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THE NAVY

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THE NAVY

Australia's Maritime Journal

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 incident; 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 interests. Spain was a preliminary to World War II.

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.

It launched a Satellite

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

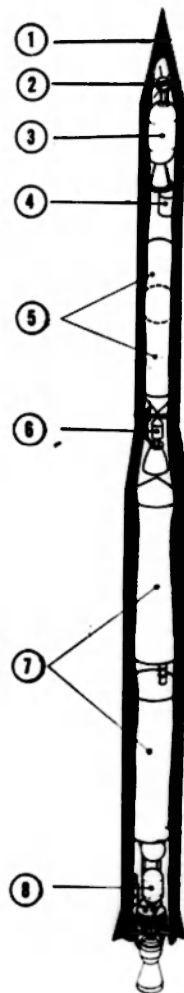
The rocket measures 72 feet, two feet longer than the Jupiter-C which launched Explorer I.

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 tanks.
6. Second stage engine.
7. First stage tanks.
8. First stage engine.



RUSSIAN SHIPBUILDING

By J. MEISTER

WHILE the Navy protects the merchant fleet, the latter provides the former with supply, carries troops for amphibious operations and furnishes many 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, Revel, Riga, Liepaja, Odessa, Nicolaiev, Mariupol, Astrakhan, Stalin-grad, Votkinsk, Sormovo, Perm, Gorki, Kolomna, Spask, Vladivostok, Komsomolsk, Severodvinsk and Murmansk; and at Wismar, Rostock, Warnemünde, Danzig, Elbing, Gdynia, Stettin, Budapest, Varna, Kormorn and Galatz in the Satellites.

Soviet 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 coasters, tugs, 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 400,000 tons (about 50 per cent. of it self-propelled) which the Russians were able to build just prior to World War II, this output shows a notable increase.

The Poles launched, between 1950 and 1955, 165 freighters,

39 trawlers, 65 other fishing vessels and some tugs and special vessels of over 350,000 tons, and for the period 1956-60 the plan provides for 305 ships of 831,000 tons, including 152,000 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, Rumania 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 1,300,000 tons, carrying 11 per cent. of Czarist 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 Italy. The 685,000 tons of merchant ships available in

1932 was able to carry 8.8 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, 716 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, 36 per cent. was carried in the Caspian Sea, 26 per cent. in the Baltic, 21 per cent. in the Black Sea, 8 per cent. in the Far East, and 6 per cent. in the Arctic. About 20 million tons, or 90 per cent. of Soviet foreign trade, was despatched by ship, and almost 6 million tons passed through Leningrad.

Another 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 half a million tons of U.S. lend-lease vessels, including "Liberty" ships and tankers, 360,000 tons of German vessels received after the surrender, more than 100 Finnish merchant ships, and many requisitioned Rumanian and Bulgarian vessels.

Please turn to page 9

THE NAVY

WHAT DOES THE FUTURE HOLD FOR NEW GUINEA?

An A.B.C. Talk by DR. DEREK VAN ABBE

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 most 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 half 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 firmly marked seam from north to south down the middle; the international border was more or less arbitrarily fixed along the 141st 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



New Guinea natives call a helicopter "baloo" (bird) bilong Mirmaster. This Sikorsky helicopter is being used to carry drilling rigs and equipment to jungle oil sites.

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 adminis-

tered 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

April, 1958

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 especially is 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 Digger remembers, rain is one of the dominating features in the New Guinea economy. The area enjoys all the worst gifts, in fact, of a typical tropical climate.

WHAT are the prospects for the islands then? I had the good fortune to attend the Australian Institute of Political Science's summer school on New Guinea in Canberra recently, and it was interesting to discover that there is no answer that everyone accepts. It looks as though there were some prospects of economic development throughout the Territory but that, under the most favourable circumstances, the ultimate return is never likely to be staggering.

Take gold, for example. Economics amateurs like myself have always thought of New Guinea gold-mining as a very valuable asset to the island. But it is a sobering let-down to learn that though at the end of the war some seven mines were operating there, and apparently making quite good returns, today only one is left.

If you try to find out why, you strike a difference of opinion which ran through most of the deliberations of the AIPS summer school. The technicians and investors say their work has been set back by Governmental over-fussiness, delay and taxing. The Adminis-

tration and the academic students of New Guinea hold that development in the islands cannot be made to move along any other lines than those along which it has been directed thus far.

It looks as though here, as elsewhere, you pay your money and you take your choice.

The academic geographers hold that, since so little of the soil of the New Guinea area is suitable for cultivation, extreme care must be exercised with regard to all agricultural development. Great attention 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 types of 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 questions.

There seems to be no doubt, for example, that New Guinea could do itself economic good by growing sugar. But if the planters did do so, they would, of course, at once be in competition with Queensland, and so neither side would gain. It was even hinted that the New Guinea people could grow better sugar and at a lower cost.

The same is true of a number of other products. At various times, a variety of different crops has been suggested. Hemp, for example, for making jute bags, seemed to be full of promise at one stage. But the mere threat of competition was sufficient to make the Indian jute exporters lower their prices, and at once it became completely uneconomic to start up such a costly new industry under New Guinea conditions.

At the moment, cocoa and coffee planting are coming along as the most rewarding products. Many a promising

patrol officer, it seems, has retired from the Administration's service after a few years and settled in the northern highlands to chance his arm at coffee-planting, and some are succeeding beyond all expectation.

Like the white Central African planters, they are amongst the last bearers of the white man's traditional pioneering burden.

How does the Papuan native fare amidst all this, you might be asking?

Again, you will find it difficult not to get two answers at once. And these answers won't be to the Marxist question, "free or exploited?"; they will be answers to the question, "modernise or leave in the primitive state?" When a Government actually gets around to planning the future of an area like New Guinea it finds — what the South Africans are now finding and what we ourselves would be more conscious of if we thought more about the aborigine question — that the native population of New Guinea has been completely disrupted by contact with the European, is being disrupted by continued contact, and is likely in the future to be pulverised culturally by any foreseeable development.

It is here that one occasionally hears those statements from anthropologists and missionaries which sound so depressing. They warn us that we are destroying the native culture.

At the AIPS school it was clear, to me at least, that there is one line of intelligent authorities who believe, as against this, that the only solution for the native population is complete abandonment of the old ways and adoption of modified versions of our ways.

One speaker said bluntly that the native culture was not such

as to warrant even preserving in museums—the natives themselves laugh at the things we have stored up for them in the anthropological collections. But, of course, there are enormous difficulties of logistics in the transition period between a Stone Age culture and the Papuans growing into our ways.

Small as the native population is by Asian standards — there are well below two million Papuans, all told — they are very widely scattered and it is not easy to set up central schools. This is the reason why, for example, it is still uneconomic 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 many formerly undeveloped 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 Rousseauistic.

The question of New Guinea development, if left as a purely 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 agitation shows, purely objective factors are regarded as unimportant where sentiment is involved: the Indonesians who have the area at heart are unlikely to think as calmly about development as scrupulous blue-printers in a Government 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-

Continuing . . .

RUSSIAN SHIPBUILDING

From page 6

fore, the Soviet merchant navy boasted more and better tonnage than at the outbreak of the conflict! About one-fourth of this shipping, most of it tankers, was in the Caspian Sea.

Since then large Soviet contracts have been placed abroad and gladly accepted by the "Capitalist" yards, never very far-sighted, although the Soviet has often financed these constructions largely through credits obtained by political pressure, like Sweden's credit of one milliard crowns, or by barter projects of dubious value. Finland, East Germany and the Balkan countries have had to build hundreds of merchant ships and almost two thousand tugs and fishing vessels under the very harsh terms of the peace treaties.

England has built 20 modern trawlers and three tugs; Den-

mark two medium-sized tankers, and numerous refrigerated vessels, eight sealers a.s.o.; Germany 21 fish factories and five fish carriers; Italy two passenger motor ships and many tugs; the Netherlands six icebreaker freighters, some dredgers and refrigerated vessels; Belgium many cargo ships and large trawlers; Japan tugs and fishing vessels; France six cargoes; and Sweden numerous trawlers, small tankers and coasters. Altogether over 2,500 merchant and fishing vessels of all types have been built since 1945 outside Soviet Russia for Russian account!

This has permitted the Soviet to concentrate upon the building of warships without neglecting the improvement of their merchant navy.

The Soviet merchant navy outside the Caspian Sea may reach by now almost three million tons, while the Satellites must be credited with another 1,000,000 tons, of which about half fly the Polish flag. Whereas before the war the Soviet had

Please turn to page 16

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A BP spokesman, explaining the company's officer training scheme, said: "It has become

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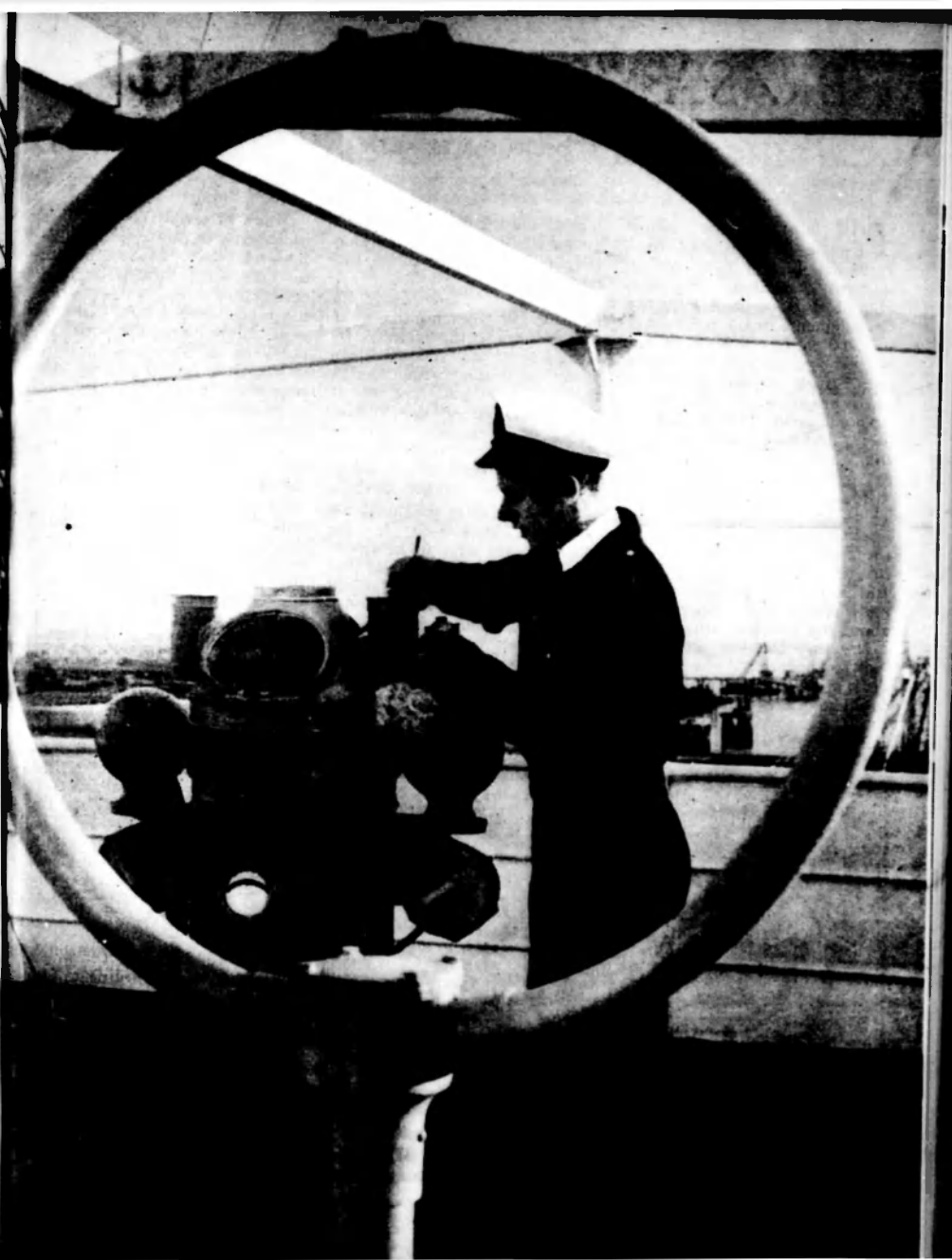
There is now a considerable amount of technical knowledge to be assimilated. New advances in electronic techniques are constantly being applied to the navigational aspect of seafaring, while the carriage of cargo — oil in particular — is tackled as a scientific problem.

"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 28,000-ton oil tanker *British Adventure*; and, right, an apprentice on the *British Sovereign* cleaning the binnacle.



BRASSEY'S ANNUAL—1957

By OSCAR PARKES, Ass.I.N.A.

THE bulk of this volume consists of discussions, from various points of view, of the strength, 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 they account for 11 of the 30 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: A 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 recogni-

tion 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 for 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 supersonic manned bomber aircraft.

Such misgivings 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 responsibility of framing the Defence Policy lies.

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 resources that he must devote to defending himself against destruction by an equally ingenious enemy. Our defence expenditure has absorbed 10 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 discussing "N.A.T.O. and the European Scene," Colonel the Hon. E. H. Wyndham 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 fact 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 now Americans are beginning to feel their power, they will develop the necessary responsibility to use it for the common weal.

Referring to the possession 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 small 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 both 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 barred. 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 forces necessary for fighting a conventional war such as the Korean cam-

paign 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. Luckily there are so few of them."

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

Major-General K. R. Brazier-Creagh 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 opposing nuclear strike force.

The chances of either side achieving this appear to be

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small, since both are presumably ready for instant retaliatory action, and so the risk of global war is receding. A state of nuclear stalemate is approaching, a balance of terror in which global war may be regarded as a thing of the past.

If "progress" proceeds at its present rate and defence continues to lag behind offence, whichever side uses its nuclear strike force will be initiating an act of suicide, because the other side will immediately reply with similar weapons and both contestants will be destroyed.

Under these circumstances the nuclear deterrent loses much of its force. The governments concerned in making the fateful decision will be most reluctant to take it. Nothing short of a threat to a nation's most vital interests and the exhaustion of all other means of dealing with the situation would persuade them to cast the fatal die. Under these circumstances, different nations in alliance may well have different ideas on when the critical moment has arrived.

While accepting the obligation to fight for their neigh-

bours, nations may hesitate to commit suicide for them. The deterrent may thus be enasculated, and while forced to preserve this expensive weapon the nations may find it useless. And we shall be back almost where we started.

With the teeth of the deterrent drawn, limited war even in Europe may be regarded by the Communist powers as a safe and profitable adventure.

In the Suez crisis, 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.

Economy and efficiency will result when standardization and integration with our Allies make independent action no longer necessary. But national pride would suffer.

Perhaps the time has come to swallow the pill, because undue emphasis on national prestige, as well as being the most expensive, has been shown

in N.A.T.O. to be the biggest obstacle to effective international co-operation.

"Foreign Navies" are reviewed by Vice-Admiral B. B. Schofield, who shows how construction continues to be dominated by nuclear propulsion and guided missiles. Although the strategic mobility of carrier forces remains an important factor in "the deterrent" to the launching of a nuclear war, the immense cost of modern carriers such as the Forrestal, currently estimated at £75,000,000 per ship has prevented other countries from attempting to build them.

THE most interesting development is the construction of submarines to fulfil special functions stemming from the higher underwater speeds now obtainable. Of these the most arresting are those designed to launch guided missiles, with atomic heads, from all the oceans of the world, and of exploiting the advantage of surprise to a degree unlikely to be attained by airborne attack.

In the U.S. Navy, the new carriers are described, including one type of about 15,000 tons to be known as a helicopter-assault-landing ship (L.P.H.A.) to carry 45 aircraft and accommodate 1,500 marines. Ten such ships are projected. The construction of a nuclear-powered cruiser of 11,000 tons to be armed with g.m. is in hand and is to be of a revolutionary design.

A minimum number of 18 g.m. cruisers includes three already so fitted, and of the 10,000 tons "Helena" class, the Helena, Mason, Toledo and Los Angeles will carry "Regulus," the Little Rock, Oklahoma City, Pasadena, Providence and Springfield are to be equipped with "Terrier" and "Talos." Galveston is in hand for fitting the latter.

Twenty-six of the "Forrestal

Sherman" class of destroyer (2,900 tons) have been authorized, and 15 frigates of the "Mitscher" type (3,900 tons), which will carry g.m. A nuclear-powered radar-picket submarine of 5,000 tons, the Triton, is well advanced, and another N-P S/m Halibut, of 2,900 tons, is to have a g.m. launcher. The hangar will be large enough to house a midjet s/m. It is estimated that in 10 years' time the U.S. Navy will have 75 N-P submarines in service.

In the Soviet Navy there is a temporary suspension in cruiser construction to allow slips to be used for construction of merchant ships. Of the new destroyer types, there are eight of the "Tallin" class (3,100 tons), 72 "Skoryi" class (2,200 tons), 24 "Kola" type (1,100 tons) and a new type known as the "Kotlin" class, estimated at 2,200 tons. Incidentally, the photo captions of the last two have been interchanged. Progress has been made with g.m. types, but nothing is known about the fitting of such weapons on ships.

Of the minor navies, it is noted that the two destroyers the building for Chile at Barrow have been named *Almirante Williams* and *Rivieros*; the two for Colombia in hand in Sweden of the "Halland" type are 13 de Junio and 20 de Julio; six frigates building in Italy for Venezuela have been named *Almirante Clemente*, *Juan Jose Flores*, *General Jose Moran*, *Almirante Brion*, *General Jose de Austria* and *Almirante Jose Garcia*. These are of 1,500 tons and 32 knots.

"Naval Salvage Organization," by Commander C. G. Forsberg, R.N., is a wonderful story of the splendid results in the salvaging of ships, the unblocking of ports, and accomplishments at the artificial harbours. It covers both wars and the Suez operations, and shows how far this very special-

ized work has progressed since the days of the *Montagu* and *Gladiator* when equipment was primitive and our experience limited.

THE Technical Editor of "Flight," Mr. W. T. Gunston, contributes a most illuminating chapter on guided missiles, with a list of the various types and their dimensions and data now being produced in Great Britain (6), France (6) and the U.S.A. (34). During the past 12 months the guided-missile programmes of the major powers have given enormously greater return for the money which has been invested in them.

Notwithstanding the long history of naval torpedoes, radio-controlled target aircraft and similar "guided" devices, the true g.m. is now only becoming an effective and available force in the world's military affairs.

We have our "Sea Slug" in the Girdleness, where it is automatically constrained to follow the angular disposition of a large radar equipment which locks it on to its target. The *Clausen Rolling Platform* operates a similar system, and this curious floating device is greatly assisting its development, particularly with reference to operation in heavy seas.

The American "Terrier" has shown its effectiveness against 500-knot targets flying at 50,000 ft. at up to 20 miles slant range, and the installations in the Boston and Canberra can sustain eight rounds a minute (per ship) indefinitely.

The "Hawk" specializes against aircraft flying at extremely low altitudes, against which several systems are helpful. Particularly effective air-launched "Petrel" missiles can be launched against ships or submerged submarines from a considerable range, but are likely to be replaced by the

fearsome "Lulu," which is fitted with a nuclear warhead and is claimed to have a lethal underwater radius measured in miles.

"Thoughts on the new British Defence Policy," by Vice-Admiral J. Hughes-Hallett, M.P., advances a cogent plea for concentration in the higher direction of war and considers that the Government have set a new course which is not merely the right one, but the only safe one. Yet Ministers and their supporters in Parliament will need both courage and persistence if it is to be followed to the end. The rewards will then be great, both in terms of economy and also effective fighting strength, though they will take some years to achieve.

Much the same arguments are advanced by "Centurion" in "Defence — A New Look for Nuclear War," who considers that the existing defence machinery is too cumbersome and too wasteful to continue in its present form. No amount of juggling with it will cure the trouble. An entirely new look is required, and this could only be achieved by putting the control of the Armed Forces and Civil Defence under a single Ministry, working to a single policy and with a single aim. In this way we could and should, get efficiency, speed and flexibility in defence which are vital in nuclear war. In addition, the economies proposed are too extensive to be ignored.

SO much for a few of the contributions to this invaluable annual. Those dealing with Military and Air problems, the Aden situation and Suez affair are rather outside the province of this review, but should command serious study in mess and club. "Brasse" is happy in its editor, Rear-Admiral H. G. Thursfield, and "1957" is well up to the high reputation it has always enjoyed.

(From the London "Naval")

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Continuing . . .

RUSSIAN SHIPBUILDING

From page 9

the world's 11th merchant fleet, they are now eighth on the list and may soon obtain an even better place.

The building programme for the next few years is very ambitious and includes a tanker of 47,000 tons, many medium-sized tankers, fast cargo vessels and coasters, refrigerated vessels, three whale factory-ships (one of them with atomic propulsion), numerous tugs and other special ships.

The Soviet merchant navy maintains at least 14 training vessels, and there are also over 100 sailing vessels with auxiliary power for the coasting trade. Tanker tonnage is still relatively scarce but the situation will improve in the near future.

Before the war, the Soviet had very few passenger ships, but after 1945 they secured some former German liners, and they have since refloated and refitted several more. Shortly after the war they tried to maintain a regular service

between Odessa and New York, but as nobody wished to travel on board the ill-kept and badly managed proletarian "luxury" liners, the attempt was soon abandoned. A small-scale passenger service is actually running between Leningrad, some Finnish, Swedish and Danish ports and England.

Most of the refitted liners have been sent to the Far East, where they are used as troop and labour transports between Petropavlovsk and more easily accessible ports. However, 33 per cent. of the passengers carried in 1953 in the Far East had to travel in the cargo holds of ordinary freighters!

Some other liners operate in the Black Sea between Odessa, the Crimea and the Caucasian holiday resorts, and a few more carry the rare but privileged Soviet tourists abroad.

Cargo and passengers carried by the sea-going merchant fleet amounted in 1950 to 33,700,000 tons and 3,200,000 passengers; in 1955 to 53,700,000 tons and 6,700,000 passengers.

The work of the merchant fleet can only be maintained with the help of icebreakers. While the ports in the northern part of the Black Sea and of

southern Siberia only need to be kept open for a few weeks each winter, the eastern Baltic normally freezes completely for two to four months; and off the north Siberian coast — the notorious North-East Passage — shipping can be got through only with the help of powerful icebreakers, and even the use of icebreakers is limited to two or three months a year. This explains the importance of the Russian icebreaker fleet.

Besides many smaller harbour and river icebreakers, there are now about a dozen icebreaker freighters and 25 large icebreakers in service, while three or four, including one or two atom-powered ones are being built. Without icebreakers the Soviet Navy and merchant fleet would be almost helpless.

THE Russian inland shipping has always been of outstanding importance. There are over 108,000 rivers in Russia and many large lakes, and the length of the navigable system measures almost 132,000 kilometres or 75,000 miles. In 1906, global tonnage of the Russian inland shipping was greater than the tonnage of the British seagoing merchant fleet, having reached 3,897 steam-driven vessels of over 750,000 h.p. and about 21,000 barges with a loading capacity of over 13,000,000 tons!

The volume of freight shipped amounted in 1913 to 48 million tons, of which 4 million were carried between the Baltic and the Arctic on the "Mary" canal system. World War I and the revolution wrecked most of the inland shipping trade as well, and the volume of freight carried fell to 6,250,000 tons in 1918.

The Soviets soon turned to the reconstruction of the inland fleet, which enabled them to offset the poor efficiency of rail and road transport. In 1936 the river fleet again consisted of

3,070 steam and motor vessels and 6,507 smaller units and barges, and in 1937 the total power of the tugs and passenger ships amounted once more to 746,000 h.p., while 87,000,000 tons of cargo were carried. Passenger transport was always important, amounting in 1940 to 70,200,000 persons.

World War II cost the Soviets 4,280 self-propelled craft and 4,029 barges, and 98 shipbuilding and repairing yards were destroyed. With the help of the satellite shipbuilding capacity, however, losses have been replaced, and in 1951 global tonnage again reached 3 million. Today they may have almost 5 million tons of inland shipping, including many modern and fine passenger vessels built in East Germany, large tankers of 22,000 tons, and numerous tugs.

The main lifelines of inland shipping connect the Baltic with the White Sea through the "Stalin" Canal, and the Baltic with the Volga through the so-called "Mary" system, a canal built at the beginning of the 19th century and which is now replaced by a larger canal. The "Lenin" Canal permits

navigation between the Volga and the Black Sea and the Volga-Moskva Canal forms the link with the capital.

There are, of course, many other, but less important, canals connecting rivers and lakes or even linking several seas. Back in 1922, Russia already possessed 807 different canals, and their number has been raised since with the help of cheap "slave" labour.

It must not be overlooked, however, that most of the canals and rivers freeze each year for between two and seven months, and become, therefore, completely useless. The mighty Siberian rivers, with the single exception of the Amur, all flow towards the Arctic and are therefore only of limited use 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.

Only ships up to destroyer and submarine size might make the trip, which will take much time during the few months that the waterways are open, and aerial attacks on the locks

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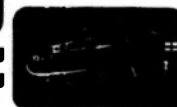
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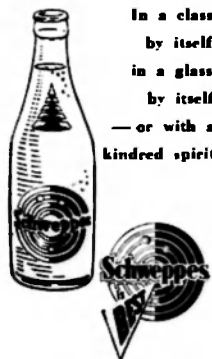
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could have disastrous and immediate results. This happened in 1941 when the Germans bombed and destroyed the locks of the "Stalin" canal.

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 2,875) 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 after the war the Soviets received about 50 trawlers and 150 smaller fishing vessels in use in the German Navy, and since then almost 2,000 trawlers and seiners have been built abroad, mostly in Finland, East Germany and Sweden, for Russian account. Relatively few fishing vessels have been built in Russia, owing to the predominance of the "high priority" warship-building programme.

Since 1956, 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, 1,300 other fishing vessels, 55 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 peace-time 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 sea-going merchant fleet is not yet large enough to be able to carry all Russia's coastwise 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 sea-going merchant fleet is still too small to provide in case of war the tremendous 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.

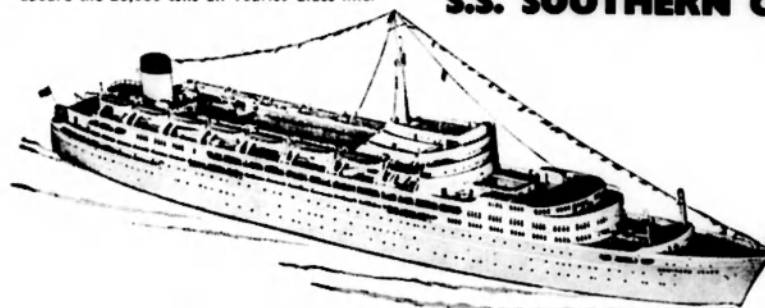
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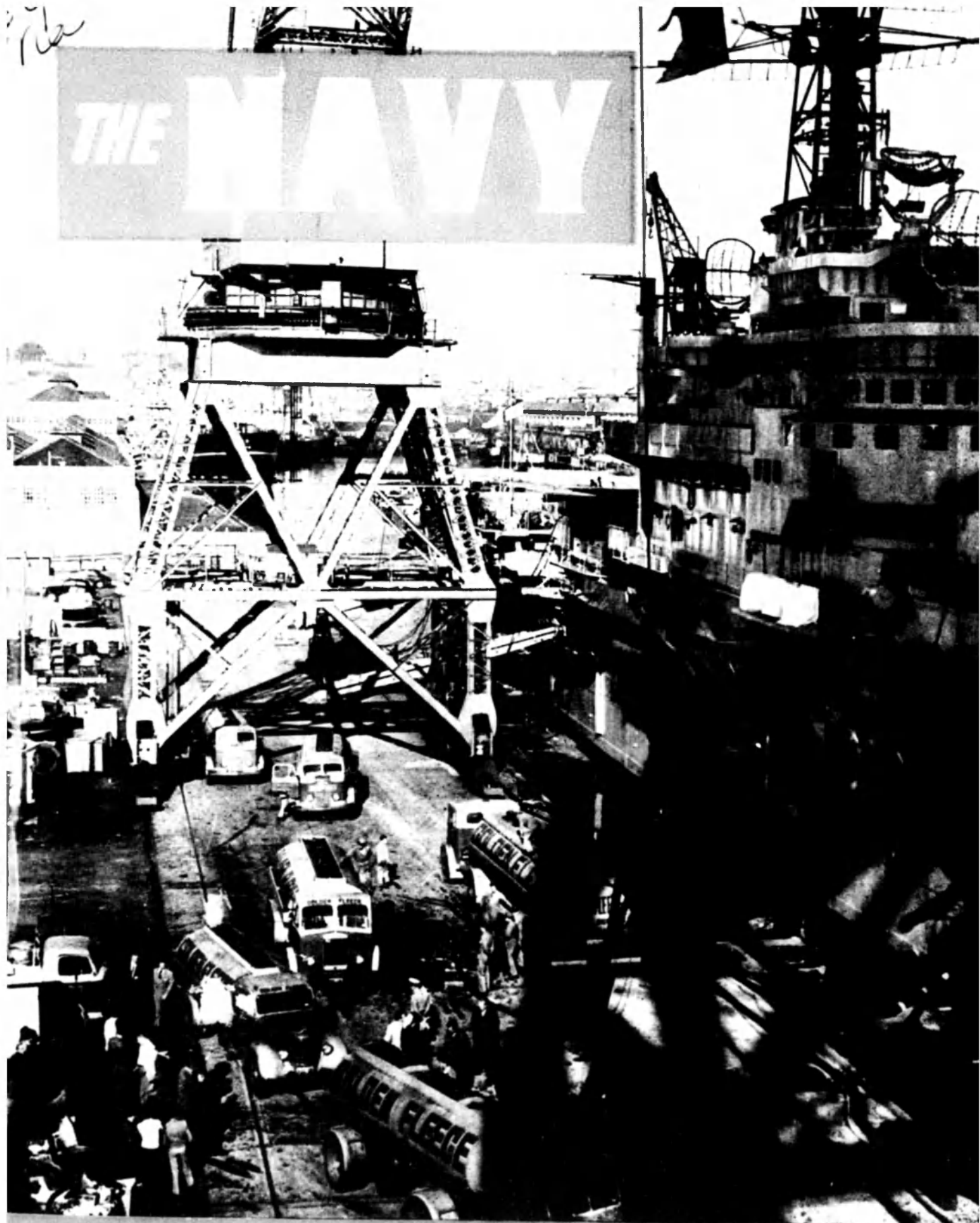
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THE NAVY

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THE NAVY

THE NAVY Australia's Maritime Journal

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 only on our alliances for our security; that we must provide as strong a 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 obsolescent 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.

Young "Stowaway" talks to Guard



Sonarman Richard Henninger, of Miami, Florida, who was on guard duty soon after the U.S. cruiser 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.

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 targets (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, ours must have at least as good, if not better, capabilities.

As a long-term development, the threat of offensive action using 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 propelled submarines must surely be regarded as a new weapon of war rather than as an improved existing type.

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

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 anything more than the sketchiest preliminary investigations until 1950.

At this time the preliminary design of a land-based prototype of a gas-cooled, graphite-moderated, low enrichment

From a talk at the Royal United Service Institution (U.K.), given by REAR-ADMIRAL G. A. M. WILSON, Deputy Engineer-in-Chief (N.) and Rear-Admiral Nuclear Propulsion.

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 fissile material for the highly enriched systems delayed any serious 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 must always be weighed against the penalties of weight and space. Reactors, even the most compact of them, tend to be heavy and cumbersome beasts. 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 greatly improved possibilities of ship, flight deck and radar layout, increased capacity for aviation fuels and much improved conditions for landing on.

The carrier clearly has very strong claims indeed for our next fighting ship application.

For those who have doubts on the wisdom or necessity of converting to a nuclear fleet, I would suggest they reflect on what is being done by other nations in this field.

The Americans are committed to and have made a great start in constructing a nuclear fleet.

Nineteen submarines of varying types are built or under construction or planned for completion by 1961, a cruiser is due to be completed by 1960, and a large fleet carrier will follow. Preliminary design investigations for a destroyer are in progress.

As regards the carriers, approval for a further five has

been sought by the Navy; one each succeeding year for a total of six in service by 1966.

We do not know definitely the Soviet intentions, but they must be aware of the advantages that nuclear-powered submarines would give to their very large underwater fleet. Their achievement with their satellite program bears ample evidence of their rapid advances in the scientific field.

The French have announced their intention of getting a submarine to sea by 1961.

IT is obvious that the transition from conventional power to nuclear will be a slow one and we will be faced with the problem of operating both types of ship at the same time. It is just not practicable to convert conventionally-propelled warships to nuclear and, in my opinion, it will eventually be of great benefit to adopt nuclear propulsion for Fleet replenishment work, thereby spreading 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 commercial 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 it is thought to be the most attractive proposition at the present time, although the high speeds required for transatlantic liners and some other last 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 there would be approximately a 15 to 20 per cent. increase in running costs of a nuclear vessel over a similar conventional one.

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 possible to bring down the unit cost by raising the generation capacity for the same size plant.

In a ship this increased power cannot be so easily utilised. It could increase the speed at which the ship would operate, but since speed varies only as the cube 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 use of higher operating temperatures and higher efficiencies.

Building prototype plants can be an important step in reducing capital costs. 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, often 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, many countries have embarked on a nuclear program of construction and extensive feasibility studies.

In America the Eisenhower peace ship, a fast cargo 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 and 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 close cycle gas turbines.

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

real danger to our shipbuilding industry unless we, as a nation, can get moving quickly.

The Russians are building a 16,000-ton displacement ice-breaker which is due for completion about 1960.

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

We also know the Japanese are particularly interested in the possibility of commercial submarines.

Norway, Sweden, Netherlands, Italy and France are all reported to be actively engaged on the design of plants for merchant marine applications.

The Norwegian and Swedish studies are understood to be well advanced, but there is no evidence of any authorisation to build.

In Western Germany, four German firms have formed a company which has a development of a reactor for ship propulsion as its main objective, and they are intending to construct a shore prototype plant as a first step.

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

Of course, no nuclear venture can proceed far without the help and, in particular, the experimental backing 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, but 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 atomic bomb. 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 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 shut-down 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 them. 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 through a telescope. Some of them see things looming very near, others would appear to be looking down the wrong end, while there are still others who have forgotten to take the cover off the eyepiece.

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

It is always the lot of a new

(Please turn to page 17)

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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.

Otherwise it is grim but resolute recital of policy aimed at maintaining our security "in a world poised between the hope of total peace and the fear of total war."

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 be 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 strength of the three Forces of 375,000 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 of 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 conflagration should not continue to be prevented almost indefinitely through the balancing fears of mutual annihilation, though that would be a mournful prospect. The ultimate aim must be comprehensive dis-

armament, 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, they would have to hit back with strategic nuclear weapons.

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 visualise 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 Atlantic and 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 not necessarily to provide a fully balanced all-purpose British fleet."

As Russia's formidable submarine force constitutes a world-wide threat — both sides are proceeding with the development of submarines

capable of firing nuclear missiles from under water — it is desirable to concentrate the efforts of the Navy to an increasing extent on the anti-submarine role.

Nevertheless, British naval forces in the Atlantic and Mediterranean will include two aircraft carriers, two cruisers, and a number of destroyers, frigates and submarines. The carriers, however, will be predominantly equipped with anti-submarine aircraft and helicopters, but will carry some lighter and strike machines.

East of Suez the policy will be different; it will be to maintain a balanced, all-purpose fleet of appreciable strength to enable Britain to discharge her obligations to S.E.A.T.O. and the Baghdad alliance, and to fulfil her independent military commitments in that area.

First official confirmation that the Navy is to have a Commando carrier is given by the statement that the Eastern forces will also have a converted carrier, equipped to accommodate a Royal Marine Commando force and capable of operating helicopters for either the troop-carrying or the anti-submarine role.

In addition to these main operational fleets, a small number of frigates will, at all times, be stationed in the Persian Gulf to discharge British responsibilities there, some light craft will be employed at Hong Kong for local defence, a frigate patrol will protect British shipping along the China coast and a few frigates or destroyers will be kept in the West Indies and South Atlantic.

The construction and modernization programmes are being aligned with this policy and dockyard and base facilities will be curtailed to correspond with the reductions in the size of the Navy, the White Paper

says. Similarly, plans for the Reserve Fleet are being revised; it will comprise only of sufficient ships to keep the active fleet up to strength, allowing for accidents and long refits.

To ensure that the Royal Navy will continue to keep abreast of the times, several 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.39) 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 co-operation 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.



Ordinary Seaman Duncan Campbell of Glenbrook, N.S.W., arranges flags aboard the ship H.M.A.S. Quickmatch, a type-15 anti-submarine frigate berthed at Garden Island. The ship was dressed for the sixth anniversary of the Coronation of Queen Elizabeth II. Four 25-pounder guns from the 105 Field Battery, 1st Field Regiment, Royal Australian Artillery, at Mrs. Macquarie's Chair, fired a 21-gun salute.

THE NAVY

May-June, 1963

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M.O.'s IN ATOMIC COURSE



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 Balmoral Naval Depot.

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 manoeuvring 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 1953.

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. Seamanship, 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 the case in almost all 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 ships, 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

By J. MEISTER

in the London "Navy"

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 gilded naval leaders as 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. Orlov, Spiridov, the British-born Elphinstone, Uchakov, and the two Senjavin, 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, Essen in 1911-15, Eberhardt and Koltchak in 1914-16 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 Tributz, 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

American Paul Jones, in the Czarist Navy in the eighteenth and nineteenth century must not be over-estimated; it was then customary for all nations to hire foreign soldiers and sailors. Even England tried during the Crimean war to recruit sailors 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 Soviet Navy is, on the contrary, almost entirely composed of "true" Russians.

Few Russian monarchs and political leaders have been seaminded. The most gifted was Peter the Great, who re-created the navy in 1700 and took part as a naval officer in several battles. Katherine II and Paul I, Alexander III and finally Nicolas II also showed some interest in naval affairs. Lenin, however, said that Soviet Russia would not need a navy, and for almost 10 years his doctrine was closely followed. It was

only shortly before the outbreak of World War II that Molotov demanded that Russia should build up her ocean sea power. Thereafter England and Russia concluded a naval agreement and the Soviet built numerous ships; but the "Vorochilov" War Academy went on teaching: "The Navy is the handmaid of the Army," and hence in 1911-15 the ships were not used as they should have been. After the war the build-up of an even stronger navy went on, and Marshal Zhukov declared that seapower would play a far more important role in the next war; but the Soviets have so far been unable to create and teach a "pure" naval doctrine. This inability to grasp the full meaning and all the possibilities of ocean sea power is one of the worst handicaps of the Soviet leaders, and it will weigh against such able admirals as they may find in the future, because of the predominance in the Soviet system of political considerations over purely military questions.

It is also often said that the Russians have no naval tradi-

tion. This is false, too. A nation does not need to win every battle to be proud of the deeds of its soldiers and sailors. Defeats are often more honourable than cheap victories. Some of the naval actions which the Russians commemorate as victories have already been mentioned. Individual deeds still stimulate the patriotic feelings of Russian sailors. Such deeds include that of the French-born captain Fremery, who blew himself up with his ship in 1737, as did Captain Sacken in 1788; the fight of the Vesta in 1877; those of the Varjag at Tchemulpo and of the Kurik at Urrusan in 1901, as well as the gunboat Sivutch, which sank in 1915 under the close-range gunfire of two German battleships. Even the battle of Tsushima, the worst naval disaster not only of 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 Ossljabja, Alexander III, Borodino, Admiral Ushakov, Vladimit Monomach, Svjetlana, Navarin, Dimitri Donskoi, Blesjachtchi, Besupretchny, Gromki and above all Suvarov fought in an outstanding manner until the bitter end; from several ships nobody was saved; and some of the commanding officers refused to leave the sinking ships.

But all this courage and stubbornness could not replace the lack of tactical skill; and even the sacrifice of over 1,800 Russian sailors could not wipe out the fact that Admiral Njebogatov surrendered with four ships to the Japanese; that the torpedo boat Bjedovi with the wounded and unconscious Admiral Rojesivenski on board fell into Japanese hands intact; that the crew of the torpedo boat Bodry mutinied and fled to Shanghai. And it was not to be the last surrender of Russian warships, as the Germans in 1917, after the Czar's abdication, took the new destroyer Grom, and in 1919 the Bolshevik Commander-in-Chief of the Baltic fleet surrendered his two destroyers to a British squadron without any fight.

Soviet naval tradition is above all based upon the action of the cruiser Aurora whose gun-fire decided the flight of the Kerensky government in November, 1917; she is now used as a floating museum at Leningrad. Aurora, which fought in 1905 against Japan, in 1914-17 against Germany, in 1919 against the allied intervention, and in 1911 once more against Germany, is probably the only major warship in the world which has survived three important wars! Other Soviet naval traditions stem from the actions

against the "Whites" and Allies at Kronstadt, Murmansk, the Black Sea, the Volga and the Caspian Sea. The Amur flotilla fought in 1920 against the Japanese, in 1929 against the Chinese, and in 1938-39 and 1945 once more against Japan. Some of the operations of Soviet motor torpedo boats and other coastal forces, as well as the sacrifices of Soviet submarines during World War II also inspire Soviet writers. Surprisingly enough, the only surface action which deserves mention is completely ignored. On the 25th August, 1942, in the Kara Sea the German pocket battleship Scheer sank the icebreaker freighter Sibirjakov, which was armed with four 3-inch guns.

THE Soviet ship fought to 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 line 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 some had ships, like Admiral Popov's circular batteries and the inferior battleships before World War I, or the cheap torpedo boats constructed under the first five-year plan, the top-heavy leaders of the "Lenin-grad" 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 32,000-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 1901-5 the Russians cast some excellent guns with outstanding ballistic performance and very long range. Their shooting was often pretty good but never good enough to obtain quick and decisive results. At Tsushima they had obtained a reasonable number of hits but their poor

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quality shells either did not explode or lacked adequate power and, as a result of this battle, the Russians, their faith gone, were never again very fond of using gunfire against ships!

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 unreliable, 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 above all precision work, and in this the Russians have never excelled!

Wireless, tried out in 1895, 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 Germans were able to decipher almost all their messages as if 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 1903 that Russian officers often had secret foreign signal books and so on before these booklets were distributed to the officers of the navy concerned! One would expect that the Soviets, 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, while German ships almost always got away. Soviet intelligence material about foreign navies is often surprisingly crude and inaccurate. Dictatorship is not a favourable 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 skilful, is a very brave fighter if his patriotic feelings — still very strong in an old-fashioned and simple manner — can be aroused. And this the Soviets will not fail to do again. The Czarist government was unable after 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 by 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 only existed owing to the help given by the sailors. Surprisingly enough, the same sailors revolted against the Bolsheviks in 1921 at Kronstadt, and heavy fighting occurred until they were driven into exile or to surrender. They probably wanted to protest against the stern discipline the Communists had reinstated; and they seemed genuinely disappointed with the results of "their" revolution of 1917! During World War II, however, very few Soviet sailors deserted to the Germans, and morale remained high, chiefly because of German mistakes in the handling of Russian prisoners and civilian population, but also because Soviet propaganda was busy, and the material situation of the lower grades had much improved compared with the Czarist Navy.

So the outcome of another naval war may depend, among other factors, on the following points:

- The "Maritime-sense" of the Soviet government;
- talented Soviet admirals, able and willing to take initiatives and risks;
- the continuing belief of the lower ranks that it is a patriotic war and that the Bolshevik regime is again worth dying for.

The chances that the first two conditions will be fulfilled seem to be rather slim, while intelligent allied policy and clever propaganda could do much towards the awakening of the Russian people, whose undeniable qualities have been exploited far too long by its leaders for selfish and their own utopic projects.

Continuing

MOVING TOWARDS A NUCLEAR FLEET

From page 8

component that it is compared in its early days with its fully developed predecessor. So it was when the first turbine was scorned by supporters of the reciprocating engine, leading to a battle of opinion only settled finally by a practical demonstration.

In the case of the reactor, however, we have already a convincing demonstration of what can be achieved in U.S.S. Nautilus. The experience with this ship has done much to allay fears and we believe that on a basis of ease of operation and reliability the pressurised water reactor has been outstandingly successful.

Nevertheless, I think that our successors a century or so ahead may well look back with the same amused interest on this early effort as we now tend to be today at Stephenson's Rocket engine.

It is already clear that the military advantages of nuclear power are profound and the prospects for commercial ship-

ping almost certainly attractive.

The technical problems in the application of atomic power to marine use are certainly not insuperable, but a vast field of development in physics, engineering and metallurgy lies ahead aimed at increasing temperatures and efficiencies and in reducing costs. The task ahead of industry calls for wise direction, tenacity of purpose and technical excellence.

A great challenge lies before us. We cannot move faster than technical developments will allow, and our aim must constantly be to develop an economical ship.

Nevertheless, it is of paramount importance to get a ship to sea, on which to build experience, with the minimum of delay. Of course, there will be risks and the cost will be high, but the eventual harvest which the Royal Navy and our great Mercantile Marine can reap is worth untold effort.

Posterity will not excuse us if we fail in this task.

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'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."

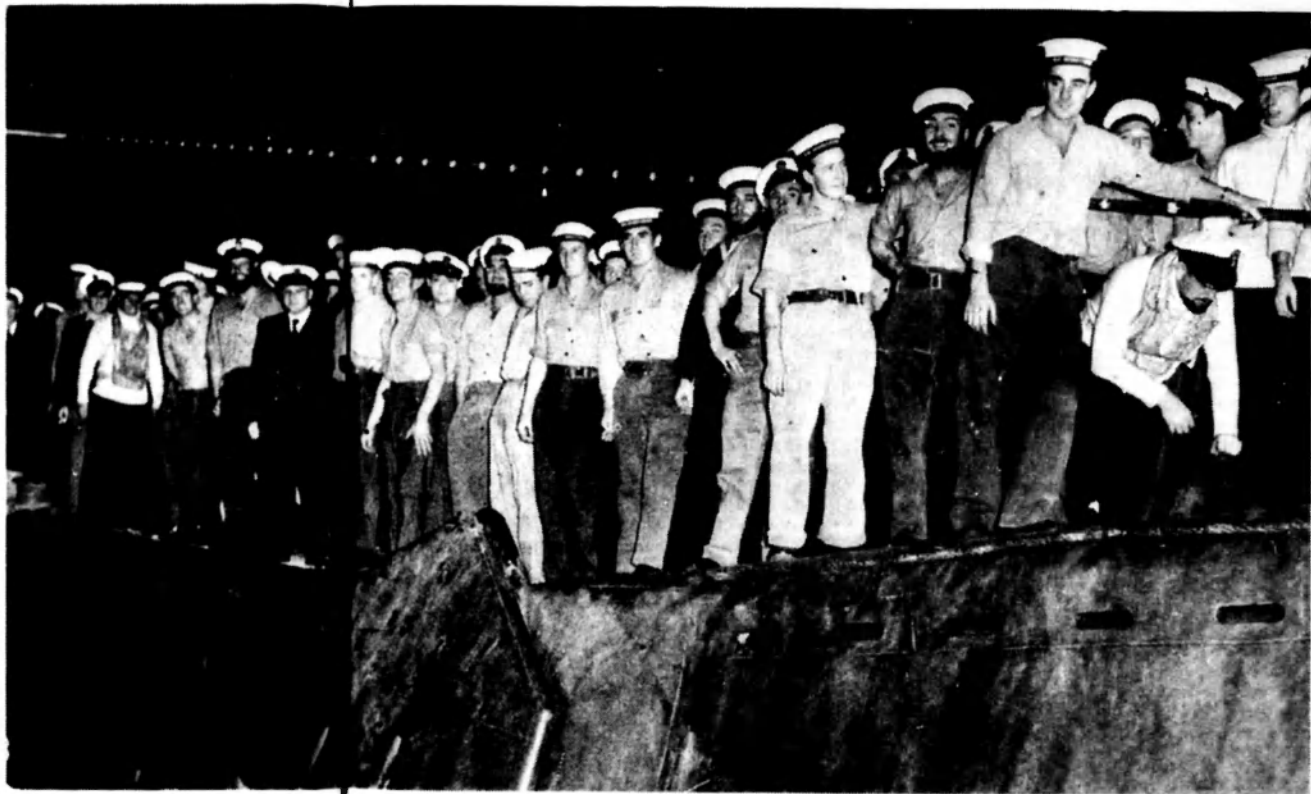
"We were out of sight about 35 seconds after the first burst.

"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 lunch 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.

Sir Vivien Fuchs explains to six London schoolgirls the operation of "Hagvire", one of the four Sno-cats used by his Commonwealth Trans-Antarctic Expedition and placed on view recently in Trafalgar Square.

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, Hong Kong and Manila 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 *Oronsay*, 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.

REVIEWS

COASTERS 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 intrepid sailors in small coasters who, virtually sitting ducks for enemy guns across the Channel and any wandering dive-bomber or any roving 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, which 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 mister 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 since 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 rescue 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.

UNUSUAL ADMIRAL

"Extraordinary Seaman," by J. P. W. Mallalieu (Macgibbon and Kee)

Born in 1775, the eldest son of the ninth Earl of Dundonald was destined by his eccentric father, who designed for him an odd 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 Sea Lord, which today would mean immediate court martial.

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

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

— M. 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 Barra and a member of her ship's company on that most eventful voyage. In October, 1910, with a full cargo of petrol she sailed for the Clyde from Halifax. Half way across the Atlantic she was set on fire when attacked by a German battleship.

Abandoned by her ship's company, here is the stirring story of how she was re-boarded and without compass, chart or wireless brought safely home to the Clyde.

Her escort, the Jervis Bay, had gone to her death and immortality, with a well-earned V.C. for her captain, Fogarty Fegen.

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

— H. B.

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. Until 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 when 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 Superinten-

dent of the Garden Island Dockyard, Sydney, and from August 1953-55 he was in command of the aircraft carrier *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 served at sea in ships of the Royal Australian Navy and the Royal Navy.

He was Gunnery 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, Taranakan, 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 December, 1953, until October, 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.

Promoted to Vice-Admiral: Rear-Admiral J. D. Luce, C.B., D.S.O. and Bar, O.B.E.; Acting Vice-Admiral W. J. W. Woods, C.B., D.S.O. and Bar; Acting Vice-Admiral D. E. Holland-Martin, C.B., D.S.O., D.S.C. and Bar.



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NAVAL NEWS FROM ABROAD

THE latest Admiralty statement on Royal Navy ship strength reveals that it has in commission four carriers, seven cruisers, one trials guided weapon ship, 26 destroyers, 39 submarines and 51 frigates.

It has 14 frigates and five submarines under construction, and, of course, the three "Tiger" class cruisers.

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

Naval Exercises

Spectacular sea-air exercises in which the Royal Australian Navy has been playing an important part ended in the South China Sea on April 2.

The exercises were carried out by a British Commonwealth naval 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 of part of the force 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."

New Peroxide Submarine

The second of the experimental high-speed peroxide submarines, H.M.S. Excalibur (Lieutenant-Commander J. R. Wadman), was provisionally accepted into service with the Royal Navy on March 22 from her builders, Vickers-Armstrong, 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 have a maximum speed of over 25 knots.

She will not be armed. Her peacetime complement will consist of four officers and 19 ratings.

To the Shipbreakers

The coast defence battleship Sverige and the former armoured cruiser Fylgia, have gone to the shipbreakers. The latter represented Sweden at the 1911 Coronation Review and was sent over to convey the body of the great scientist and evangelist Emanuel Swedenborg back to Sweden.

She was listed as an armoured cruiser by virtue of a 4 in. belt; later was reboilered, shed the foremost of her three funnels, and became a school ship.

Scimitar Squadron

The Royal Navy's first squadron to be equipped with the Vickers Supermarine Scimitar twin-jet interceptor fighter is to be formed in Lossiemouth, Scotland, in June.

Later the squadron will embark in the carrier Victorious. 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, 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 blown flap system"

to increase the lift and reduce landing speed.

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 nuclear-powered 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 Bethlehem Steel Co. She is to be completed in 1961, and cost \$100,000,000.

Listed as 11,000 tons, she will be bigger than any U.S. cruiser except the three "Salem" class (17,000 tons).

The design is as novel as her armament, the long flush deck being devoid of the complicated bridgework and tiers of large and small gun turrets, without funnels and the customary masts.

In their place the outstanding feature is the massive squared tower containing the control and navigating positions, sea cabins, and signalling stations surmounted by the usual complicated radar array and an aerial pole; a smaller secondary position aft controls the launchers aft and has the ship's boats stowed alongside.

She will be armed with "Terrier" missile mounts forward, "Regulus II" amidships, and "Talos" aft, providing a deadly offensive against attack launched from air, sea, land, or water whether by missile or conventional assault.

Her equipment also includes means for detecting enemy submarines and special methods for destroying them.

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 has 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 disciplinary 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.

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.

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 T.S. Canberra (A.C.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).

Petty Officer Pirie was outstanding in his efficiency in organising and running the routine set down.

Leading Seaman Myors and

Cadet P.O. Hockey of T.S. Condamine were a great help to the officer-in-charge of the camp. The general behaviour of the cadets helped to make the camp a success.

Sea Training: A ten days sea training and survey cruise in H.M.A. Survey Ship Warrego was a great experience for specially selected cadets.

The Captain of the Warrego later said he was impressed with their general standard. Training and efficiency was satisfactory. The Captain emphasised the necessity for discipline, particularly in regard to ship "discipline."

Should one cadet show lack of discipline, he lets his shipmates down. It is therefore intended that only cadets who show by their behaviour and discipline in the unit that they realise the importance of aiming for training in H.M.A. ships will be selected to go on board ships.

A cadet can sum up this way the requirements for selection for any activity in which he will represent the corps as a whole and his unit in particular. He must:—

- Have attended parades regularly.
- Be not less than 15 for sea-going training and not less than 14 and 9 months for harbour training.
- Have served for not less than 3 months in the Corps.
- Be smart in appearance.
- Be of very good behaviour.

Rifle Range: A large number of cadets take advantage of the rifle shooting practice and competitions at the Long Bay Range. The captain of the Rifle Club, Lieutenant Humphrey, has discovered some good

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

Regatta: A sailing and pulling regatta on Sydney Harbour on March 23 was a great success. Many parents and friends attended and made a picnic day of it.

Results:—

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.

Pulling (N.E.S. crews): Sydney 1, Sirius 2, Australia 3.

Pulling (Warrego Cup): Sydney 1, Tobruk 2, Warrego 3.

Pulling (ordinary seamen): Sydney 1, Australia 2, Tobruk 3.

The Division's rifle shooting

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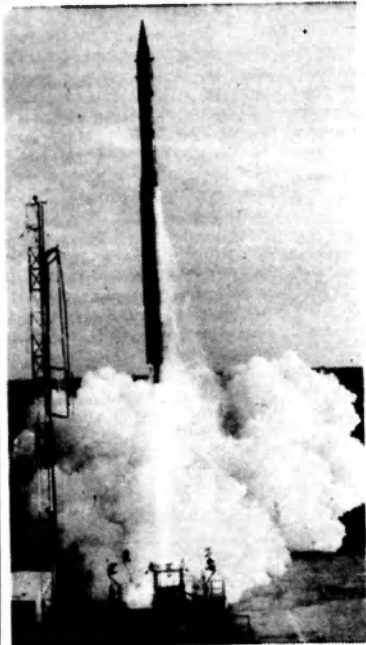
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SATELLITE LAUNCHING



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

The test sphere measured 6.1 inches in diameter and weighed only 31 pounds. It carried two radios, 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.

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competition on February 22 resulted:

Australia (208 pts.) 1. Warrego (117) 2. Tobruk (101) 3. Other scores, Sirius 102, Sydney 100, Albatross 59. The possible score was 400.

Annual Swimming Carnival: This was held in Balmoral Naval Depot swimming pool on February 15 and March 1. It was judged the best swimming carnival the Corps has held. The final day was attended by the President of the Navy League, Rear-Admiral H. A. Showers, and Mrs. Showers.

Captain Gellatley, H.M.A.S. Penguin, represented the Flag Officer in Charge East Australian Area and presented the prizes and trophies.

The Navy League aggregate point score cup was won by T.S. Australia, with T.S. Shropshire second.

T.S. Shropshire also won the Sirius Inter-Unit relay cup.

Sea-going Experience: Fourteen specially chosen cadets were privileged to go to sea in H.M.A.S. Quiberon for a day.

Unfortunately the weather was not too good, but despite a few cases of sea-sickness, the cadets had a good day out.

Queen Mother's Visit: Eight cadets from T.S. Condamine (Manly) had the honour to attend the cars 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 for her when she landed at Manly.

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

The cadets received special mention over the A.B.C. and they certainly looked and were smart in carrying out their duties. They wore No. 6 Dress (white uniform with blue collars).

THE NAVY

TWO PROBLEM SHIPS

By Oscar Parkes, Ass.I.N.A.

FOR 30 years a curious little turret ship could have been seen swinging round her buoy in the upper reaches of Portsmouth harbour, or pushing her way out past Spit Fort for firing practice — the Glatton. 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.

But in February, 1868, the Board had asked for a "low monitor of moderate speed and the smallest possible dimensions, capable of carrying the then incredible thickness of 12 in. armour and 25-ton guns in one or two turrets." No specific information as to the proposed duties of the ship was afforded, but the Controller inferred that "she was to be for the defence of our harbours and roadsteads, and for attacking those of the enemy." The Chief Constructor, Sir Edward Reed, described her as "a very exceptional vessel designed under very peculiar stress of circumstances" and evidently viewed her alleged duties with a certain amount of suspicion, as "there is no vessel with the objects of which I am less acquainted than the Glatton. She was designed strictly upon orders which I received and upon the object of which I was never informed."

Before the Committee on Designs in 1870 his scathing comments of her lack of sea-going qualities suggest that he considered she was intended for a wider sphere of activities than the harbour defence duties, to which she was presumably relegated by a freeboard which precluded any idea of opera-

tions at sea excepting in calm weather. In their report the committee stated that she did not answer to the conditions of a first-class coast defence ship through not being "fully equal to the most formidable sea-going ships with an ability to proceed in all weathers to any part of our coast."

Displacing 4,910 tons and carrying her two 12-inch guns in a 14-12-inch turret (later nine small guns were added), and steaming at 12.11 knots with 2,870 h.p., she bunkered only 240 tons of coal. This could be increased to 540 tons by loading special tanks intended to be flooded before she went into action in order to reduce her normal freeboard of 3 ft. amidships and 4½ ft. forward by a foot. It was a classical example of the low

freeboard fallacy born of the U.S.S. Monitor that the Glatton should proceed to sea with 240 tons of coal so that the reserve bunkers could be flooded. The Committee on Designs rightly considered that she would be unmanageable in such a condition, and dangerous in heavy weather.

An all-round bearing by at least one gun was claimed by the expedient of making the superstructure so narrow that when the turret was trained astern the guns could be fired on each side of it "by very great consideration and devising effect" as Reed put it. No records are available as to blast effects when this astern fire was carried out — a provision which would only be resorted to in wartime when in retreat and concussion damage would be of little consequence. Later on stops were fitted which precluded the guns being trained much abaft of amidships.

Against plunging fire the weather deck was of 3-inch iron — a loading of 608 tons — and she carried the highest percent-

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age of armour of any British armoured ship. Her ram 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 the draught of a sea-going one, and carrying the heaviest guns of her day in an impregnable hull whose radius of action was severely circumscribed by very restricted bunkerage, she was so beset by limitations that her employment was limited to zones where she was never likely to be employed.

COMMISSIONED in May, 1872, for the Dockyard Reserve as a tender to the gunnery school. Excellent, her total service saw her in the Particular Service squadron from June-August, 1872, at Portland, and during the 1887 manoeuvres as guardian of the Thames Estuary, together with the Prince Albert. She went to the shipbreakers in 1902.

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Built in the Dark Ages of the Navy when the fleet consisted of a heterogeneous collection of samples, the Shannon was our first armoured cruiser built as a reply to the Russian General Admiral. She was also the first ship to have a protective deck and subdivision in place of a complete armour belt, and the last armoured ship in the Service to have full ship rig and a single screw. No useful employment could be found for her as being too weak for the battle-line and too slow for a cruiser.

Designed primarily as an overseas flagship where she would most likely be engaged in duels, her armament and protection as a second-class armoured ship of 5,390 tons were disposed for single ship engagements, with the enemy well on the bow. Her two 10-inch guns were therefore mounted towards the rear of the long forecastle and fired through deep embrasures which allowed for arcs of training from dead ahead to just abaft the beam. These guns were protected by a 9.8-inch transverse bulkhead angled to form the embrasure port faces, and then

taken back as side armour forming a wide screen intended to shield the amidships battery from raking fire.

Amidships, six 9-inch guns on the upper deck were exposed to gunfire and damage from falling spars and rigging. It was intended to withdraw the men from these guns to the armoured forecabin after they had been laid, and fire them by electricity when passing the enemy, if an attempt to ram failed. At was the seventh 9 inch, mounted on a central pivot for traversing to either side and firing through similar deep embrasures, allowing direct fire astern with a bearing to slightly ahead of the beam.

The Shannon was distinguished by having a triangular ram which stuck out 9 ft. from the stem. This was detachable and supposed to be stowed on board during peace-time so as to obviate the risk of injuring a consort — a liability becoming increasingly frequent. As this ram could only be fitted in dock, and there was no room for it on board, service tradition averred that it was generally chasing her around the world when not in store at Devonport! Arising out of which was the facetious taunt that the ship's officers could not be trusted to handle her if and when it were ever fitted through lack of practice in avoiding ships in company.

HER sea-going qualities were well spoken of on the Pacific station, but unfortunately she had to be recalled owing to ammunition difficulties. Being the only ship on the station with 10-inch guns there was no reserve of ammunition for them; her captain had ordered not to carry out 10-inch target practice, as it was an expensive business sending out heavy

(Please turn to page 30)

For Sea Cadets

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

DESCRIBED to me by her Commanding Officer, Captain C. P. Coke, D.S.O., R.N., as the most modern aircraft carrier in existence, H.M.S. Victorious was commissioned for service at Portsmouth on January 14, 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 Victorious, and she is certainly a ship of which both the Admiralty and the Dockyard can justifiably be proud.

The Victorious is the first aircraft carrier in the Royal Navy to be fitted with all of the British invented and developed aids to naval flying — the fully angled flight deck, steam catapults, mirror sight deck landing aids, and the aircraft positioning roller device.

The work of reconstruction carried out on the ship has been the largest task of its kind ever undertaken in a Royal Dockyard or a commercial dockyard in this country. In the course of the refit and modernisation, the Victorious was completely rebuilt above the hangar deck and fundamental changes were made to her structure.

The underwater beam of the ship has been increased by eight feet, and as a result of the fitting of the angled deck, the overall beam is now nearly 150 feet. The depth from the keel to the flight deck level has also been increased by four feet.

Many problems had to be tackled during the conversion.

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

The virtually rebuilt Victorious is now capable of landing the latest and heaviest aircraft of the Fleet Air Arm, which can be operated from

By R. V. B. BLACKMAN — in
London

two modern steam catapults while their landing will be facilitated by two of the most up-to-date 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-tier operations room, 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 radar aerial — the first of its size to be mounted in a warship — and a conventional lattice mast at its after end and abaft the funnel.

The most striking feature of the new Victorious is her fully angled deck. An angle of 8½ 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 35½ feet. The extension is supported by an enormous sponson bracketed into the ship's structure.

The overhang represents a

compromise between the claims for the most efficient flight deck layout and the need to obviate the risk of damage in a seaway.

The flight deck, just over 775 feet long, is strong enough to take the heaviest of Fleet Air Arm aircraft, including the Blackburn N.A. 39. The arresting gear comprises four wires with an average span of 80 feet.

A single emergency barrier made of nylon is carried. Deck landing mirror sights are fitted to port and starboard, the angled deck necessitating the port sight being mounted well outboard on its own large sponson. Two hydro-pneumatic operated centre-line lifts handle adequately the required working load. In addition to the usual refuelling facilities, the flight deck is provided at selected positions for supplying electric power, low-pressure and cooling air for starting and servicing aircraft, weapons, and weapon systems.

Two parallel track, 115 feet catapults are fitted forward with aircraft positioners and jet blast deflectors. The steam for these catapults is provided from the wing boiler rooms on No. 6 deck forward.

The main hangar is divided into two sections by a fire curtain of asbestos cloth. The usual spraying arrangements are fitted, while the lift opening to the main hangar can be sealed off by hydraulically operated hangar doors. The lift opening to the hangar extension, which is equipped to serve as an electronics 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 flight deck and above the hangar, it is, in effect, a development of the deep beam system of the flight 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 used primarily 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 worked to. 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 Victorious is powered by three sets of Parsons geared turbines aggregating 110,000 shaft horse power and equal to a speed of 31 knots, and can be steamed from the machinery control room by hydraulic remote controls. One reason for the six new Foster Wheeler boilers installed during the modernisation was the provision of additional steam needed for the new generators and the steam catapults.

The main electric generating capacity of the ship has been increased from 2,100 kilowatts to 1,200 kilowatts, including additional diesel generators.

The radar fitted in the Victorious is of advanced design, and has been described as the best ship-borne air defence radar in the world. It combines early warning and high discrimination of an aircraft's position in plan and height simultaneously.

A complex semi-automatic electronics system collects and displays the information provided by this 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 greater numbers than ever before. A further new high discrimination radar, with a computer is also fitted to "talk down" aircraft safely on to the deck in all weathers.

The damage control and A.B.C.D. defence 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 candlesticks from the battleship Nelson. It also has in its keeping 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 4, 1937, launched on September 11, 1939, and completed on May 15, 1941. As rebuilt she has a displacement of about 30,000 tons and is armed with twelve 3-inch guns, six 40 mm. Bofors anti-aircraft guns, and four three-pounders.

Between May, 1911, and May, 1915, the Victorious and her aircraft were active in many actions against the enemy. Air strikes were launched against the Bismarck and Tirpitz in 1911, 1912 and 1911, while her convoy escort duties included those to North Russia and Malta in 1942.

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 Palembang.

On May 9, 1945, 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 reborn. All her sisters, the Formidable, Illustrious, Indomitable, Implacable and Indefatigable, have been broken up, but the Victorious lives on to keep company with the post-war aircraft carriers Ark Royal, Eagle, Albion,

A DANGEROUS PRACTICE



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.

It is the intention of the Council to rebuild and rehabilitate the port, which has fallen into very bad repair since the end of the war.

Whitstable was the first harbour in the world to have a direct railway connection, but the old line to Canterbury was closed in 1953 and the main line to the East Kent resorts has no spur to the quays.

"Fifty-six per cent. of pedal cyclists killed on the roads in 1957 were primarily responsible for their own deaths," says Mr. T. G. Paterson, Chairman of the Australian Road Safety Council. The practice of "whipping behind," shown here, was one of the main causes of such needless tragedies.

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 Paltridge, on June 18.

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

More than 3,000,000 line drawings of three basic rules for children's safety will be distributed in the next month as a contribution to the "Life is so Precious" campaign of the Australian Road Safety Council.

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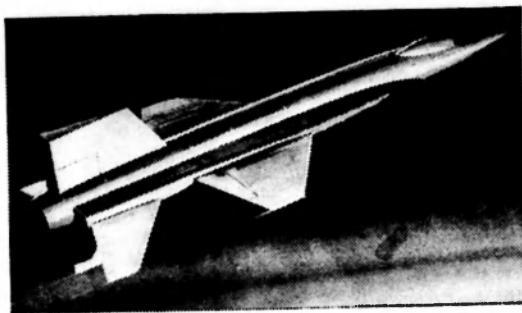
TRIP INTO SPACE

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 Defence.

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 from a B-52 bomber over Wendover Air Force Base in Utah and landing it at Edwards Air Force Base in California.

In case of trouble in the air, the entire cockpit will become the pilot's built-in "escape capsule." A special space suit will also maintain constant pressure should leaks develop in the cabin cockpit.



An artist's conception of the X-15.

Before it is off the ground, the X-15 will have flown several entire full-length "missions," with the actual test pilot at the controls, via flight simulators, according to North American engineers.

months the Dockyard laboured to make her better and better. Owing to a miscalculation she was a foot overdraught in 1876, and when again commissioned matters were much worse. So her rig was reduced to a barque, but engine trouble kept her in dockyard hands for another year. Ultimately her bunkering was fixed at 569 tons full load and she was sent to the Channel Fleet for a shake-down cruise before going out to China. She arrived there in April, 1878, but was ordered home in July for further alterations. Another spell in the Channel, followed to see how she fared, and then to the Mediterranean for a few months 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.

(From the London "Navv")

THE NAVY

FICTION

A MARK ON THE CHART

By C. D. BELL

HARDING. Navigating Officer of H.M.S. Lorimer, put down his dividers, picked up his pencil and made a neat, small cross.

"They must have been caught right in the centre of that storm," he said, as he straightened himself.

There was silence for a moment, and then Debroy, the First Lieutenant, said slowly: "And now, all that remains of them is a mark on the chart."

Commander Inchcape, leaning back on the settee, looked up at Harding's long, sensitive face.

"In this case," he replied, "it has left a few badly scared merchantmen and a German cruiser, which may, or may not, come our way."

"And if she does, she will sink us precisely as she sank Laxton," said Debroy.

"Let us hope we put up just as good a fight."

Debroy nodded sombrely. "It was only a week ago that we had a farewell party in her wardrobe, and now she has gone."

From without came the voice of the Boatswain's Mate. "Hands darken ship."

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

That night Inchcape found it difficult to sleep. The picture of Laxton sinking in the storm passed continuously in front of his eyes.

Confound that chap Harding and his semi-mystical talk. When a ship was sunk that was the end of it, nothing remained.

He must get some sleep. Tomorrow they would be in the danger zone. It was not likely

that the German cruiser would come this way, to the narrow stretch of water between Scapa and Iceland — but she might. In war it was the unexpected that happened, so tomorrow night and the night after he must spend on the bridge. Eventually he slept.

It was nearly six o'clock when Inchcape awoke. The ship was rolling a little more heavily, he thought, as he slid from his bunk. Pulling on his oilskins and seaboots he clambered up to the bridge.

Low, dirty looking clouds were beginning to race across the sky and the sea was covered with white horses.

Lawrence, the Gunner's Officer, was on watch. He turned towards Inchcape as he walked over to the compass platform. "Wind began to get up about an hour ago, sir," he said.

Inchcape nodded and gazed round the horizon. The air was damp and moist and the temperature had risen. The clatter of footsteps on the bridge ladder came to his ears. Turning, he saw Debroy walking towards him.

"Morning, Number One," he said, "I think we are in for some dirty weather. If it gets much worse you had better get life lines rigged."

Debroy nodded and held out a signal pad. "We've just had this weather report through, sir. The storm in which that cruiser sank Laxton has altered course and is coming down on us."

During the day the wind increased, and by the end of the afternoon watch 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 following sea. Inchcape, standing alone on the starboard wing of the bridge, thought longingly of his warm cabin, and tried to reconcile himself to yet another night of vigilance.

Over the next two hours the storm gathered in intensity. Vivid flashes of lightning streaked across the sky, the wind shrieked and moaned in the rigging.

Debroy, he saw, had joined Harding in the corner of the bridge, whilst Lawrence had relieved Kirkland on watch.

"Ship keeps on wanting to veer to port, sir," said Lawrence, looking down at him from the compass platform.

Inchcape ignored the remark. He glanced round and felt a spurt of temper rising within him. What the devil were they all doing up here on the bridge? All day long he had sensed an air of expectancy. They were passing through a storm, just as they had passed through storms before, and that was all there was to it.

AND yet — Laxton and the convoy had died in this storm, and what Lawrence had said was true. The ship did keep veering to port — almost as if she were trying to get to 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 was steering so badly.

He walked over to the port side of the bridge and looked over the side. The sea seemed

Continuing

TWO PROBLEM SHIPS

From page 26

shells all the way round the Horn to the magazines at Esquimalt.

Architecturally, the Shannon's most distinctive feature was in her waterline protection. In place of the complete armour belt Chief Constructor Barnaby had cut this short at 60 ft. from the bows with a 9-inch transverse bulkhead, and from the lower edge of this a 3-inch armour deck 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 distrust and suspicion in his subsequent designs — especially in the "Admiral" class — but in course of time was accepted as a normal and adequate method of safeguarding the water line in lieu of,

or as an adjunct to, armour. With a full ship rig she was intended for sailing more than steaming, and although her engines of 3,370 h.p. were driven by high-pressure steam of 70 lbs. per square inch, her best was 12.2 knots. Bunkering was only 560 tons. As there was some apprehension about going into action with such a high pressure (for those days) in the boilers, her engines were designed to work the steam expansively to any desired extent, with a special arrangement of valves to allow it to be reduced to 2 lbs., admitted directly into the low-pressure cylinder.

Laid down at Pembroke in 1873, she was to all intents and purposes ready for sea when entering Plymouth Sound in July, 1876, but for the next 12

taintly tinged with a shade of green, even the darkness seemed to be permeated with it.

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

Inchcape nodded. Yes, Debroy 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.

He jumped to the compass

platform, shouldering Lawrence aside as he did so. "Hard a starboard," he roared down the voice pipe, but even as he spoke he knew that it was too late. He turned, and fascinated, watched the other ship.

She came straight towards them without attempting to alter course, almost as if she were unaware of their presence. In the green light she looked deadly, menacing.

And then she was on them, her bluff bow towering above their bridge.

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 greeny white foam.

Harding 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 swinging 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, scattering like a herd of frightened sheep.

He watched them as they spread farther and farther

CREW CHANGE IN RELAY



The BP Group presented this £500 surfboat, British Patrol, as first prize in the Western Australian State championships of the Surf Life Saving Association. The boat was won by Cottesloe Club, and proved its worth in its first start, winning the marathon race by 200 yards and setting a record for the course. Here Cottesloe changes crews during the marathon relay.

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 taut, fascinated faces of the men around him, the ships 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.

Harding moved closer to his side.

"It's Laxton," he said quietly. Inchcape ignored the remark and watched spellbound. A great flash of flame illuminated the other ship, and he knew that she had been badly hit.

For a moment she seemed to hesitate and then staggered slowly on.

To his ears came Lawrence's voice. "Hard a starboard," he said. He glanced over the top of the bridge and saw their bow swinging to port.

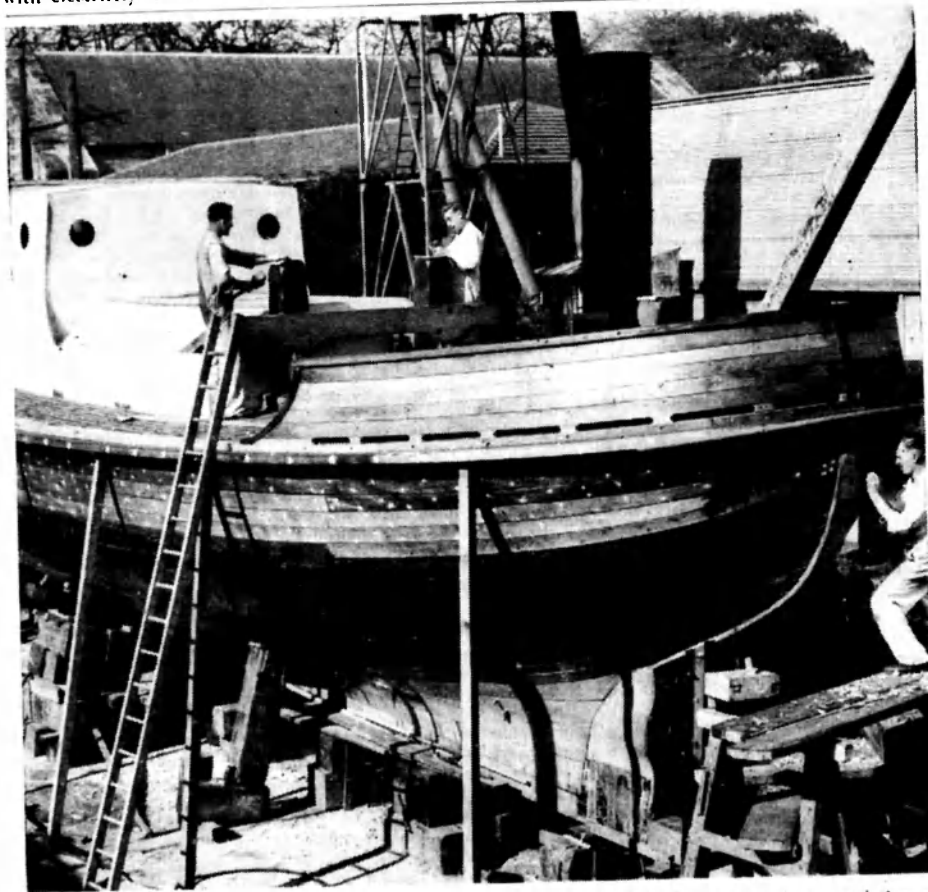
"Watch your course." He turned and looked over at Lawrence.

"I can't hold her, sir," Lawrence spoke desperately. "rudder's hard 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



The Goondooloo, the first of three new pilot ships for the port of Sydney, is nearing completion at the Maritime Services Board's slipway at Goat Island, Sydney Harbour. It will probably be launched in August. The new ships will replace the Captain Cook in Sydney and the Newcastle pilot ship.

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

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 regretfully, 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 could see."

Inchcape did not trouble to reply. Stepping off the compass platform, he turned, and without a word, walked from the bridge

(From the London "Navv")

NEW P & O COMMODORE

Captain J. C. W. Last, the new Commodore of the P & O fleet, was chief officer of the Strathallan when she was sunk by enemy action in the North African landings in 1912.

He was awarded the O.B.E. for courage and devotion to duty in this action.

MEMORIAL TO WAR DEAD



LONDON: The recovery of Saint Paul's Cathedral, London, 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 re-designed by Sir Christopher Wren.

Its Dean, Doctor Matthews, says there will be three "high-lights" 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 a canopied reredos, 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 near future according to the Petroleum Information Bureau (Australia).

At the end of 1957 there was a total of 50,990,000 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 1,560,000,000 metric tons.

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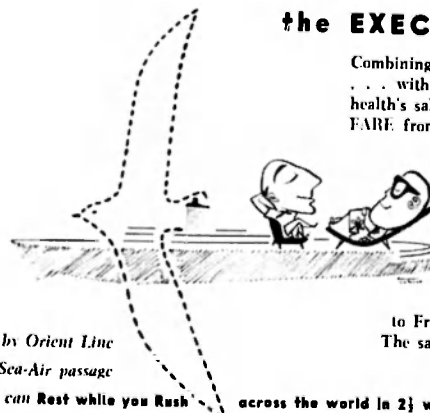
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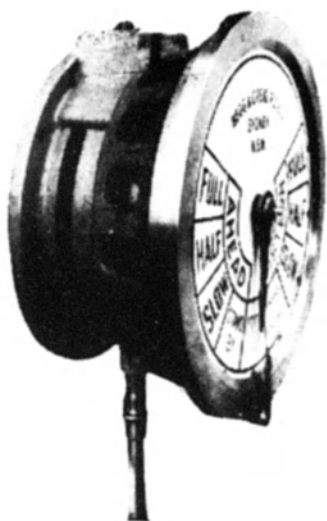


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