulk of the warships having been commissioned, the Soviet yards have started building tankers and other commercial vessels in larger number, including fishing boats. The latest programme plans the construction of 175 large trawlers, 1,500 other fishing vessels, 50 refrigerated vessels, three whale factories (one atom-powered) and 800 other ships connected with the fishing industry.

The Soviet is not only trying to fish within the territorial waters of smaller neighbours, but is also plundering the fishing grounds in the open seas. It is all the more depressing, therefore, that so many of the most modern, efficient and largest Soviet fishing vessels have been built since the war by non-Communist yards! These vessels help directly to diminish the catch of Western fishermen, and to raise the Soviet standard of living. The Bolshevik leaders were forced to admit some time ago that Soviet Russia owns less cattle than the less-populated Russia of the Czars; hence they try, with our help, to provide more fish for the average Russian. If they succeed, one more source of dissatisfaction among the Russian population will disappear, and the Soviet system will have a greater chance to remain in power.

Soviet and Satellite shipbuilding capacity would be sufficient for the normal and well-balanced peacetime development of their war and merchant fleets, but would be unable to build enough ships to replace war losses, even if the possible effects of A and H-bombs are not considered.

The seagoing merchant fleet is not yet large enough to be able to carry all Russia's coastal and foreign trade, but this goal may be reached in the near future.

Soviet inland shipping has good material, but suffers from many geographical and climatic handicaps.

The fishing fleet is very important, and its growth seems to continue. The seagoing merchant fleet is still too small to provide in case of war the enormous amount of tonnage needed for supply, troop transport and auxiliary duties; and above all, tanker tonnage is inadequate.

The tonnage of the fishing fleet and inland fleet would be sufficient, however, to provide the Navy with many auxiliaries and to continue to carry on operations for a certain length of time.

—From the London "Daily Telegraph"

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THE NAVY
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WORLD STRATEGY
IN THE BALANCE

France's internal disturbances are a domestic problem for that country, but they are also of acute interest to the rest of the world.

The prospect of French civil war holds a particularly dangerous threat to the Western nations. It could mean France's elimination — even temporarily — from the Western alliance.

That would change the world strategic picture.

So, apart from the natural concern of all decent-thinking people at the prospect of a country stricken by civil war, the inflammatory situation in France has a profound and practical significance for both East and West.

This applies to Australia, even though we are on the other side of the world.

It hammers home once more a lesson which the Australian Government is slow to learn: that we cannot, with any feeling of safety or sense of national dignity, rely on our alliances for our security; that we must provide a strong defence force as our economy will permit; and that our defence moneys must be spent wisely to the best possible effect.

The Royal Australian Navy has become the poor relation of the Australian defence forces.

Yet if war comes the Navy will undoubtedly be called upon to take the initial shock of battle, and to maintain a sustained effort of the highest order throughout the hostilities.

To fulfil this task, the R.A.N. has a token fleet of mainly obsolete ships, a dangerously shrinking manpower, and no apparent prospect of being armed with the weapons of the navies of today — let alone of tomorrow.

It is to be hoped the Commonwealth Government will give earnest thought to the naval element of the nation's defence planning when it frames its Budget for the coming financial year.

May-June, 1958

Sonoran Richard Henninger, of Miami, Florida, who was on guard duty soon after the U.S.S. Nicholas berthed at Woolloomooloo on May 11, talks to four-year-old Mark Preston, of Clovelly, an "unofficial" visitor to the ship, which was closed to the public.

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Young "Stowaway" talks to Guard

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MOVING TOWARDS A NUCLEAR FLEET

WHAT does nuclear power offer? From a naval viewpoint it offers almost limitless endurance at high power without requiring oxygen for combustion. This is, of course, ideal for a submarine. For the first time in history we have within our grasp a true submersible independent for long periods of any contact with the atmosphere and capable of high sustained speed underwater.

As an instrument for surprise attack, against a large fleet (sea or land) it has potentialities which are unsurpassed, and the problems which it poses to the defence are formidable indeed.

The effectiveness of submarines in the anti-submarine role is not in doubt. If we are to have any chance to kill enemy submarines which are nuclear-propelled we must have at least as good, if not better, capabilities.

As a long-term development, the threat of offensive action by ballistic rockets and similar weapons fired from submarines, even when submerged, can be greatly increased by the adoption of nuclear propulsion.

Its strategic and tactical potentialities are so great that nuclear propulsed submarines must surely be regarded as a new weapon of war rather than as an improved existing type.

The American Navy, based on the experimental results experienced with trials of the Nautilus in every conceivable role (except that of a ballistic missile carrier) certainly regard them as of first importance.

As early as 1946 the Admiralty were aware of the potentialities of nuclear power for such an application, but due to the lack of facilities and personnel it was impossible to institute any thing more than the sketchiest preliminary investigations until 1950.

At this time the preliminary design of a land-based prototype for the highly enriched systems moderated, low enrichment reactor was considered, which it was hoped would form the basis of a submarine machinery installation. Investigations showed that the proposed design would be unsuitable and the study was abandoned. It did, however, reveal much valuable information on gas technology which proved useful in the Calder Hall program.

By this time most of the available effort of the Atomic Energy Authority had been diverted to the land-based program.

There is no doubt whatever in my mind that the policy of the country, with its crying need for increasing land power generation, was entirely right in channelling its whole endeavours first to this end.

Coupled with this, the unavailability of fuel material for high enriched systems delayed any start being made on a further study until 1951, when the Dreadnought project was initiated.

Apart from the submarine, where should we aim for the next military application?

In surface ships, the advantages of long endurance at high speed may always be offset against the penalties of weight and space. Reactors, even the most compact of them, tend to be heavy and cumbersome. Therefore, we shall certainly first see nuclear propulsion applied to large rather than small surface ships.

The aircraft carrier, with its need for high speed, is a worthwhile application and it has other particular advantages in that, for the world as a whole, opinion, it will eventually be of great benefit to adopt nuclear propulsion for Fleet replenishment ships, and, therefore, in the benefits widely over the conventional Fleet by very greatly increasing its operational endurance.

From a technical point of view, the problems associated with the application of nuclear power to a merchant ship of a large tanker type, or a fleet replenishment tanker, are expected to be quite similar and, to a large degree, much of the research and development could be dovetailed. It is generally agreed that a tanker is probably the most rewarding application for nuclear vessels — at least initially.

If nuclear power is to be attractive commercially it must be economically competitive.

All studies to date have shown a disparity between the overall operating costs of a nuclear and conventionally powered ship, but, as would be expected, the gap is smaller the larger the ship.

In the early stages of merchant ship development it will be necessary to choose a ship which has a high usage factor and one which is capable of large bulk transport weight.

A tanker most nearly fills these conditions and it is for this reason its thought to be the most attractive proposition at the present time, although the high speeds required for transatlantic liners and some other fast passenger ships, with the consequent heavy expenditure of fuel at these high powers, makes this type of ship another strong candidate for nuclear power. For obvious reasons it is too big a commercial risk for a first venture.

Many people have done economic studies and have, I think, reached roughly the same conclusion. That is, that at the present time, at least approximately a 15 to 20 per cent, increase in running costs of a nuclear vessel over a similar vessel, would appear to be the most economical.

Capital costs and not running costs are retarding the application of nuclear power to commercial vessels at the present time.

All efforts must therefore be directed to reducing the capital charges.

Development is currently going on to achieve this aim.

In land power stations it is now considered that the bringing down of the unit cost by the generation capacity of the same size plant.

If this increased power cannot be so easily utilised, it could increase the speed at which the ship would operate, but since speed varies inversely as the square root of the power, we do not get significant gains in the economics.

We must look, therefore, for other ways. One avenue which appears promising is the use of slightly enriched fuel which can drastically reduce the size and weight of the reactor and its associated shielding. Advantages also lie in the higher operating temperatures and higher efficiencies.

Building prototype plans can be an important step in reducing capital charges. As experience is gained, both designers and manufacturers will develop methods which should lead to manufacturing cost reductions.

In its present infancy, the production of nuclear equipment has, of necessity, only to be carried out on a costly "one off" basis.

Foreign reports tend to confirm these findings as regards the economics of nuclear propulsion. But despite this fact, all effort must be continued on a nuclear program of construction and extensive feasibility studies.

In America the Eisenhower proposal for a large merchant marine passenger liner of about 25,000 tons displacement, is due for completion in 1960.

THIS is predominantly a prestige ship and has certainly not been claimed as economic. Despite this, however, they will have the opportunity of gaining first-hand experience in design, construction, installation and operation of a nuclear propelled merchant vessel.

In addition to this, feasibility studies are proceeding with Governmental backing especially into the possibility of using gas cooled reactors coupled with closed-cycle gas turbines.

The Americans, with less need to develop cheap electricity from nuclear power, are able to put a far greater concentration into the ship problem and will, to my mind, be a
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.

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May-June, 1958

THE NAVY

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The Russians are building a 10,000-ton displacement icebreaker which is due for completion about 1960.

In Japan, design studies of two nuclear ships are reported to be actively in progress. The size, type and power are not known, it has been reported that the maritime administration has allocated an excess of over £1 million for their 1958 budget for the development of nuclear-propelled merchant ships.

We also know the Japanese are particularly interested in their THIR budget for a development of marine propulsion as its main objective, but there is little investigation. However, the Authority has undertaken to tackle the problem of nuclear plants for merchant ships. Only the most preliminary investigations have been undertaken to date.

In Britain, several groups of companies have announced the formation of associate companies whose assignment is the development of nuclear plants for merchant ships. Only the most preliminary investigations have been undertaken to date.

None of course, naval venture can proceed far without the help and, in particular, the experimental housing of the U.K. Atomic Energy Authority. In any case, the Authority has complete control of fuel supplies and advises the Cabinet on reactor safety.

This leads me to one point which I have not yet touched on at all, and which is of primary importance — the question of safety.

With nuclear reactors there is no danger of nuclear explosions in the sense of a small weapons explosion. The worst that can happen would be an accident comparable to a boiler explosion probably due to loss of coolant, but this could have the resultant effect of spreading highly radioactive materials over a comparatively large area and might therefore be quite a major disaster.

One endeavour in reactor design is to choose a system which is inherently safe; that is to say, one in which the loss of moderator or the coolant tends to reduce the criticality of the reactor rather than increase it.

Due to certain fundamental nuclear properties, it is possible to make systems self-compensating, and so reduce the effect of mechanical failures.

The problem of safety in marine plants is, of course, even more difficult than for power stations, since we are faced not only with an unstable platform which prohibits, for instance, the use of gravity for emergency shutdown by control rods, but we must also consider such problems as stranding and sinking.

WHILE many of these problems are formidable, they are, I feel, capable of solution and, as always, the best way of finding out the answer is to undertake a realistic project. It will be necessary to evolve a fundamental philosophy for safety and ensure that design and construction of all marine plants comply with it. It will almost certainly be necessary to use some form of containment vessel for the whole of the primary circuit.

We are well aware of the importance of safety, and as a first step a safety committee has recently been instituted to study the behaviour of nuclear warships in British territorial waters and ports. Besides the Admiralty, members of the Atomic Energy Authority, Ministry of Transport, and Lloyd's Register are represented.

In addition to the safety aspect, there are undoubtedly large ship installation problems which will have to be faced.

The heavy concentrated weight of the reactor pressure vessel and shielding will necessitate specially designed structures and supports which will have to be carefully designed as part of ship's structure.

The siting of the machinery in the ship will need careful consideration, and it is most unlikely that we would be able to install it well aft, since this would result in problems in ship stability and trim.

The positioning of the machinery must also be considered from the point of view of collision, to ensure the reactor is least liable to damage. Overall design of the nuclear plant and associated machinery will call for the very closest co-operation between the reactor designers, marine engineers and naval architects.

It seems to me that people tend to look at the advent of nuclear propulsion as though it were the first time, "NICOSOLVENS" helps you look younger and live longer. The cost is negligible, being recovered in several weeks of non-smoking, then you start saving money. Price: $4/19/6 for Three Day Treatment. Send cheque, money order or postal notes to the sole Australian agents:

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It is necessary to evolve a fundamental philosophy for safety and ensure that design and construction of all marine plants comply with it. Some of them see things looming very near, others would appear to be looking down the wrong end, while others who have forgotten to take the cover off the eyepiece.

None of these views are accurate if we keep our sights on the target of economical operation.

It is always the lot of a new [(Please turn to page 17)]
BRITAIN'S DEFENCE POLICY

By a Special Correspondent in London

A TRIBUTE to the British soldier, sailor and airman strikes the only human chord in the Defence White Paper, recently published by H.M. Stationery Office.

It is a timely recognition that in this era of push-button weapons the efficiency and courage of the man behind the weapons, even if they are controlled from long range or by electronic devices, is the primary consideration.

The White Paper does not pay lip service. It announces increases in pay and allowances for all regular officers and men, with effect from April, the intention to continue improving service accommodation at home and abroad, and steps to remove grievances and anomalies in service conditions.

But the reduction in manpower is to continue in accordance with the policy announced last year. Nothing has so far happened to lead the Government to revise its estimated requirement of combined forces of the three Services of 525,000 by 1962 or to alter its views about the prospects of recruiting.

Within this plan it has more precisely indicated the naval target by authorizing the Navy to recruit up to 88,000 officers and men, but this figure does not take into account locally enlisted personnel, women and the W.R.N.S. or junior ratings. With these additional categories the total will be approximately 98,000.

Peace says the White Paper, is maintained by a balance of arms and there is no military reason why a world configuration should not continue to be prevented almost indefinitely through the balancing fears of mutual annihilation, though that would be a moribund prospect. The ultimate aim must be comprehensive disarmament, which would be pursued by stages.

The West, relying primarily upon the nuclear deterrent, would never start a war against Russia, but if Russia were to launch a major attack, even with conventional forces only, the West would be hit back with strategic nuclear attack.

To conform with this policy the Government requires the Navy to perform three main tasks:

- **In peacetime:** To help carry out Britain's responsibilities in colonies and protected territories, to defend British shipping, and generally to contribute by their presence to the maintenance of peace and stability.

- **In limited war:** To protect sea communications, to escort troops and supplies to the theatre of operations and to give them support in action.

- **In global war:** To make an effective contribution to the combined naval forces of the Western Alliance.

As the Prime Minister stated in a recent speech in Melbourne, the Government does not visualize the possibility that British naval forces will ever be involved in a European war, except as a member of N.A.T.O.

This affects the traditional conception of defence in Home waters and in the Mediterranean, for the White Paper goes on: "Since, apart from fulfilling certain colonial responsibilities, the Royal Navy will be operating in conjunction with other allied Navies, the aim will be to make the most effective contribution to the combined forces of the Alliance, and to equip the Royal Navy to perform all the tasks:—

- different: it will lie to main-

The Navy will continue to keep abreast of the times, some important projects are in hand. A new comprehensive radar and aircraft control system, more advanced than any other in service, has been introduced. A low level tactical bomber (the N.A.9) is being developed and its adoption by the R.A.F. is being considered. The development of a nuclear submarine is proceeding with the valuable cooperation of the United States.

Whatever its shortcomings, the Defence White Paper is more positive as to the role of the Navy in modern war than the 1957-58 White Paper.
Chief Petty Officer K. Edgerton demonstrates to Service medical officers on a model of Sydney the area which would be damaged by an atomic bomb dropped near Balmain. Nineteen medical officers from the three Services in May attended the first course in atomic, biological, and chemical warfare at Balmain Naval Depot.

**M.O.'s IN ATOMIC COURSE**

**Human Factors in Russia's Sea-power**

One of the catch phrases most heard outside Russia is the comforting statement that Russians are not good seamen.

Of course, compared with the British or French, who do much more ocean navigation and are more accustomed to taking risks, the Russian is still somewhat inferior. Remembering the poor manœuvring noted during the Russo-Japanese war, or when the battleship Marat came to the Coronation Review in 1937, things have certainly improved, and many will recall the superb handling of Sverdlov in 1955.

Soviet warships, which between the two world wars paid few visits to foreign ports, now undertake frequent cruises abroad; and Soviet submarines are reported almost everywhere, though most of these reports are probably erroneous. Seamen, which was very important during the sailing ship period, is, however, less important on board a modern submarine, while much depends now on skilled engineers. Although in the Baltic, ice forces the Russians to lie four or five months in harbour, and they have therefore less opportunity to get to sea, they certainly have an excellent knowledge of their own coastal waters and severe Arctic conditions, and these factors should not be underestimated.

Another argument is that the Russians are short of sailors, and this is certainly not true. Russia has never had enough men in her Merchant Navy or Fishing Fleet to provide the navy with sufficient personnel, but this was also true in most of the other countries. However, contrary to experience in the Royal Navy or the U.S. Navy, the Russians never had any difficulty in securing the numbers needed to man their warships, either as volunteers or as long-service (11 years) conscripts. This is the more surprising, as service in Russian warships was always subject to very strict discipline, life was rather dull, and in the opinion of the average Russian their navy does not possess the glamour the British Navy has for every Briton.

The tremendous peace-time strength of the Soviet Navy is by itself proof that the trained manpower is not lacking, with the organized reserves, over 1 million sailors are available.

This is not exclusively an achievement of the Soviets. During the Crimean War the Russians were not short of sailors. Later, during the Russo-Japanese war, they lacked not sailors, but good officers and engineers. According to American statements, the Soviets are at the present time producing more engineers and technicians every year than the U.S.A., and this shortage is therefore not likely to occur again.

The Russians do not have gifted naval leaders, it is yet another statement. Some of the Czar’s admirals were good officers, others not; while the Soviets have not so far produced any Admiral of even average talent and luck.

Up to the Russo-Japanese war Russia’s naval history was one of reasonable success; Admirals Apraxine and Greig (of British origin) and the Prince of Nassau-Siegen gained some notable victories over the Swedes, Ottos, Spiridov, the British-born Elphinstone, Ushakov, and the two Senjavis, among others, were successful in the wars of the eighteenth and nineteenth centuries against the Turks, but the battle of Sinope, when the Black Sea Fleet under Admiral Nachimov defeated the Turks in 1853, was Russia’s last naval victory: and it led ultimately to the intervention of the British and French in the Crimean war.

Other brilliant naval officers, like Admirals Makarov in 1901, Kosen in 1911-15, Elberhardt and Koltschak in 1911-16 died or were removed before they could change the situation.

Most of the Soviet Admirals who came to the top during the Revolution and whose only qualifications were political agitation and brutal killings were liquidated during the purge of 1937-38. Others, like Oktjabrski and Tribulz, Commanders-in-Chief in the Black Sea and Baltic in 1941, showed no leadership at all, fled from Sevastopol and Reval respectively, and disappeared later from the scene.

The importance of foreign officers, mostly English, French and Dutch, and the notorious
Czarist Navy in the eighteenth century was largely recruited from the Scandinavian countries! In the nineteenth and twentieth centuries a high percentage of Czarist naval officers were of Finnish, Swedish and German/Baltic origin, the latter being the most able and reliable servants of the Emperor. The Czarist Navy is, on the contrary, almost entirely composed of "true" Russians. Few Russian monarchs and political leaders have been sea-minded. The most gifted was Peter the Great, who re-created the navy in 1700 and took part as a naval officer in several battles. Catherine II and Paul I, Alexander II and finally Nicholas II also showed some interest in naval affairs. Lenin, I. Alexander III, and finally Nicolas II also showed some interest in naval affairs. Lenin, I. Alexander III, and finally Nicholas II also showed some interest in naval affairs.

But all this courage and stubbornness could not replace the lack of tactical skill: and even the sacrifice of over 6,000 Russian sailors could not wipe out the fact that Admiral Nielpogatov surrendered in 1915 under the close-range gunfire of two German battleships. Even the battle of Tsushima, the worst naval disaster not only of the Russian but of all modern history, still the main cause of the bad reputation of the Russian Navy, witnessed some outstanding acts of bravery. The ships Netskaya, Admiral K. Romodanowski, and Admiral Ushakov, Vladimir Monomach, Stepan Kraav, Navarin, Dimitri Domnkoi, Blaesbachetti, Bacquereaux and others above all sent heavy blows in an outstanding manner until the bitter end: from several ships nothing was saved and some of the commanding officers refused to leave the sinking ships.

IHE Soviet ship fought for the last and many of her survivors left swimming in the cold water refused even to be saved by the Germans.

Some people said a few years ago that the Russians cannot build ships or, at least, no fine ships. The new cruisers, destroyers and submarines have proved in the meantime how wrong these "experts" were. Russia, like every other nation, has built from time to time bad ships, like Admiral Popov's circular batteries and the interior battleships before World War I, or the cheap torpedo boats constructed under the first five-year plan, the top-heavy leaders of the "Leningrad" class, and the submarines of the "P" type. But there have always been also very outstanding ships, like the icebreakers, minelayers and powerful destroyers built before 1917, and the submarines and destroyers launched prior to World War II. Four 52,000-ton battle cruisers built in 1916 and two 35,000-ton battleships on the stocks in 1911 were, however, never commissioned.

After the war of 1905 the Russians cast some excellent guns with outstanding ballistic performance and very long range. Their shooting was often poor but not good enough to obtain quick and decisive results. At Tsushima they had obtained a reasonable number of hits but their poor
Mines have already been analysed in a previous article, but it is worth mentioning that Russian torpedoes (the first Whitehead torpedoes were used in the war of 1877-78 against Turkey) were always very reliable, and the results obtained in all their wars, especially in 1904-5 and 1914-17, were very unsatisfactory. New types of torpedoes have been introduced since World War II, but torpedo manufacture is still precision work, and in this the Russians have never excelled.

Whitehead, tried out in 1905, was badly handled during the war with Japan, but much improved and cleverly handled during World War I. The Soviets, however, forgot all about it, and Soviet ships in 1911-15 were very talkative, and the coding was so primitive that the German officers were able to decipher almost all their messages as written in plain language. The same loss of quality was observed in the field of naval intelligence. The Czar's navy had one of the best secret services of the world.

Fred T. Jane remarked in 1905 that Russian officers often had secret foreign signal books and so on before these books were distributed to the officers of the navy ahead aimed at keeping ten or. One would expect that the secret services, with the help of sympathizers in all navies, would have been even better informed, but World War II proved the contrary. The Soviets fell promptly into every trap the German Navy set, with surprising speed and with rare intelligence, and it was only given away. Soviet intelligence material about foreign navies is often surprisingly current and accurate. But the inclusion of foreign navies is not the admirable breeding ground for good and reliable intelligence.

FROM these examples and flashbacks we may conclude that the Russian, sailor, though not very flexible and not always skillful, is a very brave fighter if his patriotic feelings — still very strong in an old-fashioned and sentimental manner — can be aroused. And this the Soviets will not fail to do again. The Czarist navy was usually at the beginning of the twentieth century to appeal to the patriotic feelings of the Russian masses, nor was it willing to give them the necessary political freedom and economic security. As in all countries, labour was most affected, while the new ideas, and as navies absorbed most of the skilled workers, the sailors were the spearheads of revolution. The Russian Navy suffered from revolts and mutinies in 1901, 1903, 1906, 1907, 1912, 1916, and 1917. Each time officers were killed in the most brutal and cowardly manner, and the terror-system of the early Bolshevik government took the place of the secret discipline. The Czarist navy had one of the best secret services of the world.

The Czar's navy had one of the best secret services of the world.
SUB. ATTACKED OFF CELEBES

The Royal Navy submarine Aurochs was completely prepared when attacked by an unidentified aircraft off the Celebes Islands on May 17, its commander, Lieut.-Commander C. A. J. French, told reporters when the submarine berthed in Sydney.

In his description of the attack, Lieut.-Commander French told how the submarine escaped serious damage by diving deep and altering course. He said: "I was on the bridge taking a sight with the officer of the watch and two lookouts. As soon as I heard the guns I gave the order to dive. We were out of sight about four seconds after the first burst. The aircraft was flying high, travelling north, while we were travelling south. It turned and came in at us from astern, and when we were machine-gunned, I gave the order to dive."

The Aurochs, at present serving with the Royal Australian Navy, had been away for 91 days exercising with the SEATO fleet in Far Eastern waters.

Aurochs was not hit and there were no casualties.

Lieut.-Commander French said that after leaving Manila, the Aurochs had an uneventful voyage until just after dusk on May 17, when the attack occurred.

Pictured (right) are the crew of H.M.S. Aurochs lining the deck after the submarine had berthed in Sydney.

None of the crew of 60 were injured. Most of them did not know of the attack until the submarine dived suddenly. Lieut.-Commander French said that most of his crew had never been under fire before. "But I don't think they were particularly worried," he said.

NEW PACIFIC SERVICE

DATES for the first voyages of Orient & Pacific Lines' new operations in the Pacific, linking Australia with the Far East and with North America, have been announced in Sydney. Orient & Pacific Lines combines two of the world's leading shipping lines (P. & O. and Orient), and will provide the largest shipping service ever to operate in the Pacific.

The new links will complete an important triangle in shipping services.

The first of the new voyages embrace two sides of the triangle. It will be made by the Himalaya to leave Sydney March 18 next year and proceed via Auckland, Suva, Honolulu, and Vancouver to San Francisco, then via Los Angeles calling at Honolulu, Yokohama, and Hong Kong before leaving the Pacific via Singapore and Suez for London, where she is due on May 28.

The second of the new voyages will be a North Pacific crossing by the Chusan from Manila on May 9.

The third new voyage will be by the Himalaya from Sydney on August 7, proceeding via the original route to Manila, then south through Torres Straits to Sydney.

Last of the 1959 initial voyages also covers the complete triangle. It will be by the Uranus, leaving Sydney on October 27 for Manila, Hong Kong, and Yokohama and thence to Honolulu, Vancouver, San Francisco and Los Angeles and south along the established trans-Pacific route to Sydney via Honolulu, Suva and Auckland.
Coaster's Story

"The Coal-scuttle Brigade," by Alexander McKee (Souvenir Press)

The glamour and the high-lights left on the actions of the warships; but there was also a substratum company of quite interregional scoopiness. Small craft, who, virtually sitting ducks for enemy guns across the Channel and any wandering dive-bomber on any moving MTB, persisted stubbornly and against all odds in carrying war cargoes on a cumulatively vast scale.

This is their story, and it makes clear one further stage in the overall pattern of the victory at sea.

There is inevitably what may be termed a Spencer Tracy touch about this account, but full justice to the little ships could truly only be done by some modern Kipling, who the author is far from being.

Nevertheless, here is yet another proud story of the heritage of the sea, but it is one that is necessarily singularly devoid of admirals but richly sprinkled with many a miser as master of his craft in more senses than one.

— B. J. H.

Naval Helicopters

"Hovering Angels," by John Frayn Turner (Harrap)

The first Royal Naval helicopter squadron, No. 705, was formed in 1947 and a few then we have had little but the occasional press report of a rescue carried out at some point round our coasts to remind us of the magnificent service these aircraft have rendered.

The appearance of Mr. Turner's book, giving a very lively account of the work on which naval helicopters have been engaged over the last decade, is therefore all the more welcome.

Up till now we knew little of what the Fleet Air Arm undertook in helping the Army to suppress the communist bandits in the jungles of Malaya from October, 1952, onwards. Or of the splendid work by helicopters in the following year during the disastrous floods in Holland and the earthquake in the Greek Ionian Islands. All these exploits and many more are told in "Hovering Angels," and there is an interesting opening chapter on the history of the development of the helicopter from early days.

— R. S. D. A.

Gallantry and Resource

"San Demetrio," by Calum Macneil (Angus and Robertson)

The magnificent story of the San Demetrio has now been told by Calum Macneil, a native of the island of the same name and a member of her ship's company when she was sunk in World War II.

Born in 1775, the eldest son of the ninth Earl of Dundonald was destined by his eccentric father, who designed for him an old uniform, for a career in the Army.

But, many of his relatives having been naval men, he succeeded in joining the Senior Service, wherein he greatly distinguished himself, not least when, as a young officer, he wrote a letter to Earl St. Vincent, the First Lord, which today would mean immediate court martial.

It is wonderful to read of the men of the San Demetrio.

— H. B.

When told by Customs officials that he must pay full duty on gold candlesticks taken from the enemy he broke them into small pieces and passed them in as old gold, which was duty free.

Among his activities was the part he took off the north-east coast of Spain, in urging more active resistance against the French.

Mr. Macneil does not mention the bundles of his extremely outspoken letters which can be seen today, tied up in ribbons, at Gurnea's town hall.

There is a full and most interesting account of what Cochrane accomplished in Chile, Peru and Brazil.

— M. A.

Personal Notes

Captain G. C. Oldham, D.S.C., R.A.N., has been appointed Fourth Naval Member of the Australian Commonwealth Naval Board, with the rank of Commodore, second class.

He is the first R.A.N. officer to hold this appointment. Up to now it has always been held by officers of the Royal Navy.

Captain Oldham entered the R.A.N. College in 1920, and during the pre-war years he qualified as an observer in the Fleet Air Arm, serving with the Royal Navy in the aircraft carriers Glorious and Eagle and in the Royal Australian Navy in the seaplane carrier Albatross.

He had a distinguished record in World War II. He was mentioned in despatches for bravery on the cruiser Australia, in which he was serving, was attacked by Japanese aircraft in the Battle of the Coral Sea, and was awarded the D.S.C. for his skill, determination and courage while serving in the cruiser Shropshire in operations in Leyte Gulf.

He was mentioned in despatches a second time for his services in the Shropshire in the Lingayen Gulf.

After the war Captain Oldham served as Joint Secretary of the Chiefs of Staff Committee in Melbourne during 1945-46, and, then assumed command of the Tribal class destroyer Warramunga from 1946-48.

From May, 1948, until October, 1949, he was Director of Naval Intelligence at Navy Office, and later Captain of the cruiser Australia from 1950-51.

In August, 1951, he was appointed Captain Superintenden-

tent of the Garden Island Dockyard, Sydney, and from August 1953-55 he was in command of the aircraft carriers Sydney, and Chief Staff Officer to the Flag Officer Commanding H.M.A. Fleet.

In 1955-56 Captain Oldham served in the appointment of R.A.N. Liaison Officer, London, with the rank of Commodore Second Class, and subsequently he successfully completed the 1957 course at the Imperial Defence College, London.

N.O.I.C., South-East Aust.

Commander G. L. Fowle, D.S.C., R.A.N., formerly Naval Staff Officer to the Department of Supply, has been appointed Naval Officer-in-Charge, South-East Australian Area, in the acting rank of Captain.

Commander Fowle had a distinguished record in World War II for most of which he was in the Royal Australian Navy and the Royal Navy.

He was Gunner Officer in the cruiser Hobart when she was torpedoed by an enemy submarine south of Guadalcanal.

He was awarded the D.S.C. for the part he took in the bombardments of Cebu, Tarakan, Wewak, Brunei Bay and Balikpapan after the Hobart had been repaired.

He was still serving in her when she was present at the Japanese surrender in Tokyo Bay.

Early in the war he served in the R.A.N. cruiser Canberra and then went to the United Kingdom in 1940 to specialise in gunnery.

He commanded a Dutch motor vessel which assisted in the evacuation of women, children, other civilians and troops following the fall of France.

He has held various appointments since the war. Among them was the command of the Tribal class destroyer Bataan from October, 1953, until December, 1954.

R.N. Promotions Etc.

The following changes on the Flag List have been announced:

Promoted to Admiral: Vice-Admiral Sir Gerald V. Gladstone, K.C.B.


The future of steam for marine purposes is not by the latest Babcock develop-

ments, which are confined to the over 50 years' sea experience. At sea, the Babcock Beller Plant.

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Engineering and Construction

May-June, 1958

The Navy
**THE NAVY**

The latest Admiralty statement on Royal Navy ship strength reveals that it has in commission four aircraft carriers, seven cruisers, one trials guided weapon ship, 26 destroyers, 39 submarines and 51 frigates. It has 11 frigates and five submarines under construction, and, of course, the three "Tiger" class cruisers.

Ward ships listed as "ordered" include four guided weapon destroyers and 11 frigates.

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**Naval Exercises**

Spectacular sea-air exercises in which the Royal Australian Navy has been playing an important part ended in the Southern China Sea on April 2. The exercises were carried out by a British Commonwealth force commanded by the Flag Officer Commanding the Australian Fleet (Rear Admiral H. M. Burrell, C.B.E.), and aircraft of the Royal Air Force based on Singapore.

The main purpose of the exercises was to give officers and men practical training in the protection of a supply convoy at sea and to give those in the remaining part experience in convoy interception and "destruction.

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**The Scimitar Squadron**

The Royal Navy's first squadron to be equipped with the Vickers Scimitar twin-jet interceptor fighter is to be formed in Lowestoft, Scotland, in June. Later the squadron will embark in the carrier Victory, and other carriers will eventually have the same type of aircraft.

The Scimitar will replace the single-jet Sea Hawk, officially designated as an interceptor fighter, the Scimitar can carry out ground attack and reconnaissance, and strike with nuclear weapons.

As a means of delivering nuclear weapons, it is first of the class with the Royal Navy.

Described as "giving the Navy an entirely new potential," the Scimitar has swept wings and is powered by two Rolls-Royce Avon turbojets.

It has a "bounced flap system" to increase the lift and reduce landing speed.

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**More G-M. Ships for U.S.**

It is reported that the plans for a second nuclear-powered carrier have been shelved and that instead a number of submarines carrying guided missiles are to be built.

The keel of the nuclear-powered cruiser Long Beach, which is to be armed with guided missiles, is to be laid at the Quincy yard of the Bath, a division of the Vickers-Swindenorton branch.

It is expected that she will be the second ship in the class of the "Salem" class carriers that have been delivered or are under construction.

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**New Peroxide Submarine**

The second of the experimental high-speed peroxide submarines, H.M.S. Excalibur, has been accepted into service with the Royal Navy on March 22 from her builders, Vickers-Armstrongs, of Barrow-in-Furness.

The Excalibur will provide a fast underwater target to train surface forces in the tactics which would be required to destroy submarines with high underwater speeds. She will achieve a maximum speed of over 25 knots.

She will not be armed, and her peace-time complement will consist of four officers and 19 ratings.

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**To the Shipbreakers**

The cold defence battleship Sverige and the former armoured cruiser Fijiya, have gone to the shipbreakers. The latter was presented to Sweden in the 1911 Coronation Review and was sent over to convey the body of the great scientist and evangelist Emanuel Swedenburg back to Sweden.

She was listed as an armoured cruiser by virtue of a 1 in. belt, later rebuilt, in the foremost of her three funnels, and became a school ship.

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**SEA CADET ACTIVITIES**

By D. J. MORT, Administrative Officer, N.S.W. Division A.S.C.C.

THE absence of Sea Cadet News from the "Navy" might give the impression that the Corps has been inactive. Far from being inactive, the N.S.W. Division had a lively half-year of activities, which has included "Training Week Ends" in H.M.A. ships and establishments.

Also we have had continuous training courses in H.M.A.S. Penguin and H.M.A.S. Warrego, all of which have been of immense value, not only in professional training, but in discipline and comradeship training.

While it is necessary and good for a cadet to have individualism in regard to his unit, it is also essential that he becomes Corps-minded as well.

Annual Athletic Carnival, September, 1957: Although the carnival did not produce Olympic champions it did show that keenness to win which inspires the spirit de corps.

T.S. Tobruk won the Stamina Cup for the aggregate point score, and the Annual Continuous Training Course: This was held in the H.M.A.S. Penguin from January 3 to 13 this year. Twenty-five cadets from all units (A.C.T.) attended this camp and in his report Lieutenant O'Connell, of T.S. Sirius, made special mention of the standard of these cadets.

Lieutenant O'Connell made special mention of Cadet Leading Seaman Hunt, of T.S. Canberra and Cadet Petty Officer Ian Pirie of T.S. Warrego (now T.S. Sirius). Both cadets were outstanding in their efficiency in organising and running the routine set down.

May-June, 1958

Shotters among the cadets. Who knows, "Kings" might be the next step?

Regatta: A sailing and pulling regatta on Sydney Harbour on March 29 was a great success. Many parents and friends attended and made a picnic day of it.

Sailing: T.S. Sydney (Sub-Lieutenant Jackson) 1, T.S. Warrego (Lieutenant Grant) 2. All other whalers failed to make Fort Denison and had to withdraw.


The Division's rifle shooting
SATELLITE LAUNCHING

THIS picture shows the launching from Cape Canaveral on March 17 of the U.S. Navy rocket which placed the first test satellite, the Vanguard, into an orbit.

The test sphere measured 6.1 inches in diameter and weighed only 31 pounds. It carried two radio, one powered by solar cells designed to draw their energy from the sun and the other by conventional batteries.

Overall length of the Vanguard rocket, built by the Martin Company of Baltimore, is 72 feet, 2 feet longer than the Jupiter-C, although only one-third as heavy.

TWO PROBLEM STUFFS

FOR 50 years a curious little turret ship could have been seen swinging round her bows in the upper reaches of Portsmouth harbour, or pushing her stern up to Spit Fort for firing practice — the Glutton. Nobody knew why she had been built or what service she could conceivably have performed — she was just the Navy's curiosity and accepted as such.

In February, 1968, the Board had asked for a "low mount" of moderate speed and the smallest possible dimensions, capable of carrying the 12-inch guns. The Lady County, novice in her class, was only 100 feet long and so was the object of interest. Unfortunately the weather was not too good, but despite a few cases of seasickness, the cadets had a good day out.

Queen Mother's Visit: Eight cadets from T.S. Condamine (Manly) had the honour to attend the car during the Queen Mother's visit to Manly.

Cadet Leading Seaman Earl was the lucky one to stand by the Queen Mother's car and open the door of the car when she landed at Manly.

Cadet P.O. Hockey was the other lucky one to attend the car when the Queen Mother returned to the embark in H.M.A.S. Quiberon.

The cadets received special mention over the A.B.C. when they were looked at and were smart in carrying out their duties. They wore No. 6 Dress (white uniform with blue collars).
age of armour of any British armoured ship. Her range was simply a prolongation of the hull plating without any armour reinforcement, and if employed would have been as much a menace to her own safety as a weapon of offence.

As a warship she stood out as the acme of uselessness. Having the freeboard of a harbour defence ship combined with that of a draught of a sea-going one, and carrying the heaviest guns of draught of a sea-going one. and the acme of uselessness. Having

COMMISSIONED in May, 1872, for the Dockyard Reserve as a tender to the gunnery school from June-August, 1872, at Portland, and during the 1887 manoeuvres was quartered on the Thames Estuary, together with the Prince Albert. She went to the shipbreakers in 1902.

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H.M.S. Victorious: A Rebuilt Aircraft Carrier

DESCRIPTED to me by her Commanding Officer, Captain C. P. Coke, D.Z.O., R.N., as the most modern aircraft carrier in existence. H.M.S. Victorious was commissioned for service at Portsmouth on January 11, 1958, nearly eight years after she entered H.M. Dockyard at that port to be prepared for almost entire rebuilding.

I spent some hours making a tour of the rejuvenated vessel, and there is certainly a ship of which both the Admiralty and the Dockyard can justly be proud. She is the first aircraft carrier in the Royal Navy to be fitted with all of the latest and heaviest air-torpedo, mirror sight deck landing aids. Her two modern steam catapults while their landing will be facilitated by two of the most up-to-dateable types of mirror sight deck landing aids. New high speed lifts have been fitted with a combined platform area double that of those in the original ship.

To supply power for the catapults, larger boilers of much higher output have been installed and the whole capacity of the ship's auxiliary machinery has been increased, including more steam dynamos, evaporating plants and air conditioning plants. New larger capacity aviation fuel systems have been fitted with filters designed to give a much higher degree of purity to the fuel.

The main machinery can be remotely operated, so that in an atomic attack it can be controlled from a centre supplied with filtered air, while the electrical system has been removed completely and the equipment used is in advance of any afloat at the present time.

The generating plant would be more than enough to supply the daily electrical needs of 2,000 houses.

The reconstruction of the Victorious demanded 800 miles of electric cables, 10,000 lighting points, ten miles of ventilation trunking, and 17,000 square yards of linoleum. Some 130,000 castings were worked into the ship.

According to the manager, constructive department, the most complicated and intricate part of the rebuilding was the island.

This appears to be small by present-day standards for the size of the ship, and every effort was made to keep it so in order to give the maximum available flight deck area. The siting of the two carrier operations rooms, radar display room and associated compartments below the flight deck level has enabled the size of the island to be kept to the minimum.

Features of its outline are the large radiator aerial — the first of its size to be mounted in a warship — and a conventional lattice mast at its after end and aft the funnel.

The most striking feature of the new Victorious is her fully angled deck. An angle of 83 degrees has been achieved by extending the flight deck outwards for 41 feet on the port side for a length of 120 feet. It overhangs the ship's side by some 54 feet. The extension is supported by an enormous I-section bracketed to the ship's structure.

The overhang represents a two modern steam catapults while their landing will be facilitated by two of the most up-to-dateable types of mirror sight deck landing aids. New high speed lifts have been fitted with a combined platform area double that of those in the original ship.

Her sea-going qualities were well spoken of on the Pacific station, but it must be admitted that she had to be recalled owing to ammunition difficulties. Being the only ship on the station with 16-inch guns, there was no reserve of ammunition for them; her captain had ordered not to carry out 16-inch target practice because it was an expensive business sending out heavy

For Sea Cadets

By R. V. B. BLACKMAN — in London

It is officially stated that the modernisation was deliberately planned to enable all of the latest equipment and developments to be incorporated.

The virtually rebuilt Victorious is not only capable of landing the latest and heaviest aircraft of the Fleet Air Arm, which can be operated from the flight deck, but also from the hangar deck. A double side elevator has been fitted, so that planes can be lowered and raised without the need to use the flight deck. The hangar deck has also been lengthened by some 60 feet, and is capable of handling 30 aircraft. The hangar can be closed in bad weather, and the deck has been strengthened to take an increased weight.

A completely new lift has been fitted to carry aircraft between the hangar deck and the flight deck.

The hangar deck has been shortened, and the accommodation for the aircraft has been increased. The hangar deck has also been strengthened to take an increased weight. The hangar can be closed in bad weather, and the deck has been strengthened to take an increased weight. The hangar deck has also been shortened, and the accommodation for the aircraft has been increased.
compromise between the claims for the most efficient light deck layout and the need to reduce the risk of damage in a seaway.

The light deck, just over 775 feet long, is strong enough to take the heaviest loads. The main hangar is divided into two sections by a fire curtain of asbestos cloth. The usual spray ing arrangements are fitted, and the main hangar can be sealed off by hydraulically operated hangar doors. The lifting area of the hangar extension, which is equipped to serve as an electronic servicing bay, can be cut off by a conventional type of fire curtain.

The upper gallery deck of the Victorious is unique in a British aircraft carrier. It is continuous for the length and full width of the ship. Situated immediately below the light deck and above the hangar, it is, in effect, a development of the deep beam system of the light deck, the beams being deep enough to provide the necessary headroom for accommodation and office spaces. Fore and aft access on both sides of the ship is provided at this level, the space gained through this extension being utilized for accommodation and dining halls. It is air-conditioned and fully lagged because of the exposed deck above.

As regards accommodation, as far as possible the latest standards of habitability have been adopted. Single cabins are provided for all officers. These occupy less overall space than the double and dormitory cabins used in the past. The arrangements provide for bunk sleeping for all ratings, dining halls for junior ratings with separate messes for senior ratings. Many of the messes are air-conditioned.

The main electric generating capacity of the ship has been increased from 2,100 kilowatts to 2,600 kilowatts, including additional diesel generators.

The radar fitted in the Victorious operates on the novel principle of 'discrimination radar, with a high power output. It gives the information provided by the radar, enabling the Admiral or Captain to see at a glance the tactical situation in an instant in any section of the sky for miles around him. Electronic computers provide greater accuracy in the control of modern high performance fighters operating in conjunction with each other. A further new high discrimination radar, with a computer is also fitted to 'talk down' to aircraft on to the deck in all weathers.

The damage control and A.E.C. facilities on the ship have been arranged on a much bigger scale than for previous aircraft carriers.

The chapel, which seats some forty-five persons, contains a stained glass window and ancient carvings from the battlefields. It also has its own altar, with the roll of honour of the Victorious from her last commission.

H.M.S. Victorious was originally built by Messrs. Vickers Armstrongs Ltd., Newcastle-on-Tyne. She was laid down on May 1, 1937, launched on October 11, 1939, and completed on May 15, 1941. As rebuilt she has a displacement of about 40,000 tons and is armed with twelve 5-inch guns, six 30 mm. Bofors anti-aircraft guns, and four three-pounders.

Before May 1911, and May 1913, the Victorious and her aircraft were active in many actions against the enemy. Air operations were launched against the Bismark and Tirpitz in 1911, 1912, and 1914, while her personnel of officers was increased to serve as an escort duty in the North Sea and Malta in 1912.

That year the air group from the Victorious covered the North Africa landings and in the following years of the war launched strikes against land targets in New Georgia, Northern Sumatra and Borneo.

On May 9, 1915, she was hit on the flight deck by a Japanese kamikaze suicide aircraft, but within a few hours she was in action again. More than twenty air squadrons served in the Victorious during the Second World War.

Now, the seventeen-year-old ship has been rearmed. All her sisters, the Formidable, Illustrious, Indomitable, Implacable and Indefatigable, have been broken up, but the Victorious lives on to keep company with carriers Ark Royal, Eagle, Albion, Bulwark and Centaur, the capital ships of the modern fleet.

Smaller Ports in U.K.

Two of the smaller ports have been in the news in England in recent months. The harbour at Whitstable became the property of the Whitstable Urban District Council, having been purchased from the British Transport Commission.

Smaller Ports in U.K.

The competition is open to children aged 6 to 14 throughout Australia.

More than 3,000,000 line drawings of three basic rules for road safety will be distributed in March for a road safety colouring contest. It is hoped that the competition will be opened by the Commonwealth Minister for Transport, Senator Parkes, on June 18.

This photograph was used as a basis for one of three road safety drawings in the BP children's road safety colouring contest, to be opened by the Commonwealth Minister for Transport, Senator Parkes, on June 18.
TRIP INTO SPACE

America's X-15, first craft designed for piloted penetration of outer space, is well along in the development stage, according to a recent announcement by the U.S. Department of Defense.

SCHEDULED to be test flown some time next year, the pencil-thin ship is being built for the U.S. Air Force, Navy, and National Advisory Committee for Aeronautics by North American's Los Angeles division.

Tentative plans call for launching the X-15 into space at Edwards Air Force Base in Utah and landing it at Edwards Air Force Base in California.

Continuing

TWO PROBLEM SHIPS

From page 26

shells all the way round the Hoorn. (She was to go to the magazines at Enkhuizen.)

Architecturally, the Shannon's most distinctive feature was in her armour belt. In place of the complete armour belt Chief Constructor Barnaby had cut this down to 60 ft. from the bows with a 9-inch transverse bulkhead, and from the lower edge of this to the upper. The other half-bulkhead ran down to the ram 10 ft. below water, leaving a space between it and the lower deck to be filled by coal bunkers flanked by stores and the cable tier. This system was regarded with dismay and suspicion as a subterfuge — especially in the "Admiral" class — but in course of time was accepted as a reliable and adequate method of safeguarding the water line in lieu of, or as an adjunct to, armour. With a full ship it was intended for sailing more than she was for being blown up. Her engines were driven by high-pressure steam of 70 lbs. per square inch, her best being 12.2 knots. Her bunkerage was only 569 tons full load. As there was fixed at 569 tons full load and she was sent to the Channel Fleet for a shake-down cruise to see how she fared, and then to the Mediterranean for a few weeks, before going to China. She arrived there in April, 1878, but was ordered home in July for further alterations. Another ship in the Channel, followed to see how she fared, and then to the Mediterranean for a few weeks, before going to the Pacific in July, 1879. Reduced to Fleet Reserve in May, 1893, and Dockyard Reserve in January, 1898, she was sold in December, 1899. And so of her 21 years' service, exactly three were spent on foreign stations: 10 as a coastguard ship, and nearly four in Reserve, with four passed in repairs and refits.

In war it was the unexpected that mattered, and what Lawrence had said was nonsense. It was the heavy weather that would decide. He walked over to the compass platform. "Wind began to get up about an hour ago, sir," he said.

Inchcape nodded and gazed into the distance. "And now, all that remains of the Boatswain's Mate," he said, "is a mark on the chart."

From without came the voice of the Boatswain's Mate, "Hands darkenship."

Harding turned and closed the door behind the man. "I wonder," he said, "if the ship knows that her sister has died?"

Inchcape found it difficult to sleep. The picture of Laxton sinking in the storm posset continuously in front of his eyes. Despite the weather report through, the storm in which that cruiser sank Laxton had altered course and is coming down on us."

During the day the wind increased, and by the afternoon it was blowing a full gale. The short day had already drawn to its close and it was now almost dark. The ship yawed wildly in the heavy weather, standing alone on the starboard wing of the bridge, thought longingly of his cabin, and tried to reconcile himself to yet another night of vigilance.

And yet — Laxton and the convoy had died in this storm. But who said she would have died? And was it true. The ship did keep veering to port — almost as if something was driving her toward the centre of the storm as quickly as possible.

He stirred impatiently. What on earth was he thinking? This was nonsense. It was the heavy quartering sea. That was why she had dropped the anchor. He walked over to the port side of the bridge and looked over the side. The sea seemed...
taints tinged with a shade of green, even the darkness seemed to be permeated with it.

Debroy walked over towards him and nodded overside. "Saw this sort of thing in the Pacific, sir, but never here." His voice was deliberately casual.

Inchcape was right. The centre of the storm was highly charged with electricity. His mind went back to the days before the war. He remembered passing through such a storm and a majestic and awesome sight it had been. Despite himself, he thought of Laxton again. So it was thus that she had died, and those with her.

The wind was dying down now — they must be very close to the centre.

Suddenly the voice of the port look-out came to his ears. "Ship. Red 40" he said shrilly. Inchcape swung round. The green light was increasing rapidly in intensity, and he could see lumbering towards him, a large tramp, smoke pouring from her solitary funnel. She was not more than three cables length away, and they were on converging courses.

"Watch your course." He turned, and fascinated, watched the other ship.

It was a scene he knew lie had never forget. The huge, rolling masses tumbling waves, the stillness, the vast, faceted faces of the men around him, the ship on the water — ghost ships running from a ghostly enemy.

The picture vanished, and then suddenly, broad on the port bow, another ship came into view. From her side flashes of orange light flickered and he realized that she was firing.

"It's Laxton," he said quietly. Inchcape looked up at her steel sides and waited for the sickening crash as they collided, but nothing happened. The ship seemed to pass over and through them, and then her stern showed on their starboard beam.

He walked over to the starboard side of the bridge. The wind had died away, but the sea was heaped up in huge rolling masses coming from all directions, that reared and broke in a welter of green white foam.

Inchcape turned towards him as he approached. His deep-set brown eyes looked strangely alive.

"It's getting lighter, sir," he said. "We shall soon be in the centre."

Despite himself Inchcape felt a wave of fear pass through him. Again Harding's voice came to him, deep with intensity.

"Look," he said, swinging his arm round to port.

Inchcape followed the swing- ing arm. It was much lighter now, visibility having increased to about two miles, and there on the port horizon were ships, merchant ships with smoke pouring from their funnels, that looked like a herd of frightened sheep.

He watched them as they spread farther and farther apart, and then, in the strange green light, melted into nothingness.

It was a scene he knew he would never forget. The huge, tumbling waves, the stillness, the vast, faceted faces of the men around him, the ship on the water — ghost ships running from a ghostly enemy.

He turned, and looked over at Lawrence.

"I can't hold her, sir," Lawrence spoke desperately. "I can't hold a starboard already."

He walked over to the compass platform and glanced down at the indicator.

Still the bow swung round and then steadied. He saw the ship was heading straight for Laxton. Harding's voice came to him, little above a whisper. "My
He walked over to the canvas dodger, peering out ahead, and as he did so the wind began to come at them from the north-east. A cold, hard wind, shrieking down on them even more furiously than before.

Rapidly the strange green light disappeared, and it was dark.

He stood there, staring out into the darkness, but where Laxton had been there was nothing. Slowly, almost reluctantly, the bows of the ship swung round to starboard and he knew that all was over. Then out of the darkness ahead of them came the flash of a signal lamp.

He saw the duty signalman flash an acknowledgment and then begin to take down the message.

Presently it was finished, and walking over to the compass platform he read aloud in the faint, ghostly light, "From Laxton to Lorimer. Thank you and good luck, always."

He stood there whilst the wind tore at him and slowly brought him back to reality. What was it they had seen?

He heard Harding's voice by his side. "It wasn't a dream, sir," he said. "It's because they were sisters. That's why we see them."

"She's going to help Laxton," he said, "the ship knows."

LONDON: The recovery of Saint Paul's Cathedral, from war wounds suffered more than 17 years ago is taking definite shape. This year will be memorable in the history of the 1,300-year-old building redesigned by Sir Christopher Wren.

Its Dean, Doctor Matthews, says there will be three "highlights" this year.

First will be May 7, when, in the presence of the Queen and the Duke of Edinburgh, the Bishop of London will rededicate the high altar, commemorating the men and women of the Commonwealth who gave their lives in two world wars.

Second will be June 5, when Queen Elizabeth, the Queen Mother, will attend the annual festival of the Friends of Saint Paul's — a body without whose devoted services in fire-watching the Cathedral could not have survived the Great Fire raids of 1910.

The third, reopening of the east end, will be a dedication of the U.S. Memorial Chapel.

The high altar, behind which will be the only general Commonwealth Memorial in Britain.

It will be visible to the whole congregation and will be a focus of worship within the Commonwealth.

Money for this memorial was raised in Britain by a private appeal organised under the leadership of Sir Jocelyn Lucas, M.P.

The total cost of the restoration will be £1,000,000 sterling.

WORLD'S TANKER FLEET

The world tanker fleet, which had already doubled in size since 1918, probably will double again within the next future according to the Petroleum Information Bureau (Australia).

At the end of 1957 there was a total of 50,000,000 deadweight tons of tanker shipping in service, but in addition to this fleet tankers on order or in the course of construction totalled 10 million deadweight tons.

These orders are based on forecasts that world demand for oil in 1965 will be in the vicinity of 1,500,000,000 metric tons.

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