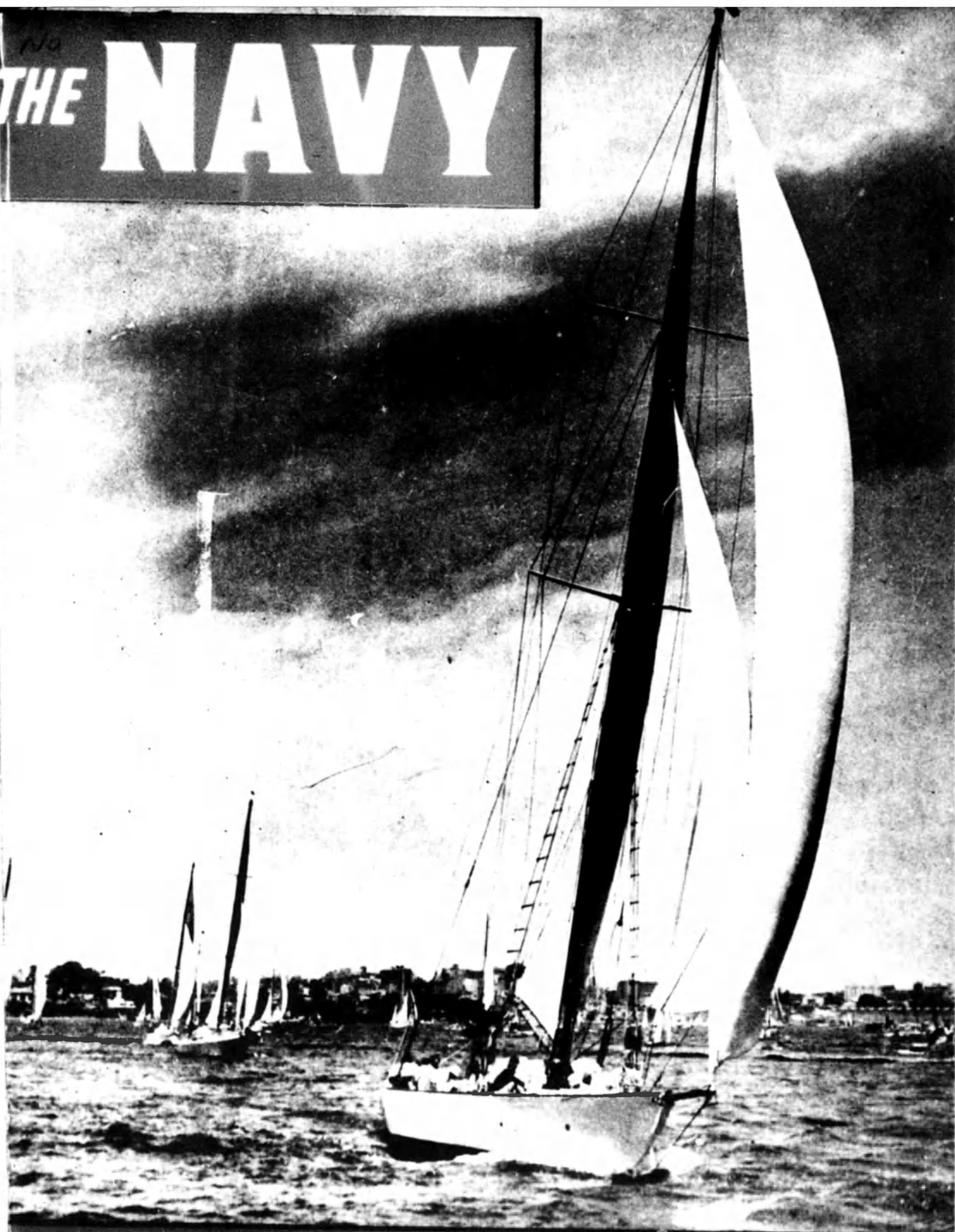


No
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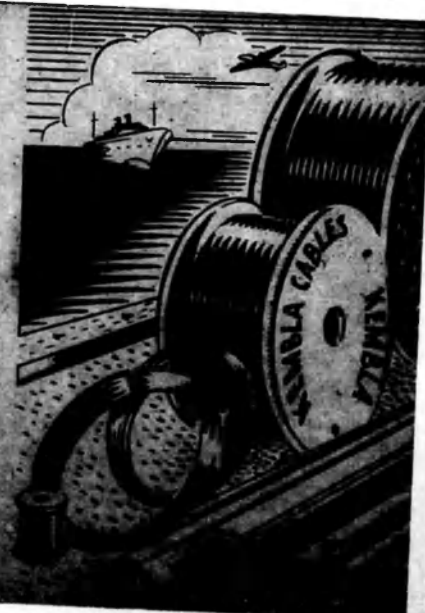
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January, 1957.

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No. 1

AMERICA AWAKENS

If the Anglo-French operations in the Canal zone have achieved nothing else they have obviously awakened America to the danger of Russian infiltration in the Middle East.

It was, in American eyes, perfectly right for the U.S. Government to subject Britain and France to the severest censure for their actions. It was a shock, however, when the Soviet leaders joined in with veiled threats of missiles on England and France if they did not desist.

Although the United States Government must have known of Soviet ambitions in the Middle East, it seems pretty clear that American public opinion was not supported with that knowledge. Consequently President Eisenhower's request to Congress early this month for power to move into Middle East politics with arms and economic aid — to forestall Russian penetration — must have been somewhat puzzling to the American voter.

The hopeful interpretation that can be put on this new American move is that the U.S. Government is awakening to a sense of realism after a period of naivete in its attitude towards Middle East problems.

The facts of Russian involvement in the Middle

East were officially disclosed in London after the Canal cease-fire.

In the past year Egypt received from Russia military aid worth at least £A187.5 millions.

It included at least 50 Ilyushin bombers; at least 100 M.I.G. fighters; about 300 medium and heavy tanks; more than 100 personnel carriers; between 400 and 500 guns of various calibres; and a number of rocket launchers. In addition much other equipment had been supplied such as mines, radar, and wireless telegraphy equipment.

The Egyptian navy received from Russia two destroyers and four minesweepers, between 15 and 20 motor torpedo boats and some smaller vessels. It is also known that delivery of one and probably more submarines from the Soviet bloc was in hand before the Anglo-French intervention.

Although it is not known if Soviet bloc volunteers went to Egypt after the British-French operations started, the following facts are significant pointers to Soviet policy and influence:

- At least one thousand Soviet bloc technicians and instructors were previously sent to Egypt.
- About 300 Russians and Czechs made towards the Sudan from Egypt shortly after the Anglo-French intervention. A number of them appeared to be aircrews and mechanics.
- The bomber force was not used by Egypt. Most of it appeared to have been flown out of the country. Nearly all the fighter force

and some bombers were, it is known, destroyed on the ground.

Soviet bloc aid was also given to Syria. During the last year the following equipment is known to have been delivered to the value of £A25 million: at least 100 medium tanks and 100 armoured personnel carriers; 50 to 100 self-propelled guns; at least 100 other guns of various calibres; and large quantities of minor armaments such as ammunition, vehicles and radar.

These facts show the extent to which Russia was prepared to use Nasser and his allies to penetrate into the Middle East.

After forcing the British and French out in favour of an impotent U.N. token police force, the United States has apparently realised that there are Russians at the bottom of Nasser's garden.

THE NAVY VOTE

The new Director of Australian Naval Reserves, in a recent newsletter, refers to the cut in the Naval vote by £9 million to £39,065,000.

The Director says that the cut "is not so serious as it appears, as £6 million expended last year on H.M.A.S. Melbourne and her aircraft is not again required this year."

Nevertheless, he points out, the cut of £3 million, coupled with rising costs, has made necessary certain economies which will delay our building pro-

gramme and decrease "slightly" the personnel strength of permanent Navy.

The Director points to these four effects:

1. A reduction in expenditure on stores and dockyard working. This will cause a delay to the completion of the "Darings" and new frigates. It also means that the periodical refitting of most ships of the Reserve Fleet will be deferred.

2. The amount of building works which can be undertaken this financial year will also be reduced. However, £350,000 has been set aside for houses for Naval personnel under the Commonwealth-State Housing Agreement.

3. The activities of some shore establishments are being reduced and complements adjusted on the Naval and Civil side to keep as many ships in commission in the Active Fleet as possible. Part of this reduction has been the concentration of all Reserve ships in Sydney, with consequent saving of Naval manpower.

4. A slight reduction in Permanent Naval Force personnel. This will be achieved by granting free discharges to selected men who have justified claims for release on compassionate grounds. National Service and Naval Reserves are not affected, but training for reserves has been curtailed.

Despite the Director's reassurance to his reserves the outlook is depressing. It is to be hoped that the Australian Government, in its next Budget, will realise the vital importance of a virile Navy and will afford that Service proper financial support.

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Navy's Part in Suez Action

The story of the Anglo-French action in the Suez Canal zone was reported day by day in newspapers and radio and television news services throughout the world. Much of it was unavoidably disjointed, for many reasons. Even now, when the British and French forces have withdrawn, probably few people have a clear picture of the sequence of events that followed the Anglo-French ultimatum. The following is the Navy's side of the story, but because the Suez action was largely a Naval operation it gives possibly the fullest account yet published in Australia.

THE offensive opened on October 31 with air operations against Egyptian Delta airfields and other military targets by land-based and Naval aircraft. The first news associated with the Navy came from H.M.S. *Newfoundland* (Captain J. G. Hamilton, R.N.), who encountered an Egyptian frigate by night while on shipping protection duties in the Gulf of Suez, and sank her when she failed to answer when challenged or to stop when called upon to do so.

The Egyptian frigate was later identified as the *Domiat*, formerly the River class frigate *Nith*. It was announced in London that she was carrying mines with the apparent intention of laying them in the area. Sixty-nine survivors were picked up by the Navy.

Another early incident involving the Navy was the shooting down of an Israeli aircraft by the frigate *Crane* (Captain B. S. Pemberton, R.N.) when four aircraft made a concentrated attack on the ship. This incident was also in the Gulf of Suez.

As communiques were issued with increasing frequency from Allied Headquarters, it became evident that the main Naval burden was falling on an Anglo-French aircraft carrier force. More than 100 ships of various types were operating in the Eastern Mediterranean, including five British aircraft carriers, the *Eagle*, *Albion* and *Bulwark* with opera-

tional squadrons of aircraft, and the *Ocean* and *Theseus* with operational helicopters and units of a Royal Marine Commando embarked. In addition, there were French operational aircraft carriers, led by the *Arromanches* (formerly H.M.S. *Colossus*).

All these forces operated under a joint command organisation, in which the senior British officers included Admiral Sir Guy Grantham, G.C.B., C.B.E., D.S.O., the Commander-in-Chief, Mediterranean; Vice Admiral L. F. Durnford-Slater, C.B., Naval Task Force Commander; Vice Admiral M. L. Power, C.B., C.B.E., D.S.O. and Bar, Flag Officer Aircraft Carriers; Rear Admiral D. E. Holland-Martin, D.S.O., D.S.C. and Bar, Flag Officer Support Forces; Rear Admiral G. B. Sayer, C.B., D.S.C., Flag Officer Helicopter Group; Commodore R. de L. Brooke, D.S.O., D.S.C. and Bar, R.N., Commodore, Assault Forces; Captain J. S. Walwyn, O.B.E., R.N., Captain M/S Group; Captain J. G. Hamilton, R.N., Senior Officer Red Sea Force.

The senior French Naval officers in command were Rear Admiral Pierre Lancelot, Deputy Naval Force Commander, and Rear Admiral Y. G. M. Caron, Flag Officer French Carrier Force.

The measure of the Naval contribution may be judged by a report that carrier-borne aircraft

made upwards of 2,000 sorties against military objectives and naval targets by November 6. This great effort was achieved with the loss of only one British life and two Naval aircraft, and was executed by Naval air pilots with great precision to limit civilian casualties. The combined land-based and carrier-borne air effort established complete air supremacy—a pre-requisite for the landing of ground forces.

Varied air operations

Naval air operations were very varied, ranging from routine strikes made against military land targets to attacks on bridges and blockships and the transport of fighting troops and casualties by helicopter. At one time Wyvern and Sea Hawk aircraft dived-bombed the vital railroad bridge west of Gamal airport and destroyed it. On another occasion Naval aircraft attacked an Egyptian blockship as it was being towed to the southern end of Lake Timsah. Unfortunately, although damaged, the blockship was subsequently towed on into position and sunk.

The first Naval loss was reported on November 3, when a Wyvern aircraft of No. 830 Squadron was shot down over the sea. The pilot, Lieutenant D. F. McCarthy, R.N., ejected himself and made a safe descent, but within 4,000 yards of hostile shore batteries.



Drop and pick up drill: A Royal Australian Navy frogman in exercises in Sydney Harbour sends up spray as he comes alongside a rubber dinghy towed by a landing barge.

While Naval fighter aircraft from H.M.S. *Eagle* and H.M.S. *Bulwark* kept watch over the pilot, marking his position, other aircraft engaged the shore batteries until an air/sea rescue helicopter, piloted by Lieutenant-Commander Bailey, R.N., arrived from H.M.S. *Eagle* eight miles away.

Two hours after ditching, Lieutenant McCarthy was back on board unhurt and cheerful.

The following day Sub-Lieutenant C. J. Hall, R.N., was killed when his aircraft crashed over the side of H.M.S. *Bulwark* while landing on from a strike mission.

About this time Lieutenant Donald F. Mills, R.N., the pilot of a Sea Hawk aircraft, was forced to bale out about 300 miles inland and 10 miles east of the Canal. A helicopter was sent to rescue him while Naval fighters ensured that the Egyptians did not harass him from the ground. Other fighters circled overhead to guide the helicopter, which picked up Lieu-

tenant Mills and returned him to H.M.S. *Eagle*.

Four Egyptian E-boats midway between Alexandria and Port Said were attacked by Sea Hawk aircraft on November 4. One was blown up, two set on fire and the other damaged. The damaged vessel was allowed to pick up survivors, and made its way back to harbour. This act was recognised by the Admiralty in a signal congratulating the aircraft carrier on the success of its attack and the humanity which allowed the remaining damaged E-boats to rescue the survivors of the other three and put them ashore.

Support for landings

On November 5 immediate and continuous support throughout the day was given by Naval carrier-borne aircraft to the landing of allied paratroops in the Port Said area; the first occasion, as far as is known, when such forces have been sustained and covered solely

by carrier-borne aircraft. The small groups of isolated British and French paratroops became the sole responsibility of Naval aircraft from the carrier force. Throughout the day the control teams who landed with the first "drop" passed on the positions of targets, which required bombing or strafing, to waiting "cab-ranks" of Naval aircraft overhead.

Instructions were passed clearly and accurately, and the aircraft were seldom short of targets. As the paratroops had to fight without administrative support for 24 hours, the carriers did all that was needed, and more, to supply urgent needs.

On that day a total of 373 sorties were flown from the carriers, the targets engaged being tanks, self-propelled guns, anti-aircraft positions, hostile troop concentrations, motor torpedo boats, aircraft on the ground and their hangars.

Three aircraft were lost but all the pilots were saved.

Only 90 minutes after the "jump," a Naval helicopter was sent to land at Gamil airport in answer to an urgent request for medical supplies and to evacuate wounded. This was the beginning of a series of helicopter lifts of wounded to the carriers. Destroyers were used as plane guards and Whirlwind helicopters were turned over to casualty evacuation. The helicopters had to fly over about 100 miles of open sea each round trip.

The Flag Officer Aircraft Carriers received the following message from the Army Commander ashore at the end of the day:

"To all supporting aircraft: many thanks for your magnificent support to us this day, which thrilled all ranks. Its timely effectiveness and accuracy were beyond praise and doubtless saved many casualties. Please convey our gratitude to all concerned"

During the morning of November 6 No. 45 Royal Marine Commando, consisting of some 500 men, was put ashore by a fleet of helicopters from H.M.S. Ocean and H.M.S. Theseus. They were landed in the Port Said area as the rest of No. 3 Commando Brigade was being landed from L.S.Ts. and L.C.Ts. manned by Royal Marine crews. The whole operation was completed in 91 minutes.

It was the first time this form of Naval landing had been carried out.

Many of the Commandos landed by helicopter were battle-hardened troops who formerly served in the Korean war and in jungle operations in Malaya. They were lifted from the aircraft carriers Ocean and Theseus by a fleet of Naval S.55 Whirlwind and other helicopters of the Army and R.A.F. embarked.

No. 3 Commando Brigade was commanded by Brigadier R. W. Madoc, O.B.E., who served in

Crete during World War II and was there taken prisoner.

The units of the Brigade were under the command of the following officers: Lieutenant-Colonel David G. Tweed, M.B.E. (40 Commando); Lieutenant-Colonel Peter L. Norcock, O.B.E. (42 Commando); and Lieutenant-Colonel Norman H. Tailyour, D.S.O., who was wounded during the operation in Egypt (45 Commando).

Helicopters' "wonderful job"

Subsequently, in a letter to the Admiralty, Captain E. F. Pizey, D.S.O., R.N., Commanding Officer of H.M.S. Theseus, described the "wonderful job" performed by the helicopters in ferrying the Commandos from ship to shore.

"The two squadrons whipped the men ashore in record time," he wrote.

The helicopters, after the initial lift, returned in groups of five to reload within about a minute, and after every second flight they were refuelled in four minutes. While all this was going on the first casualties from the Parachute Regiment, which was dropped the previous day, were being received in the Theseus from H.M.S. Eagle, also brought in by helicopters.

"After our assault Commando had been landed," the letter continued, "the 'choppers' turned their attention to Commando casualties and in fact one Royal Marine Commando who landed with the first wave was back on board and in bed within 20 minutes. Very soon we had about 30 casualties on board. We were in fact acting as the forward casualty clearing station and the rear receiving station, since the 'choppers' could do the job so quickly and efficiently."

The main Army medical unit was on board the Theseus and at one time as many as 11 doctors

were working on the casualties as they came in. The letter added: "The speed of helicopter casualty evacuation showed up very strongly the imperfections of boat transport. When we entered harbour and had a French hospital ship near us, it took far longer to transport Frenchmen by boat to her than it had taken the 'choppers' to bring them from shore. I am sure the helicopter assault carrier, with hospital accommodation, is here to stay."

Captain Pizey went on to describe "a really splendid rescue." Three helicopters were returning from H.M.S. Eagle when one of them had to ditch about a mile or so from the ship because of the shortage of fuel. On board the helicopter with the pilot were two French paratrooper stretcher cases.

The pilot hauled one of them out through the escape hatch, saw him swimming, and then went to the door of the cabin. He opened it as the helicopter was sinking and somehow heaved out the second man, who was floating in his stretcher. The pilot then kept both casualties afloat until they were rescued by another helicopter with winch lifting gear. Two minutes later the pilot was picked up and landed on H.M.S. Theseus.

Landing problems

Supplying stores, equipment and food for the Allied Forces firmly established ashore, directing the safe entry and speedy discharge of warships and loaded landing craft and supply vessels into Port Said at the time of its occupation, was the Queen's Harbour Master (Commander L. G. Lyne, D.S.C., R.N.) on the staff of the Naval Officer-in-Charge (Captain E. W. Briggs, D.S.C., R.N.) who was on board H.M.S. Chevron. The first ships into Port Said were minesweepers of the Royal Navy and French Navy, followed closely by

landing craft laden with troops and the destroyer Chevron.

From that ship, secured in a commanding central position in the outer harbour, Commander Lyne ordered the entry of the small armada waiting to land troops and vital support equipment. Normally few alongside berths exist in Port Said. But while fighting was still in progress and columns of smoke rose from the town, the initial problem of ascertaining those suitable and free from mines for landing craft to drop their ramps was tackled.

For major ships with deeper draughts and demanding deep-water berths, there was the same problem. Without mishap, however, ships and smaller craft were marshalled to off-load their cargoes, men and material in the right order and in the correct place, and then to make room for others still waiting.

Ironically, the recently-finished fishing harbour, which men of the Royal Engineers helped to build during the British occupation of the Canal Zone, proved of unexpected help during the operation.

After the cease fire the efficiency of Naval radar was demonstrated on November 8 when an unidentified aircraft was picked up on H.M.S. Bulwark's radar screen. The aircraft was located and identified by Naval fighter aircraft as a United Nations plane No. DC 9097.

When the pilot of this aircraft later sent a distress call asking for his position to be verified and a course given him to follow, he was amazed to learn that he had been tracked and identified.

He was assisted by Naval aircraft who directed him to the coast, from which he was able to steer a course for Cairo, which was his destination.

Later, Naval fighters escorted through the assault area an aircraft carrying General Burns after

A BIG LIFT FROM A CARRIER



This anchor from the carrier H.M.A.S. "Melbourne" dwarfed the workmen below at Garden Island, Sydney. It was being replaced for maintenance.

he had been to Cairo for talks with the Egyptians. Good wishes for a successful mission were passed to the General.

Advice concerning areas declared dangerous to shipping in the Eastern Mediterranean and Red Sea while operations were in progress was cancelled by the Admiralty on November 16, but in doing so the Admiralty drew attention to the fact the Egyptian authorities had broadcast the following warning on November 14.

"To all ships. Until further notice the area of latitude 29 de-

grees north of the Gulf of Suez is hereby declared dangerous to navigation. Ships navigating in this area will do so at their own peril."

The Admiralty also stated that information had been received that the Egyptian authorities had laid mines in the approaches to Alexandria.

No Reservists recalled

From the Naval point of view one of the achievements of the operations was that they were carried out without recalling reservists. It was only necessary to re-

tain certain categories of men beyond their normal time for discharge. This affected some Special Service ratings and Royal Marine other ranks, but it is the intention that the retention period will not be more than four months and, as Mr. Butler, the Lord Privy Seal, informed the House of Commons on November 13, "it is the aim to reduce this period of extension gradually."

In informing the Fleet of their intention to put Mr. Butler's promise into effect, the Admiralty explained that men must expect for the present to serve about seven years and four months on active service and four years eight months in the Reserve, but earlier release will be given where an overall surplus exists in a particular branch.

The principle of "first retained/first out" will be followed, but no one will be held simply because others are still serving, who on this basis should be out first. Transport or operational reasons may prevent a man being brought home first.

Additional terminal leave for retained men was under consideration, the Admiralty added.

Gratitude to all those who took part in the operations was also expressed by the Lord Privy Seal. On November 14 he told the House: "I am sure that I am expressing the feeling of the whole House in thanking not only the Forces—in particular the Navy—for the actions they have undertaken, but also the reservists for the part which they have performed."

The term "reservists" clearly embraced retained men, and the Admiralty, when subsequently the Board endorsed this statement and paid tribute to officers and men of the Royal Navy and Royal Marines who took part in the operations in the following statement:

"These operations represent a new development in warfare. In order to reduce civilian casualties and damage to the absolute minimum, severe restrictions were imposed on our bombing and support bombardment. Despite this the assault was carried out with such skill and was so well supported by the Fleet that our casualties, and those of the Egyptians, were kept to an absolute minimum."

"A striking new development was the use of helicopters, operating from carriers to land Royal Marine Commandos. The Fleet Air Arm provided half the initial striking force against the Egyptian Air Force and practically the entire close air support for the vital assault and consolidation by paratroops and Royal Marine Commandos."

"Their Lordships fully appreciate that the great part played by

the Navy in this operation was not achieved without much hard work and considerable disturbance to many officers and men. All concerned may be justly proud of the part they have played in the success of the operation — Well done!"

Two Royal Marine officers and eight Royal Marine other ranks were killed during the operations in Egypt.

Four Royal Marine officers and 48 Royal Marine other ranks were wounded.

In addition one R.N. officer (Sub-Lieutenant J. C. Hall, R.N.) was reported missing presumed killed, as a result of an accident when his aircraft crashed over the side while landing on H.M.S. Bulwark.

All the Royal Marine casualties were members of No. 3 Commando Brigade.

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A SAILOR LOOKS BACK

Captain Kennedy, of the Orient Line, looks back over his early years at sea—and recalls days of adventure, storms, violent death, earthquake, fire, and hardship. His story has been republished from the Orient Line Staff Newsletter, with permission of Captain Kennedy and the Orient S.N. Co. Ltd.

By CAPTAIN G. S. KENNEDY, C.B.E.

IN 1902 I went to sea as an apprentice, less than 14½ years of age, in the four-masted barque *Clan Galbraith*. Her captain was from Nova Scotia and his brother was a first mate. The second mate was a rigger from Belfast with no knowledge of navigation. The boatswain was an Irishman, the carpenter and sailmaker were both Finns. The cook was a negro, and the steward was the one and only Englishman.

There were five apprentices and 20 so-called able seamen. They comprised five Germans who had no previous experience at sea but hoped to become officers of the German merchant navy when they fulfilled German requirements of having served two years on a sailing ship and learnt to speak English), and 15 seamen of all nations from Spaniards to Greeks and Norwegians.

Such was the crew that sailed from Hamburg on Christmas Eve 1902. We were towed out by a German tug into the North Sea, where a hard N.W. gale was blowing with ice and snow, and made sail. The merchant adventurers were men who risked their money in ships, like the Andersons and the Greens, and incidentally made the heritage that gives us employment today.

According to Lloyds Register, in those days 15 sailing ships disappeared without trace every year and no-one knew the fate of the crews—only lost and gone forever. At that period the Red Ensign was known all the world over.

We sailed for Santa Rosalina in the Gulf of California with a cargo of coke and patent fuel. Patent fuel consisted of coal dust and tar made into bricks, and we as the crew on arrival had to discharge our whole cargo (2,300 tons) into lighters by our own efforts of arm power. In the intense heat the patent fuel scaled the flesh from our arms.

All went well until in the South Atlantic we were in the S.E. trade winds, when, while I was aloft on the main topgallant yard, an altercation started between the second mate and two of the Norwegians. One of them drew his sheath knife and stabbed the second mate.

Hearing the altercation I looked down 100 feet and slid down the backstays and at 17 feet I swung down inside the rigging and dropped on to the back of the stabber, but just too late.

The fall threw me on to the deck and the second Norwegian drew an iron belaying pin and hit me across the nose, leaving me with a scar I still have. However, I recovered and was able with a straight left to deal with them both.

The second mate died and on our eventual arrival at San Francisco they were prosecuted and consigned to jail.

I was promoted to third mate, but being only an apprentice received no more than my wages, which for the first year was £4 10s. 0d.

Further south of the River Plate we were hit by a Pompero, a very

sudden gale which comes with little warning. Before we could get sail off the ship we were on our beam ends, the deck vertical and the mast heads dipping in the sea, and as the main mast was 180 feet in height it can give you some idea.

We lay like that for about two hours, when the wind eased and, with the hatches holding, all was well. The Captain, while we were in that position, asked me if I was afraid.

I replied, "I am scared stiff, sir."

Never shall I forget his reply. He said, "Never be afraid until the Captain is; I am not. She will come up alright." An advice I have always remembered even when I became in command of an Orient Liner!

Needless to say, the barque righted herself and we carried on towards Cape Horn, which we eventually weathered after 70 days battling against one head gale after another with the sea waves 40 feet high from foot to crest.

WE arrived at Santa Rosalina 153 days from Hamburg without sighting land until the last 10 days when we entered the Gulf of California.

Our drinking water by then was rain water collected and purified with an ample supply of Condy's fluid. We were rationed to only two cupsful per diem, while our food consisted mainly of biscuits full of weevils. Such was my beginning of life as a sailor!

After we had unloaded our car-

go of coke and patent fuel we moved on to San Francisco, where we put in for provisions. The two Norwegians were tried and pailed, and after four days we proceeded to Vancouver (where the O.S.N. Co. liners now call). From Vancouver we were ordered to Port Blakeley to load the timber which now lines the ceiling of Antwerp Cathedral.

We were there three months, as only the best timber could be loaded.

I returned home after two years (for three weeks leave) and then back to Hamburg to load another cargo for San Francisco, where we arrived in time for the earthquake and fire of that town in 1906. There were only two sailing ships, both British, in the port at the time. When the earthquake oc-

curred on April 18 we were at the Union Street Wharf, at which our liners now moor.

The Captain, when the wharf collapsed, ordered the topsails set and we backed out into the bay and anchored. I was ordered ashore with ten men to see what could be done to help, and with two coils of rope we managed to rescue many people perched on the window sills of sky-scrapers, as the floors had collapsed. By scaling up with our ropes we managed to lower them to safety. All we did was to fling a rope up, pull it down inside the building and swarm up. To sailors this was easy work, to lower people down.

After seven days and nights ashore eating as we could, we returned to our ship and eventually proceeded to Port Costa 50 miles

up the Sacramento River to load grain for the U.K. Meanwhile our crew of seamen had left the ship and only the officers and apprentices were left. Owing to the disturbance we were there for two months and lost one of our apprentices by drowning. He fell overboard and was trapped underneath a timber scow and although I and another apprentice dived under it we could not rescue him in a tide running at six knots.

One aside on my second voyage in sail. Typhus caused four cases. I volunteered to nurse them; two died and two recovered. No doctors are carried unless the crew exceeds 50 persons and I carried out the Captain's orders. It was a difficult job, but gave me experience.

We were away on that voyage for 18 months and eventually reached Hull with our cargo of grain.

My wages at that time as an apprentice were £7 10s. 0d. a year.

MY third voyage was to San Francisco with a mixed cargo of bottles and glassware. While there, the boarding house runners ran the crew out of the ship. When we had completed loading grain and timber for London we lay out in the bay to collect a crew. To get a crew the Captain had to pay 40 dollars blood money for each man supplied by the boarding house runners. Whether he was a seaman mattered not.

After shipping six men one night so supplied (I was the night watchman), the boarding house runner returned in a launch to steal the men back and to sell them to another sailing ship.

I called the second mate and he and we apprentices gave chase in the gig. In an exchange of gunfire the second mate killed the boarding house runner and we were able to get our men back. I was stroke oar and we returned with seven

bullet holes in the gig and only kept going by baling out and plugging the holes. All this at 2 a.m. and pitch dark!

The inquiry held us back for three weeks, after which we eventually completed our crew and in due course, after sailing up the channel and overtaking the s.s. *Arabia* (P. & O. steamship—15 knots) off Plymouth, we berthed at Gravesend before her.

Three voyages in five years, but what experiences and experience they provided!

So ended my years in sailing ships. I spent 14 days ashore at home and passed for my second mate's certificate and two days afterwards sailed as second mate of a steamer, the s.s. *King Lud*, belonging to the King Line of London Wall. I was then 19.

During my years in sail I learnt one thing that sailors never learn today. One night, sheltering under the lee of the poop next to the boatswain (it was blowing hard), I said, "I should think the upper topsails should be furled."

He replied "You are right, son, but the second mate is deaf."

A few minutes later the Captain came on deck and gave the necessary order to furl them. And so I learned that hearing for a seaman was as necessary as sight.

In after years as Assistant Marine Superintendent at Tilbury Dock on the mornings at 7 a.m. when we were due to shift one of our ships (only with the aid of tugs) to the dry dock, I used to walk down the quay and listen to the wind in the rigging before I gave order to move the ship. It never failed.

We people listen to music, but believe me until you have heard the wind in a sailing ship's masts and rigging you know little about orchestras. You may take a chance in summer but in winter months

there is a very different note (deeper).

Wind is always heavier in winter than in summer and I have seen wind, strange as it may seem. Hold a piece of black cardboard over the windscreen at the right angle of one of our liners and you will see the wind pouring over the edge, like a stream of water. Unbelievable but true!

So I moved into steamships. When I joined the s.s. *King Lud* in Cardiff Docks I was promptly left by the chief officer to load the ship, while the coal tips were pouring down every five minutes a truck of 10 tons into the four holds.

My duty was to see that the ship was not overladen, and was on an even keel to sail. If a ship is overladen the Government steps in and prevents the ship from sailing. I often wonder how many young men at 19 years of age could and would be responsible today. The only light available was a hurricane lamp lowered down over the prow and stem to show the draft in feet and inches fore and aft to obey the law in winter time.

Try it and see with the dock water covered in coal dust. I managed, and we sailed to Buenos Aires to discharge our cargo.

DURING the voyage south off Brazil the coal burst into flame by spontaneous combustion in No. 2 hold and the hatches blew off. We placed canvas covers over the hatch and poured sea water over the hold hatch coamings and kept the fire under, although the deck buckled by heat and became red hot. On arrival at our berth we had the help of fire brigades so all was well.

We loaded a cargo of grain home to Rotterdam with cattle and sheep on deck alive. The grain was

7,500 tons and was discharged in 48 hours by suction, a thing our dockers refuse to do today, and that was in 1908!

Back to Cardiff to load 7,500 tons of coal, all completed in 50 hours, and off to Santos in Brazil. Our greatest trial was mosquitos. Before sailing all the crew were injected in the arms against typhus, yellow fever, and smallpox—all at one time, but we all survived.

During our stay at Santos one of the labourers discharging the ship fell off the wharf during the dinner hour and I dived in to fish him out. The result, as the Spanish doctor said, was that the man died of a fit—not drowning—but he warned me not to go ashore as the religious belief was that I had cheated God of a life, even if only temporarily, and therefore I would be killed. I took his advice—who wouldn't?

From Santos to Rosario, about 40 miles up the River Plate, to load grain. On arrival at Rosario we were ordered another 500 miles up to Colustina, Santa Fe, to load the first 2,000 tons and then return to Rosario to complete loading.

Brushing tree tops and seeing many crocodiles we arrived and eventually returned to Rosario. At this port we moored under a cliff 300 feet high and the grain in bags was thrown on chutes down to the ship and I as second officer had to count the bags in tens for the whole cargo some further 4,700 tons, and so I learnt more about my job as an officer in the Merchant Navy.

Back to Rotterdam and another 48 hours discharging and so back to Cardiff to load coal again.

I left the *King Lud* to sit for my first mate's certificate, but to work my time out made a short voyage to Malaga with coal and

Continued on page 16



Captain D. H. Becher, who recently took over command of H.M.A.S. "Melbourne", discusses with his sailing officer, Commander ("Red") Merson, the carrier's forthcoming cruise to New Zealand. The "Melbourne" is due to sail for New Zealand on January 29, calling at Hobart for the Hobart Regatta on the way.

NEWS OF THE WORLD'S NAVIES

Experimental Helicopter assault carrier

The first experimental helicopter assault carrier *Thetis Bay*, formerly an escort carrier, has been recommissioned after an eight million dollar conversion at San Francisco Naval Yard.

Under a new U.S. Marine Corps doctrine of vertical envelopment she would launch troops in helicopters at dispersed places 50 miles from the beachhead, eliminating bunched waves of landing craft and beachhead concentrations of support ships.

She will carry 20 eight-man helicopters and 1,000 marines. The forward elevator was removed and this section of the ship made into a troop berthing space, spare parts stowage, and servicing shops.

Helicopters are berthed in the remainder of the hangar and on most of the flight deck with an elevator at its extreme end.

All catapults, arresting gear and such obsolete installations have been removed; the island structure has been rearranged and re-equipped to adapt the pilot house and steering station for the combined land, sea and air control arrangements.

Queen's Colour laid up

Shortly before the broad pendant of Commodore G. E. Hunt, D.S.O. and Bar, D.S.C. and Bar, was hoisted in H.M.S. *Bigbury Bay* as Senior Naval Officer, West Indies, news was received that Her Majesty the Queen had been graciously pleased to give her consent to the laying up of the Queen's Colour in the Flagship of the Commander-in-Chief, America and West Indies Station, in the

Cathedral of the Most Holy Trinity at Hamilton, Bermuda.

The laying-up of the Colour follows a re-arrangement of Station areas in the South Atlantic whereby part of the old America and West Indies Station has been absorbed by the South Atlantic Station, Vice Admiral W. G. A. Robson, C.B., D.S.O. and Bar, D.S.C., now commanding what is known as the South America and South Atlantic Station, and Commodore Hunt commanding a reduced area in the region of the West Indies, as Senior Naval Officer.

Major alterations to H.M.S. "Ark Royal"

The *Ark Royal* has recommissioned at Devonport (U.K.) after a refit when the operations room was extensively modified and new radar devices incorporated.

The angled deck has been extended over the port side forward with the removal of two 4.5-in. turrets, which has increased living accommodation for 120 men.

Ex-Soviet destroyer in Suez Action

Ship casualties in the Anglo-French operations against Egypt included an Egyptian destroyer of the Soviet "Skoryi" class, attacked off Alexandria by French aircraft and set on fire.

This was the first intimation that Russia had transferred such craft.

Navy teams for gliding contests

Two sail-planes, or gliders, and two teams of five members each were entered for the Australian gliding championship contests by

the Royal Australian Navy Gliding Association at the R.A.N. air station at Nowra (N.S.W.).

The contests are being held at the airfield at Tocumwal, N.S.W., from December 28 until January 9.

The teams entered by the R.A.N.G.A. consist of officers and ratings. They began practising glider flying at the R.A.A.F. station at Uranquity (N.S.W.) on December 14.

NATO's anti-submarine force "inadequate"

In the event of war Eastern Atlantic Command of NATO would be unable to supply surface escorts for Atlantic convoys for some time.

Press reports quote Admiral Sir John Eccles, C-in-C of the Home Fleet and commander of Allied naval forces in the eastern Atlantic, as having given this opinion when he arrived in London for a six-day official visit last month.

The inadequacy of his command's anti-submarine strength was such that for a while only aircraft would be able to give convoys between this country and America any protection from enemy submarines, he said.

The Royal Navy's new anti-submarine frigates were "coming along fairly well."

But it was well known in the Navy that despite promises of more such ships, the first had been in commission for only a matter of months.

Ships of another class of frigate for anti-aircraft work were nearly ready.

The nearest the Navy had to modern frigates were wartime

destroyers converted or improved, he said.

Of Russian cruiser strength Admiral Eccles said "They constitute a threat, but we would give them a pretty good nudge before they could get on the trail."

The "nudge" would be delivered by aircraft from carriers.

Coral Sea battle Admiral dies

Admiral Wilson Brown, who played a prominent part in the Battle of the Coral Sea, died on January 2 in Groton, Connecticut.

Admiral Brown, who was 74, commanded the U.S. Pacific Fleet task force in the Lae and Salamaua area during the conquest of New Guinea.

His task force sank or badly damaged 25 Japanese ships surprised in those bases.

Operating off the Gilbert Islands, the force shot down 17 Japanese bombers.

For his service in the Pacific he received the Distinguished Service Medal in 1942.

R.N. frigate transferred to South Africa

H.M.S. *Wrangler*, an anti-submarine frigate, has been transferred to the South African Navy and commissioned as S.A.S. *Vrystaat*.

This is the first of a number of ships being acquired by the South African Navy, implementing the agreement of June, 1955, regarding the Simonstown Base, when it was agreed that the Union would expand its naval strength.

S.A.S. *Vrystaat* has been undergoing refit by the Mount Stuart Dry Dock Ltd., Cardiff. After trials and the usual working up period she will sail for Simonstown at the end of January.

H.M.S. *Wrangler* was built as a destroyer by Vickers Armstrongs Ltd., of Barrow, in 1944 and converted in 1951-2 by Harland &

Wolff Ltd., Belfast, to a fast anti-submarine frigate. She is powered by two sets of geared turbines producing 40,000 h.p. The armament includes one twin 4-in. and one twin 40 m.m. Bofors guns, as well as two multiple mortars.

The ship took part in wartime operations off Norway, Milos and Sumatra, and was present at the surrender of Japan.

Details of new U.S. G.M. frigates

The U.S. Navy has announced that the contract recently let for the construction of two guided missile frigates (DLG), including preparation of detailed working plans, provides a total fixed price of \$40,536,800.

The frigates will have hull numbers DLG 14 and DLG 15 and will be similar to ships of the same type in last year's shipbuilding programme. They will have a length overall of 512 feet, extreme beam of 50 feet, and light displacement of 3,900 tons.

The DLGs will be equipped with Terror guided missile bat-

teries aft and five inch batteries forward. They will be used primarily as anti-aircraft defence for high-speed task forces, screening other ships by intercepting enemy aircraft at ranges unsuitable for conventional weapons.

They also will have the most recent electronics equipment and weapons necessary to enable them to search for and destroy enemy submarines, the U.S. Navy states.

NATO meteorologists confer in U.S.A.

A group of meteorologists from four of the fifteen member nations of NATO recently concluded a two weeks' conference at the headquarters of the Supreme Allied Commander Atlantic, Admiral Jerauld Wright, U.S.N., at Norfolk, Virginia.

The group resolved some of the difficulties which have existed in the exchange of meteorological information and weather forecasting.

The meteorologists saw some of the meteorological facilities available at Norfolk, both ashore and afloat.

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A SAILOR LOOKS BACK—

Continued from page 13

iron ore home and thereby is another tale to follow.

During all this time only two navigating officers were carried and that meant four hours on day and night at sea. As second mate my pay was £5 10s. 0d. a month, no overtime, and in port all day on duty and every other night on board. It was our job and we did it. Did we think we were hard done by? Yes, maybe, but we realised it was the job that we had signed for and so we did it.

As many others, I have been swept overboard off Cape Horn and brought back on board by the next lurch of the barque and washed off the fore-castle head and swept along the main deck to bring up about the poop bulkhead, but these sort of things were common to seamen in those days of sail.

At the time this occurred I was second mate of a tramp steamer en route from Barry Docks to Messina with a cargo of coal. The straight course from Gibraltar was north of Sicily and then south through the Straits of Messina. When off the north coast of Sicily we ran into a thick fog of dust and grit. The Captain stated that Mount Etna or Stromboli Island must be in eruption. There was no wireless in those days and so we carried on. How the Captain brought the ship safely through the Straits on dead reckoning I would not pretend to know except that he was a very able navigator.

Having passed through the Straits during the hours of darkness and a pall of pumice powder he eventually anchored the ship off Reggio, opposite to Messina on the mainland of Italy, as he rightly doubted any entrance to Messina Harbour.

In the early hours of the morning just as dawn was breaking, we

discerned a vessel close to us. As was usual in those days wherever trouble happened, a British cruiser appeared out of the murk.

His first signal to us within 100 yards was: "Beware the Straits of Messina have been distorted."

Our Captain replied: "Maybe, but we came through last night by dead reckoning."

The next signal was: "Where are you bound?"

Answer: "Messina with a cargo of coal when we can see it."

The next signal was: "We are sending an officer to board you."

The officer arrived and after a talk to the Captain and first mate we were ordered to remain where we were but to send two lifeboats ashore at Reggio to try and succour people. In the meantime he would intercept the R.M.S. *Ophir* (Orient Line), homeward bound from Australia and due through the Straits from the south that night, and give the Captain of the *Ophir* instructions.

I was landed with 20 men and appointed as beach officer to do anything we could at Reggio. I landed on Reggio beach with two lifeboats in the murk. We carried down to the beach many people, hurt or fit, and at 3 a.m. the *Ophir* duly arrived and anchored. The *Ophir* sent off about seven lifeboats to the beach as instructed. I saw her deck lights in the gloom. I and my men were stripped to the waist and when the lifeboats ex-*Ophir* beached, I met them.

The murk was intense. I met an immaculate officer in white uniform who landed.

I asked: "Who are you?"

He said: "The purser of the *Ophir*."

I said: "Take your coat off and help us place these people in your lifeboats," which he did at once under the orders of the navigating officer in charge from *Ophir*.

The crew of the *Ophir* were ex-



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cellent and co-operative and never opposed my orders as beach officer. Their discipline was excellent and eventually they took away about 800 casualties up to Naples. So my contact for the time ceased with the Orient Line but the thing that impressed me was, here was I, stripped to the waist, second mate of a tramp steamer, as beach officer, obeyed without the slightest opposition! Here, I said to myself, is the Company I shall join as soon as I hold my master's certificate. And eventually so I did in late 1912.

SYDNEY GAVE HEARTY WELCOME TO DUKE OF EDINBURGH



ROYAL VISIT

Crowds lined the streets of Sydney to wave and cheer when H.R.H. the Duke of Edinburgh drove through on his recent visit to Australia. The Duke attended the Olympic Games in Melbourne and later went to Antarctica in the Royal Yacht "Britannia."

RECORD CROSSING IN ANTARCTIC

H.M.S. Protector, netlayer, now engaged on her second tour of duty in the Antarctic, has equalled the earliest crossing of the Antarctic Circle made in the Weddell and Bellingshausen Sea areas during the Antarctic "summer" season.

The crossing was made on November 9. This record has been equalled only by a Norwegian whaler, which crossed on November 9, 1893.

Only three ships are known to have crossed the Antarctic Circle in this area before in November or December.

H.M.S. Protector's first duty on her return to the Antarctic was to rescue by helicopter the sledging party of the British Antarctic Expedition who had been marooned on Roux Island.

The rescue was effected on November 9 by helicopters (of which the ship carries two), five trips of about forty miles each way being flown.

Two men were picked up as the helicopters hovered over the pack ice and were returned to their base on Lent Island. Equipment and specimens were also taken off, together with nine huskies.

The dogs were reasonably docile even when being hoisted on board the helicopters.

Since then, the ship has landed a Royal Marine detachment and a party of sailors for skiing training on Deception Island. Forty officers and ratings have also visited the ringed penguin colony there.

The Collins Point lighthouse has been cleaned and painted by men from the *Protector* and a survey has been made of the whaling factory. Base personnel at the factory presented the ship with a Falkland Islands Dependencies Survey crest, carved during the

SOME FACTS ABOUT THE NAVY LEAGUE

THE NAVY LEAGUE OF AUSTRALIA has a Federal Council, responsible for overall policy, and State Divisions in Victoria, New South Wales, Queensland, Tasmania, South Australia, Western Australia and A.C.T.

His Excellency the Governor-General is the Patron of the League in Australia. Rear Admiral H. A. Showers, C.B.E. (Retd.), is President of the Federal Council and of the N.S.W. Division. The Governors are Patrons of each of the State Divisions. In the A.C.T. the President is His Excellency G. E. L. Alderton, C.M.G., the High Commissioner for New Zealand.

The responsibilities of the divisions are controlled by committees elected annually by League members. Their responsibilities include the implementation of Navy League Federal Council policy; conduct of domestic affairs; financing the division and contributing to Federal Council expenses; Australian Sea Cadet Corps affairs (divisional) concerned with the League through the Sea Cadet Committee appointed by the Divisional League Committee.

The Australian Sea Cadet Corps has a Federal Council consisting of Royal Australian Navy and Navy League of Australia representatives. The Council is responsible for advising the Navy or the Navy League on policy within respective spheres.

The responsibilities of the Royal Australian Navy in these matters include training; provision of uniforms, naval stores and equipment; provision of Naval instructors, where practicable; advice in regard to and approval of selection of instructors; some financial assistance.

In general, the Naval Board exercises control, but the Navy League administers the Sea Cadet Corps on behalf of the Naval Board.

The Navy League's responsibilities include social and moral welfare of the Sea Cadet Corps; recreation and sports activities; formation of units; with Naval Board approval; provision of accommodation and buildings; financial administration; assistance in providing suitable instructors.

The State Divisions of the Australian Sea Cadet Corps are controlled by the Australian Sea Cadet Council, whose members are representatives of the Navy League, the R.A.N. and State Division Senior Officers of the Australian Sea Cadet Corps.

There are 24 Units of the Sea Cadet Corps in Australia.

winter, for the first ship south this season.

Although reports indicate that "summer" in the Antarctic has begun earlier this year than usual, **H.M.S. Protector** has nevertheless experienced periods of very severe weather.

Off Deception Island the ship

encountered a Force 8 (34-40 knots) south-westerly gale which caused her to heave to, and while passing through channels to the Bransfield Strait, wind gusted at 70 knots, with visibility down to 400 yards in snow, and a considerable amount of ice and small icebergs were seen.

The Navy League

1956 Activities Summed Up

Reports have come in from State Divisions of the Navy League of Australia on activities during the past year.

THERE are extracts from the reports, dealing with Sea Cadet activities:

VICTORIA

No additional Units were formed in Victoria during the year, the activities of those concerned having been directed towards consolidation of the existing Units. Portland and Mildura units now have their own drill halls. The local committee, assisted by a grant from the League, purchased a building for the former, and Mildura acquired a Commonwealth building through the good offices of the Naval Board. Bendigo is now the only unit in Victoria which does not possess its own drill hall.

A colour was presented to the Division by His Excellency the Governor of Victoria in October. The Colour Party and Colour Guard were provided by the Geelong Grammar School and Mildura units respectively, and other units were represented at the ceremony which took place in the Government House grounds. N.O.I.C.S.E.A. kindly allowed the R.A.N.R. Band to be used.

Two courses for cadets and one for officers were carried out in Flinders Naval Depot during the year. Unfortunately it was again not possible to carry out sea training, but it is hoped that this lack will be overcome in the forthcoming year.

The policy of encouraging inter-unit visits has been continued. Although in some cases a good deal of travel is involved, these visits do much to stimulate the interest

of cadets and to broaden their horizon.

As expected, the Albert Park drill hall has proved a valuable asset, not only as the headquarters of the Melbourne unit, but also for accommodating country cadets in Melbourne to take part in various ceremonies and functions held in the city.

Generally speaking, the division has had a successful year. A major problem to the League at the moment, and a complete contrast to the situation obtaining in the country units, is the shortage of instructors offering for the metropolitan units. The growth of the Melbourne unit in particular is greatly affected by this lack of qualified personnel.

QUEENSLAND

On October 21 officers, instructors and cadets of **T.S. Gayundah** attended the customary Trafalgar Day church services at St. John's and St. Stephen's Cathedrals. Cadets were mustered at the Missions to Seamen headquarters and were marched to the Church of England and Roman Catholic Cathedrals bearing the house flags of various shipping companies. On arrival, the flags were placed before the altar where they remained during the period of the service.

On October 20 cadets from **T.S. Gayundah** provided three whaler crews and took part in whaler races on the Brisbane River in conjunction with the Royal Australian Naval Reserve.

The executive of the Queensland Division made arrangements with the principal of the Caven-

dish Road High and Intermediate School to provide five cadets from **T.S. Gayundah**, who were students of the School, to form a colour party for the passing out parade of Army and Air Training Cadet Corps units in the school. The cadets carried the school and house flags at the head of the column. This innovation proved such a success that it is quite likely that it will be repeated next year.

Gayundah Unit is up to its full strength of 120, with adequate officers and instructors, all experienced. The type of cadet serving is extremely good, as is the attendance, whilst there are usually up to twenty boys additional to the unit who come regularly and participate in the instruction and other activities in the hope that vacancies will occur so that they may join the unit. We feel it is well to give these boys this opportunity as they are so keen.

The Church of England Grammar School unit, which has only recently been inspected and received official recognition by the Naval Board, is doing extremely well. It was formed with a strength of 60 at the beginning of the year and consists of picked boys from the school, with the school captain as senior rating. A group of these cadets participated with those of **Gayundah** unit in recent exercises in two yachts.

The local Sea Cadet committee is pleased to note not only the enthusiasm of the cadets for their units, but the relatively high percentage of boys who have inti-

mated their intention of joining either the R.A.N. or the Merchant Navy. We feel we are building a good recruiting potential. This is an extremely important aspect in view of the falling-off in recruiting and the low percentage of re-engagements amongst the serving personnel in the R.A.N. A number of Sea Cadets have passed into the R.A.N.R. in Brisbane on attaining the requisite age.

SOUTH AUSTRALIA

T.S. Arunta (King's College): Great difficulty has been experienced in the past 12 months to keep this operational and, after a full investigation into the position, our committee has reluctantly decided that the unit should close down owing to the difficulty in obtaining an adequate number of officers and instructors to maintain training at the college.

The College is unable to provide any officers or instructors from its teaching staff, and efforts to obtain assistance for the Commanding Officer, Lieutenant A. R. Evans, from outside sources has been unsuccessful. Many potential officers and instructors were approached but none of them could undertake to attend training regularly.

To replace this unit the committee has been actively investigating the possibility of forming an "open" unit at Port Adelaide. Discussions have not yet gone beyond "the ways and means" stage and as and when progress is made toward this objective it will be reported.

WESTERN AUSTRALIA

Training ships *Creswell* and *Cunningham* have maintained an efficient standard right throughout the year with a full complement, for which thanks are extended to the former Divisional Senior Officer, Commander J. C. B. Ander-

son, D.S.C., O.B.E., R.A.N.R., together with continued help and support from the Captains of H.M.A.S. *Leeuwin*, Commander D. Shaw, R.A.N., and latterly, Commander N. H. F. White, R.A.N., and the Naval Liaison Officers, Lieutenant-Commander R. J. V. Hodge, R.A.N., and his successor, Lieutenant-Commander M. R. Bromell, R.A.N.

The progress covers the approved establishment of a Sea Cadet unit at Albany under Lieutenant J. L. Wilkinson, R.A.N.R., and a unit at Aquinas College awaiting the Naval Board's recognition, thus increasing the overall personnel of this division to approximately 180 cadets.

On two occasions the Chairman and some of the executive committee reviewed the units of T.S. *Creswell* and T.S. *Cunningham* whilst undergoing training in H.M.A.S. *Leeuwin*. On each occasion, the efficiency, discipline, and keenness of the boys was amply demonstrated. Credit is due to the officers and petty officers of the units and instructors from H.M.A.S. *Leeuwin*.

T.S. *Cunningham*: Training for the year began in February when an intake of 21 new entry cadets brought the total strength to 45 under command. Cadet Sub-Lieutenant J. Booth was promoted from petty officer and undertook a course at H.M.A.S. *Leeuwin* prior to the beginning of term.

T.S. *Albany*: Although attendances at the monthly meetings have been small, the members of the Albany Branch are maintaining enthusiasm. Since the first parade on the Albany Sea Cadet Unit on February 17, 1956, parades have been held regularly each Friday under the command of Lieutenant J. L. Wilkinson, R.A.N.V.R., and the average attendance has been about 45 cadets. The unit is still passing

through the initial difficulties of finding a full complement of officers and instructors. At present, the Commanding Officer is the only officer whose appointment has been confirmed, and there is only one Petty Officer Instructor whose appointment has been confirmed. Confirmation of the appointment of several other instructors is awaited. Mr. L. Gowan, who did so much recently in arranging the training programme as Acting First Lieutenant has been transferred to Adelaide and the unit suffered a severe loss on the occasion of his departure. Mr. Gowan had five years' experience as an officer with Sea Cadets in England.

The branch has recently secured the lease of a boat shed and slipway at the town jetty which, after some repairs will, it is hoped, suitably house the unit's whalers.

NEW SOUTH WALES

There are 310 active Sea Cadets in the Corps compared with 312 in 1955. With officers, instructors and juniors the total number of personnel catered for by the Corps is almost 500.

The various units and the number of active Sea Cadets attached to each unit are:

T.S. *Albatross* (Wollongong) 24; T.S. *Australia* (Waverton) 38; T.S. *Condamine* (Manly) 25; T.S. *Shropshire* (Canterbury) 52; T.S. *Sirius* (St. George) 57; T.S. *Sydney* (Snapper Island) 53; T.S. *Tobruk* (Newcastle) 29; T.S. *Warrego* (Woolwich) 32.

The officers and instructors of the Corps have continually displayed enthusiasm and ability, and the success of the individual units and the Corps in general is due to them. They are short-handed, and it will be appreciated if any member who can help, will communicate with the Secretary.

Whilst not forming part of the

Continued on page 24



The World's Tankers, by Laurence Dunn; published by Adlard Coles, Ltd. (U.K.).

A book on ships from the pen of Mr. Laurence Dunn and the publishing firm of Adlard Coles, Ltd., carries an assurance that technically it will be above criticism. Both author and publisher are experts on these matters.

In *The World's Tankers* Mr. Dunn has produced a comprehensive account of the development of the carriage of oil by sea. He takes a brief glance back through history at early recorded instances of oil cargoes, including the oil carried by medieval ships of war equipped with Greek fire; but the main part of his story begins about one hundred years ago, with the drilling of the famous oil well at Titusville in 1859.

From the brig *Elizabeth Watts*, chartered to carry a cargo of oil in barrels from Philadelphia to London in November 1861, he brings the tale up to the so-called super-tankers of 1956. Here are described the sailing vessels which carried their cargoes in casks, in tanks fitted in their holds, or latterly in the holds themselves; the early tank steamers, including the Nobel Brothers' fleet which operated up the Volga from Baku; and, with the coming of the 1880s, the true tankers, carrying their cargoes next to the skin of the ship.

Technically, development has been continuous. Mr. Dunn catalogues experiments in methods of dealing with the expansion of the oil, among them the hollow iron masts of the sailing vessel *Atlantis* of 1863; experiments in the

placing of engines and of bulk-heads.

Propulsion systems have run through the whole cycle of coal-fired reciprocating engines, diesels, and the high-pressure steam turbines, so much favoured for today's large fast vessels, to the Shell Company's *Auris* which, having tried out a gas turbine as one of four engines geared to a single shaft, is now to be fitted with a larger gas turbine of 5,500 brake horse power as her sole power unit.

Whalers have a chapter to themselves, as do the recently developed oil/ore carriers. The book is excellently illustrated, both by numerous photographs and by many of Mr. Dunn's admirably clear drawings, plans and diagrams.

For good measure, he has not confined himself to the ships themselves. They are placed in their proper setting of the tanker-owning companies such as Nobel Brothers in Russia, Riedemann of Hamburg, H. E. Moss & Co., Hunting & Son, Anglo-American Oil Co., Standard Oil Co., Shell, and the British Petroleum Co., many of them still among the owners of the great tanker fleets of to-day.

An outstanding development since 1945 has been the steady increase in size of the ships. There is a chapter on super-tankers, and the Suez crisis gives this additional point. It is now accepted that the cost of operating a very large carrier does not increase proportionately with the increase in tonnage. It has been stated, for instance, that the cost per ton of

carrying oil in a 12,000 ton dead-weight vessel is one-quarter more than in a 32,000 tonner. With this development has gone the gradual transfer of much of the refining side of the industry from the oil fields themselves to Western Europe.

New refineries such as Llan-darcy, Fawley and Isle of Grain in Britain and Pernis in the Netherlands import crude oil; and it is good economics to transport the largest possible quantities in one ship.

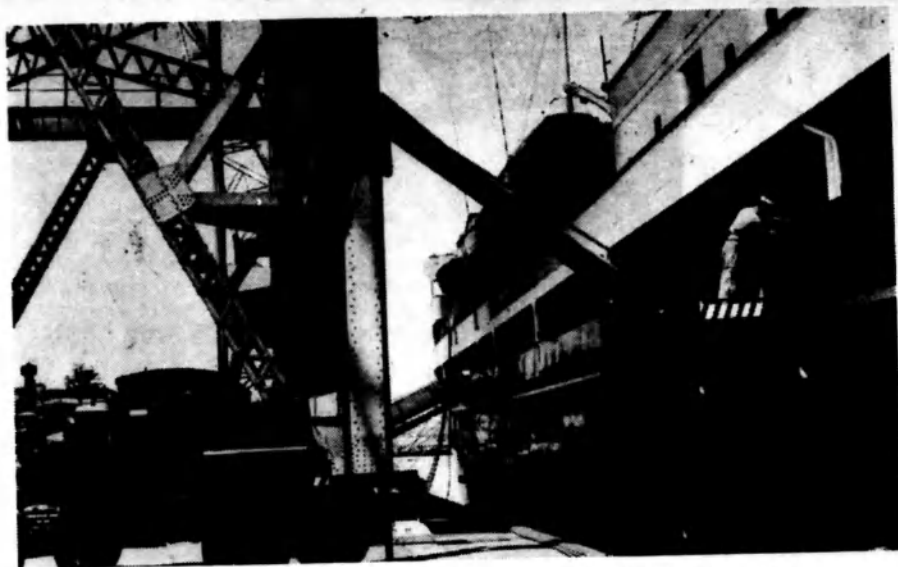
Distribution from the refinery is another matter. Split into differing types of refined products, it stands to reason that quantities of individual products must be less, and cargoes will inevitably be smaller.

Further, destinations will include many of the smaller ports. At this stage of the industry, therefore, there will always be a place for the coastal and intermediate tanker: but there are many indications that for the bulk carriage of crude oil, the future may lie in the main with the super-tanker.

This development had already been accelerated in 1956, even before Egypt's nationalisation of the Suez Canal.

Mr. Dunn refers to the *Sinclair Petrolere*, an oil/ore carrier of 55,000 tons deadweight owned by Universe Tankships Inc. of New York. With a maximum loaded draught of over 40 feet she could not advantageously use the Suez Canal; and a recent analysis of her operation between the Persian Gulf and the Delaware River showed that, despite the longer passage and greater fuel consumption, it was more economical to use her on the route via the Cape.

By the Suez route she could lift only 30,000 tons on a draught at which she could transit the Canal,



The Royal Yacht "Britannia" has her paintwork cleaned at Garden Island during her recent visit to Australia.

carrying therefore in four voyages 120,000 tons.

In the same time she could only make three voyages via the Cape, but on each she could carry 50,000 tons, making a total of 150,000 tons.

Of the true super-tankers, of 45,000, 65,000, 85,000 or 100,000 tons, many are as yet only yard numbers on a building slip or an order book. The Prime Minister recently told the House of Commons that they offer no immediate and complete alternative to the Suez Canal in the transport of Western Europe's oil. Certainly, apart from their cost to build, they require for their operation deep-water berths, and for their repair large dry-docks. There are few United Kingdom ports which can handle them.

But the story is still incomplete. The Suez crisis appears to have

COLD TRAINING FOR WATER SKIER WHO PLANS TO CROSS NORTH SEA

As a test in preparation for an attempt to water-ski 360 miles across the North Sea this year, Alan Crompton, captain of the British Olympic snow ski team, travelled some 240 miles on water skis behind a motor boat on Windermere on November 25 in 7 hr. 50 min.

given added momentum to the trend towards size, if orders placed in recent weeks are any guide. It may well be that, in 10 or 15 years' time, the pattern of trade through Suez will show much smaller oil carryings; and then perhaps Mr. Dunn will give us another instalment of the tanker story.—"BLUENOSE," in the London "Navy."

He started in a temperature below freezing and finished in heavy rain. He undertook the trial so late in the year because he wanted to get as near as possible to the conditions he is likely to encounter on the North Sea crossing attempt, which he expects to take anything from ten to fifteen hours.

During his trial, Mr. Crompton grabbed hot soup and sausages from friends at the end of a private pier at Waterhead, linking the tow rope to a hook fastened to a belt round his waist while he ate.

As a protection against the weather he wore three pairs of underpants, two pairs of socks, two pairs of light rubber boots, two pairs of waterproof trousers, two pullovers and a wind-cheater.

THE NAVY



MARITIME NEWS OF THE WORLD

From our Correspondents in LONDON and NEW YORK

By
AIR MAIL

Demand for tankers blamed for oil rise

The demand for tankers, particularly those needed to carry Middle East oil around the long Cape route to Britain, France, and other Western countries, has resulted in a sharp rise in freights of petroleum products, the director of the Petroleum Information Bureau in Australia, Mr. D. M. Pilcher, said early this month.

He predicted a rise in the price of petrol because of higher-cost stock which was now arriving in Australia.

Nearly 60 per cent. of the world's tanker fleet is owned by interests outside the oil industry and is chartered by individual companies to transport their supplies," Mr. Pilcher said.

"When the great demand for additional tankers arose following the closure of the Suez Canal spot charter rates increased enormously."

Pirates raid on Dutch ship

A gang of 40 pirates raided the Dutch freighter *General Michiels* off Singapore on January 8 and rowed ashore with most of her brass fittings.

The *General Michiels* (1,281 tons), of the K.L.M. Line, reached Singapore on Saturday and, after

discharging her cargo, anchored off-shore, awaiting sale as scrap.

Police say the gang rowed to the ship early in the day, surprised the six Indian watchmen, trussed them up and locked them in a cabin.

The piracy was not discovered until the ship's agents sent a launch out for the watchmen, who were found still locked in the cabin.

The pirates spent nearly an hour stripping the ship. They took ventilator shafts, firehose nozzles, port-hole covers, and steam pipes.

Marine police have detained three men for questioning.

All saved from wrecked freighter

The captain and all the officers and crew of the wrecked freighter *San Antonio* have been rescued by the French naval repair ship *Vulcain*.

The ship's agents in Sydney, John Mannors and Co. Ltd., received messages stating this on January 9.

A Qantas Skymaster left Sydney the same day for Noumea to pick up the captain and crew of the *San Antonio* and brought them to Sydney.

The *San Antonio*, carrying scrap iron from New Zealand to Japan, ran aground on January 6

on a reef off the north-west coast of New Caledonia.

The ship had lost her propeller in heavy seas.

Lifeboats from the *Vulcain* rescued 27 crew members early on Tuesday, but because of rough seas could not get the captain, four officers, and four of the crew off until later.

The ship was written off by Lloyds of London as a total wreck.

Fifteen-years-old boy catches big shark

Fifteen-years-old David Hooker caught a 1,000-lb. shark off Chinaman's Beach, Sydney Harbour, on January 6.

About 30 people were swimming only a few hundred yards away from the shark when it took the bait of bonito fish which David had sewn around a meat hook attached to a strong cord line.

David lives with his family 100 feet above the harbour shore off which he set the line. He had seen many sharks off Chinaman's Beach from his verandah and decided to try to catch one.

Nearby people helped him drag the shark to the shallow water, where he slipped a noose around its tail.

Later he boiled the flesh from the head and kept the jaws as a souvenir.

Soviet planes shipped to Syria

Newsagency reports from New York, quoting diplomatic sources, say that Russia delivered twelve MIG17 jet fighters to Syria by sea early this month.

The shipment is stated to have been made through the Bosphorus and Dardanelles to the Syrian port of Latakia.

Washington officials are quoted as saying the Russians are now shipping direct to Syria instead of through Egypt. Many weapons bound for Syria are reported to have been destroyed in Egypt during the Anglo-French air action.

Two ships in dry dock mishap

Two ships in New Jersey (U.S.A.) dry docks on January 10 were reported in danger of toppling into the Hudson River.

The 16,000-ton Norwegian liner *Oslofjord* fell over in its dry dock and crashed into an adjoining dry dock containing another ship.

Police said the dry docks were breaking up and that *Oslofjord* had a 60-degree list.

They said *Oslofjord* had its sea-cocks open and "will sink right away if it hits the water."

Firemen worked for several hours to evacuate 200 seamen who were sleeping in the liner.

Two of eight injured seamen were admitted to hospital.

"Joyita" in another sea incident

The mystery South Pacific island trading vessel *Joyita* (70 tons) early this month was derelict for the second time in 14 months.

Her crew of 10 and eight passengers took to the boats and abandoned her when she went aground on Horseshoe Reef. The *Burns*

Philp ship *Yanawai* later, picked them up.

When a salvage ship reached the reef three days later it found that the *Joyita* had floated off unaided.

The crew of the salvage ship put 30 empty drums in her hold to give her extra buoyancy after they boarded her and found that she had been held near the keel on the starboard side. They then took her in tow.

In October 1955 the *Joyita* was found abandoned and derelict off Fiji. No trace of her 25 passengers and crew has since been found.

New service begun by Dutch line

The *Straat Cook*, first of four ships designed for the Royal Inter-ocean Line's new service between Australia and East Africa, arrived in Sydney on her maiden voyage early last month.

In the past two and a half years the line has added three Australia-based services to its existing runs. The other two are Australia to Dutch New Guinea, North Borneo and Siam; and Australia to Ceylon, Western India and West Pakistan.

Gulls attack Duke in Antarctica

Two enraged Skua gulls had attacked the Duke of Edinburgh in the Antarctic, according to a message received at Buckingham Palace early this month.

The Duke, accompanied by Lord Cilcennin, had gone ashore from the Royal Yacht *Britannia* at Admiralty Bay, in the South Shetland Islands, to visit a "maternity home" for about 250,000 penguins.

The gulls swooped on them. Lord Cilcennin picked up a whitened whale rib bone, one of many lying on the beach, and beat them off.

1956 ACTIVITIES SUMMED UP — Continued from page 20

year's events, the approaching retirement of S. C. Commander L. E. Forsythe will mark the end of an era. He has never failed to strive for the improvement of the Corps, and its growth during his long term as Senior Officer is proof of this. We wish him well, and record our thanks for his devotion to his chosen task.

The committee takes the opportunity of welcoming Captain S. Darling's decision to take over as Senior Officer in February 1957. We feel sure that, in his hands, the Corps will maintain the high standard it has under Commander Forsythe's leadership.

There is one unit's activities which single it out for mention. T.S. Albatross has for many years been struggling to complete a building at Wollongong. Early this year, an appeals committee was formed consisting of prominent members of the local community, who set themselves the target of raising £1,000. In all they raised £1210 net. For this wonderful effort all members will wish to be associated with our thanks.

Trafalgar Week is the focal point of our activities, and October 1956 saw:

A broadcast by Rear Admiral H. A. Showers on Station 2CH.

Navy League Ball, honoured by the presence of His Excellency the Lieutenant Governor of N.S.W.

T.S. Warrego annual ball.

T.S. Sirius annual ball.

Wreath laying ceremony at which Australian Sea Cadets formed the guard of honour.

Publication of and selling programmes at Garden Island public inspection.

Earlier in the year we joined with other patriotic organizations in a luncheon held in honour of the visit of the First Sea Lord. Admiral Lord Louis Mountbatten and Lady Mountbatten.

LEGAL HISTORY OF THE SUEZ CANAL

By JOHN CAMPBELL

A LITTLE over a century ago a middle-aged official of the French foreign service, Ferdinand de Lesseps, living in retirement after the early death of his wife, turned his mind to a scheme to link the Mediterranean and Red Seas by cutting a canal across the Isthmus of Suez.

He was a cousin of the Empress Eugenie and came of a family with a long tradition of administration and loyal service to the State. Years before he had served for a time in Alexandria. Now he turned in earnest to the plan which seems first to have caught his imagination during that earlier period.

In 1854 de Lesseps secured from Said Pasha, the newly appointed

Viceroy of Egypt, approval of the Suez Canal scheme, together with a concession to run for 99 years from the completion of the Canal.

The concession, however, was subject to the agreement of Turkey, to whom Egypt was nominally subject; and work was not to begin until this had been secured.

Other provisions of the concession were that, on its expiry, the Egyptian Government was to inherit the Canal, after paying the Canal Company an indemnity to be fixed by arbitration for any stores on hand; that profits were to be divided in certain proportions between the Government, the founders and the shareholders; that the tolls were to be the same for all nations, with no special ad-

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vantages to any; and that the Canal was to be strictly neutral.

In 1856, when de Lesseps, who was not an engineer himself, had presented to the Viceroy the report of an international commission of engineering experts to whom he had submitted his plans, this original concession was replaced by another, the provisions of which were essentially the same.

Work on the Canal started in 1859, even though it was not until 1866 that Turkish approval of the concession was secured. The delay was due largely to British opposition to the scheme, based partly on commercial but partly on strategic grounds. To Britain the Canal meant in effect the revival of French influence in Egypt, right across her vital route to India and the East: and this official attitude did not change until — indeed, underlay — Disraeli's purchase in 1875 of nearly half the shares in the Company, when he bought the entire holding of the then Khedive of Egypt.

It is sometimes stated that the Canal was built by forced labour. In fact, this basis was used when work originally began, but in 1863 the Sultan of Turkey, under British and Egyptian influence, threatened that the project must be abandoned unless certain conditions regarding the employment of labour and the ownership of land were accepted. The matter was submitted to the arbitration of Napoleon III and his award, issued in 1864, withdrew from the Company the right to employ forced labour and also reduced the amount of land granted under the original concession.

The Canal was officially opened on November 17, 1869, when the Empress Eugenie in the Imperial yacht led the first convoy of ships to pass through. Since that time, however, ships have increased greatly in size, in speed, and above

all in draught; while traffic has increased beyond anything visualised by de Lesseps.

This has imposed on the Company the need to undertake, not only extensive maintenance and repair work, but also a series of programmes of improvement. The seventh programme was completed at the end of 1954, and the eighth is now under way.

THERE are in the 101 miles of Canal between Port Said and Suez two passing points, at the Ballah Loop a little north of Ismailia, and in the Great Bitter Lake.

Theoretically it is (or rather was) possible for ships to pass in the Canal itself, as its minimum width of 197 ft. would permit this. In practice, however, this causes very rapid silting and damage to the Canal banks.

Ships pass through in convoy, and the normal practice has been for two convoys a day to start from either end, their times of departure being planned to enable them to spend as little time as possible waiting at the passing points.

Speed in the Canal is restricted to seven-and-a-half knots — seven knots for very large ships — and transit takes about 12 hours.

Just before hostilities began last October the depth of the dredged channel was about 42 ft., allowing passage to ships drawing 34 ft., or 35 ft. in the case of a northbound tanker under certain conditions.

A programme of improvements planned by the Canal Company included the construction of two new by-passes, one at Port Said and one at the southern outlet of the Great Bitter Lake. These, it was estimated, would increase the average capacity of the Canal from 40 to 48 ships a day, with the possibility of dealing with a peak number of 60 when required.

Continued on page 21

PERSONALITIES

Appointments Announced

NEW appointments for seven senior officers of the Royal Australian Navy have been announced by the Minister for the Navy, Mr. C. W. Davidson.

Captain J. McL. Adams, O.B.E., R.A.N., at present Director of Naval Intelligence at Navy Office, Melbourne, has been appointed captain of H.M.A.S. *Tarangau* (the advanced naval base at Manus Island) and Naval Officer-in-Charge, North East Australian Area, from April 3, 1957.

He will be succeeded at Navy Office by Captain I. H. McDonald, R.A.N., now Inspector of Naval Recruiting and Courses, whose successor will be Commander W. F. Cook, M.V.O., R.A.N., executive officer of the aircraft carrier *Melbourne*, in the acting rank of Captain.

The new executive officer of the *Melbourne* will be Commander B. S. Murray, R.A.N., at present executive officer of H.M.A.S. *Albatross* (the R.A.N. air station at Nowra, N.S.W.).

Commander T. M. Synnot, D.S.C., R.A.N., at present executive officer of H.M.A.S. *Watson* (the Navigation-Direction School and Torpedo Anti-Submarine School at South Head, Sydney) has been appointed Director of Ordnance and Underwater Weapons at Navy Office from January 14, in the acting rank of Captain.

Acting Captain (E) L. N. Dine, R.A.N., now Fleet Engineer Officer serving in the flagship *Melbourne*, has been appointed General Overseer and Staff Officer (E) to the Flag Officer in Charge, East Australian Area, from December 12. He will be succeeded by Commander (E) J. K. Menary, R.A.N., First Assistant to the

General Manager of the Naval Dockyard at Williamstown (V.), in the acting rank of Captain (E).

R.N. APPOINTMENTS

The following R.N. appointments have been announced in London:

Vice Admiral Sir Caspar John, K.C.B.: To be a Lord Commissioner of the Admiralty and Vice Chief of Naval Staff in succession to Admiral Sir William W. Davis, K.C.B., D.S.O. and Bar (May, 1957).

Vice Admiral W. T. Couchman, C.B., C.V.O., D.S.O., O.B.E.: To be Flag Officer Air (Home) in succession to Vice Admiral Sir Caspar John, K.C.B. (March, 1957).

Rear Admiral A. S. Bolt, D.S.O., D.S.C. and Bar: To be Deputy Controller of Aircraft in the Ministry of Supply, in succession to Vice Admiral W. T. Couchman, C.B., C.V.O., D.S.O., O.B.E. (February, 1957).

The following change on the Flag List has been announced:

Rear Admiral F. A. Ballance, C.B., D.S.O.: To be placed on the Retired List to date November 21.

"Shaggy fish" club has cold views

A group of New Zealanders in the Antarctic has formed a "Shaggy Fish Club."

To join the club, candidates must drop a piece of ice on a killer whale.

New Zealanders at the McMurdo Sound Antarctic base formed the club as an answer to the "Pat a whale" club which a British Antarctic group formed in Grahamland last year.

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LEGAL HISTORY OF THE SUEZ CANAL—

Continued from page 26

They would also reduce the transit time. With this was associated a programme of deepening and—at certain points—of widening to enable vessels drawing 36 ft. to transit the Canal.

It was expected, according to the Company's last annual report, that these works would be completed by the end of 1957; and it was then intended to put in hand a further phase of the eighth programme consisting of general deepening and widening of the Canal in order to cope with the continued increase in traffic and in the size of ships.

With the increase in traffic the Company's revenue has been rising steadily, though this has been accompanied by an equally steady rise in expenditure. Increased revenue, however, has not been used to increase distribution to

shareholders. Rather, tolls have been reduced during the last three years and are now slightly lower than they were in 1939; and additional funds have been placed to the reserves for new works and to extraordinary reserve.

Further, during the past 12 months the Company has been involved in a dispute with the Egyptian Government concerning the keeping of a proportion of its receipts outside Egypt. Under an agreement reached in May last the Egyptian Government recognised the freedom enjoyed by the Company in the use of its funds outside Egypt, whilst the Company undertook to keep larger funds in Egypt than heretofore.

THE international position of the Canal has always been complicated, both by the nineteenth century rivalry between Britain and France in the Levant and even more by the condition of Egypt. Originally a province of the Turkish Empire, she came under British military occupation in 1882. In 1887 it was finally agreed that the status of the Canal should be settled by an international convention—the Convention of Constantinople—and Britain and France were asked to prepare a draft. The Convention was signed in 1888 by Great Britain, Germany, Austria-Hungary, Spain, France, Italy, the Netherlands, Russia and Turkey. It provided, as is well known, that the Canal should be open, in war or peace, to every vessel of commerce or of war, without distinction of flag; and that the Canal should never be subjected to blockade.

The Egyptian Government was to take the necessary measures for securing the execution of the Convention, calling on the assistance of the Imperial Ottoman Government, should Egypt not have the

necessary means at her own disposal.

In 1914 Britain, being at war with the Ottoman Empire, declared a Protectorate over Egypt. This was recognised by the Treaty of Versailles and the other peace treaties in 1919; and these also recognised the transfer to Britain of the powers conferred on the Sultan of Turkey by the 1888 Convention.

Then in 1922, Britain recognised the independence of Egypt, but at the same time reserved to her absolute discretion the security of her communications in Egypt and the defence of Egypt against foreign aggression. When, in 1936, the military occupation of Egypt was ended and replaced by a treaty of alliance between Britain and Egypt, the treaty provided that "until such time as the High Contracting Parties agree that the Egyptian Army is in a position to ensure by its own resources the liberty and entire security of navigation of the canal. . . ." Britain should be authorised to station forces in Egypt to ensure the defence of the Canal in co-operation with Egyptian forces. This was in no way to constitute an occupation or prejudice the sovereign rights of Egypt.

Finally, the agreement of 1954, under which Britain withdrew her forces from Egypt, contained the following clause:

"Article VIII.—The two contracting Governments recognise that the Suez maritime canal, which is an integral part of Egypt, is a waterway economically, commercially, and strategically of international importance, and express the determination to uphold the convention guaranteeing the freedom of navigation of the canal signed at Constantinople on October 29, 1888."—From the London "Navy."

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Submarines of the Atomic Age

By GILBERT HACKFORTH-JONES

WHEN Germany collapsed, the victorious allies shared the spoils of war, amongst which were of course the designs of all their enemies' weapons. So it was that the Russians, as well as ourselves, were made a present of the plans of the very latest type of U-boat, the dreaded Type XXVI, driven by the new "closed-cycle" internal combustion engine, and capable of doing at least twenty knots under water. It was the weapon which our Navy had most feared.

Proof that the submarine is now a more dangerous weapon than ever before, is the fact that the Russian Navy is now reputed to have over 400 submarines in service. They, too, have no doubt about the lessons to be learned from the Battle of the Atlantic.

Though what our own people are doing with their share of the German designs is a close secret, it is safe to observe that we are

going ahead as fast as we can with the task of bringing our own submarines up-to-date. Already all our large submarines in service are fitted with the snort and many of them have already crossed the Atlantic on training cruises without ever coming to the surface.

A number of our smaller submarines of the "S" class appear to have been altered by "streamlining" their upper-deck structures for the purpose, no doubt, of increasing their speeds under water.

Since Germany was defeated there has been time to experiment and to digest the mass of new material which fell into our hands at the end of the war. But so far the Navy has hesitated to commit itself to a big programme of building new warships of all sorts. This is because of the invention of the atomic and hydrogen bombs.

These terrible weapons, which not only explode with a million

times the violence of ordinary high explosives, but leave behind them a deadly cloud of radio-active particles which must be prevented from touching human beings at all cost, have resulted in a change of ideas about future wars at sea which is likely to change the designs of all ships except submarines.

Ships of the future may have to be completely covered over so that they can pass through clouds of radio-active material without any harm being done to the men on board.

IN addition to this change in design it is more than likely that our future warships will be armed with large rockets, capable of travelling hundreds of miles with a heavy load of explosive, or even an atom bomb, instead of the big guns of the present-day ships.

The effect of arming ships with what amount to aerial-torpedoes, instead of guns would be to make their construction much cheaper and easier, because they would not have to be built so strongly as they are when the tremendous "kick" (or recoil) of a broadside of heavy guns has to be provided for.

If the weight saved in building such ships was employed, in providing them with pressure-hulls, capable of withstanding hundreds of pounds per square inch it would be possible for such vessels to become submarines, with the twin advantages of invisibility and complete protection from radio-activity. The time may be near when many more warships will be forced to seek safety by going under water; and so the submarine will once more change, and become the "bigger and better"

vessel that many people in the past believed it to be, though for an entirely different reason

There is another way in which the splitting of the atom will affect submarines and that is by the use of atomic power to drive their engines. This will be done by using what is called an "atomic pile," which is a device which can generate an almost endless supply of heat.

This heat is used to boil the water in a specially contrived boiler and so generate steam which will work the turbines as in the case of ordinary steamships. Already the United States Navy has produced "atomic-submarines" called *Nautilus* and *Sea Wolf*, of which very little is known.

No doubt every potential enemy of America will send its spies to try and find out how successful such submarines will be. Atomic piles are far from being handy

things, for they, too, send out radio-active rays which are fatal to human beings, so that they have to be shrouded in "screens" made of concrete many feet thick.

Thus the task of designing and building an effective submarine powered by an atomic pile is far from easy, and everybody would like to know whether the Americans have succeeded in doing so.

If they have we shall soon hear of "repeat" orders being placed for hundreds of such craft; for, of all types of engine for use in a submarine, steam is the safest as long as it is not necessary to have holes cut in the submarine's pressure-hull for the funnels and air intakes, necessary when steam is generated by an oil-fired boiler.

WHILE the submarines of the future are likely to be divided into many categories which will range from Midgets to 10,000-ton "submersible" cruisers, the

methods of attacking them are undergoing many revolutionary changes, of which the greatest is likely to be the helicopter.

The great advantage of a helicopter is its ability to "hover" just above the surface of the sea. It can also, of course, go along at a speed of nearly one hundred miles an hour, which is four times as fast as the swiftest submarine at present designed. The helicopter is not seriously affected by bad weather at sea. No matter how large the waves are, it can hover above them like a seagull, completely unaffected.

If there is fog, moreover, a helicopter is able to "grope" its way at even a walking pace as it approaches its destination on land, or an aircraft carrier, so that the dangers of flying blindly into a hillside or crashing on a flight deck are largely done away with. The Navy was not slow to see

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the great possibilities which lay in helicopters for anti-submarine work. Certain secret listening apparatus has been designed which can be carried in the helicopter and lowered into the sea by means of a crane to such a depth that all the noises of the wind and waves are avoided, and the operator can listen for the sound of a submarine's propellers.

Such a development may well checkmate the fast U-boat of the future, for it is impossible in this world to produce high-speed in any form without noise.

THERE seems to be little doubt that the defence of the convoys of the future will rest mainly with helicopters. Each merchant ship may carry a number of its own helicopters which can take it in turns to act in the same way as did the screening destroyers, corvettes and frigates of the last war.

The actual attacking of the U-boats, once they have been discovered, will probably be done by a "striking force" of heavily armed fast-moving vessels which will be able to steam to the spot indicated

Collapsible tanks for liquid ship freights

OVERSEAS shipping owners are investigating the practicality of using collapsible rubber

by the helicopter and then release its anti-submarine bombs and depth-charges with deadly effect.

From the above forecast of the lines on which the eternal struggle for mastery between different types of ship will develop the reader can understand that in naval warfare there is never the "complete answer" for which people are always seeking to any type of warfare.

As fast as an antidote is found for one kind, something is developed which renders it of little value. So it has always gone on and so it always will.

As long as there is war there will be submarines, and they, like any other threat, can only be kept within check by the drastic use of every weapon which can be devised. — *From the "Sea Cadet," London.*

tanks to carry liquid freights in the holds of dry-cargo vessels.

The tanks, which have been successfully used on land for storing emergency supplies of aviation fuel, are claimed to be ideal for carrying such liquid freight as crude oil, petroleum products, edible oils and wines.

They consist of a collapsible, fabric reinforced synthetic rubber bag contained within a light alloy, telescopic frame. When not in use, they can be folded flat and placed at the bottom of a ship's hold beneath normal cargo.

The tanks have been made in three sizes, 1,620, 2,260 and 2,900 gallons.

If the tanks pass a series of extensive sea trials now being conducted, they could be adopted by some shipping owners to obviate the need for dry-cargo ships to sail in ballast when they cannot pick up suitable cargo.

The British inventors also claim that their product could be adaptable to road and rail vehicles and for freighter aircraft.

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Japanese quest for sunken ships

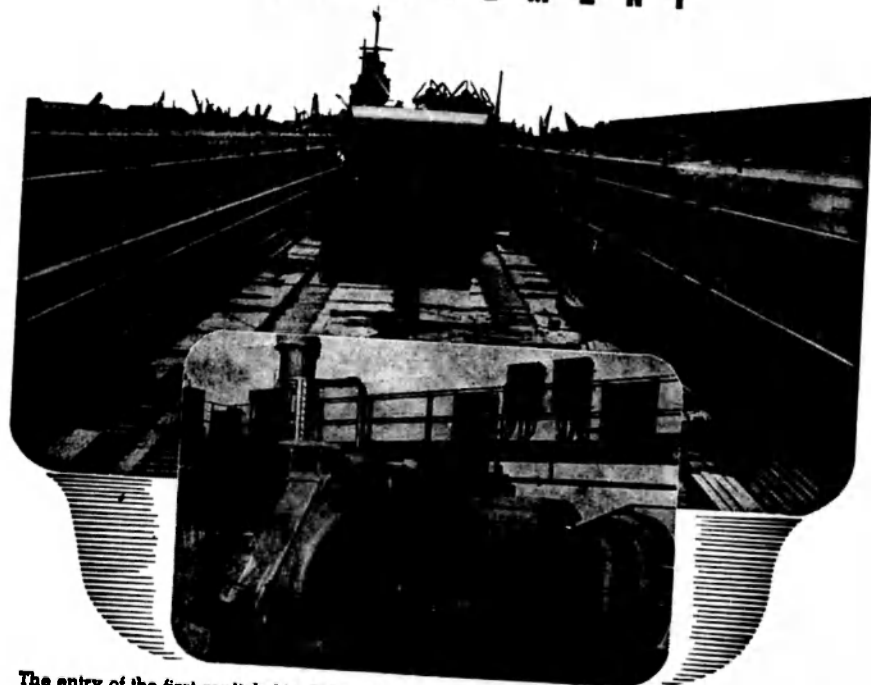
Japanese salvage companies are interested in buying any reclaimable wrecks in Australian waters, according to a Japanese businessman who visited Sydney recently.

He is Mr. Yasunobu Banno, managing director of a Japanese importing and exporting firm. He arrived from Fiji, where he had been investigating the possibility of recovering shipping sunk in the islands during the war.

He said his firm was associated with the Japanese salvage company which recently bought four war-time wrecks in Darwin harbour for £30,000.

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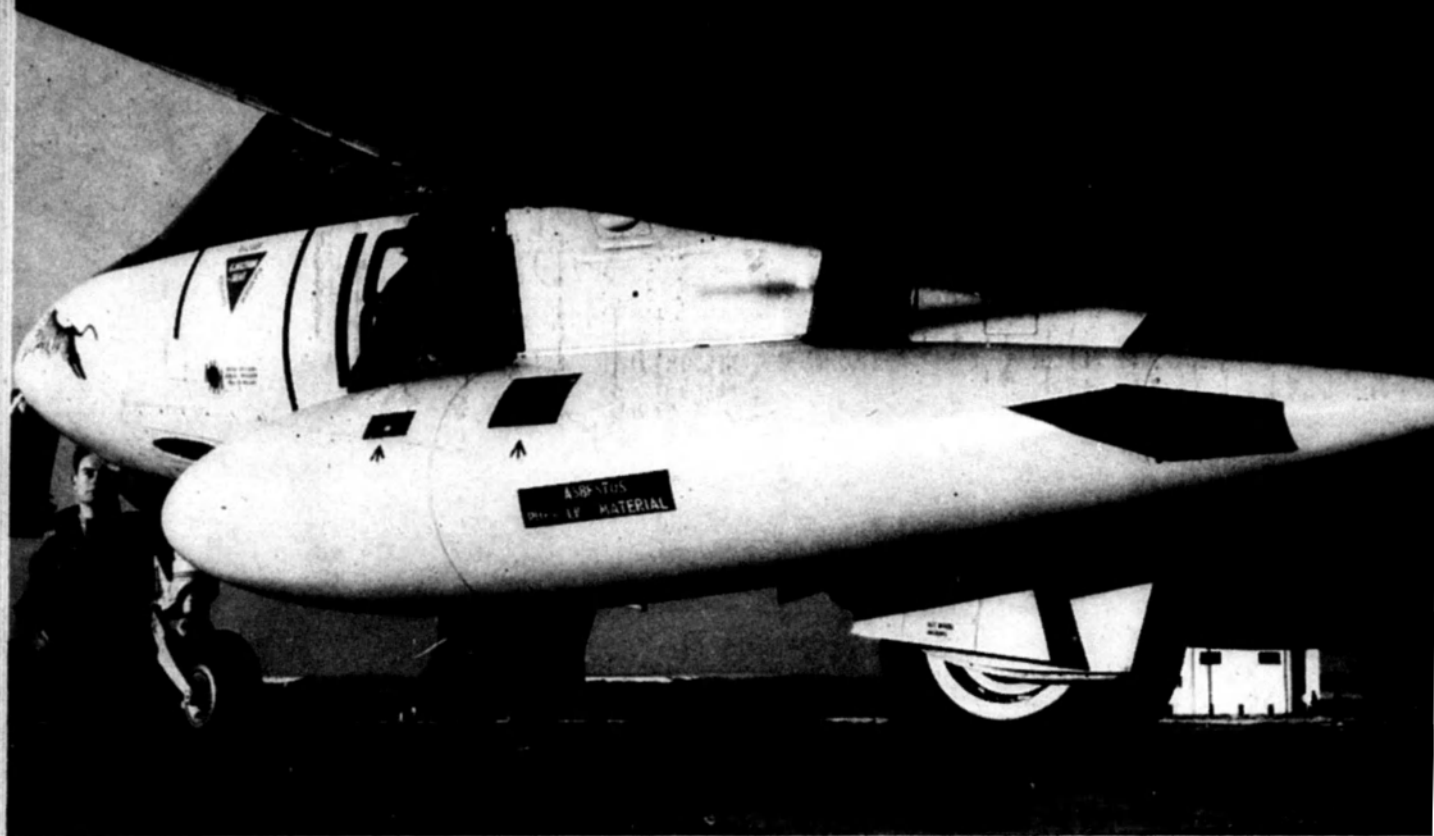
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Not-so-expensive expendables

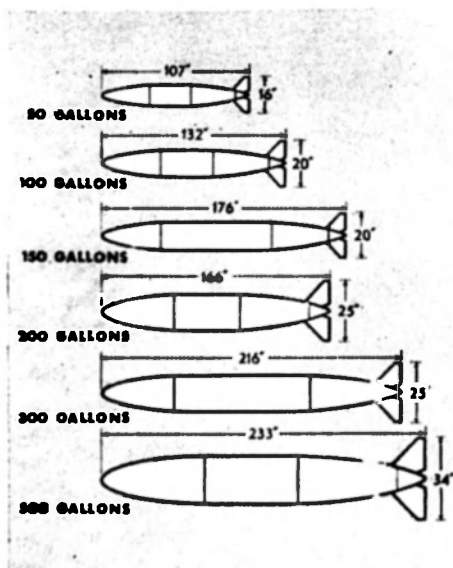
Today drop-tanks are a major expendable in the operation of military aircraft.

According to reliable reports, they constituted the largest single item of operating expenditure of the U.S.A.F. in Korea, where thousands were dropped every week. Moreover, as most current drop-tanks are of light alloy, semi-monocoque construction, they could, in time of war, compete directly with aircraft for labour, plant and strategic materials.

Bristol plastic drop-tanks were designed to get over these difficulties. They are much easier to produce than their alloy equivalents and utilise plant and skills that would not be particularly scarce in wartime. They are aero-dynamically superior to alloy tanks and can be dismantled for easier stacking. They are unaffected by extremes of temperature and humidity.

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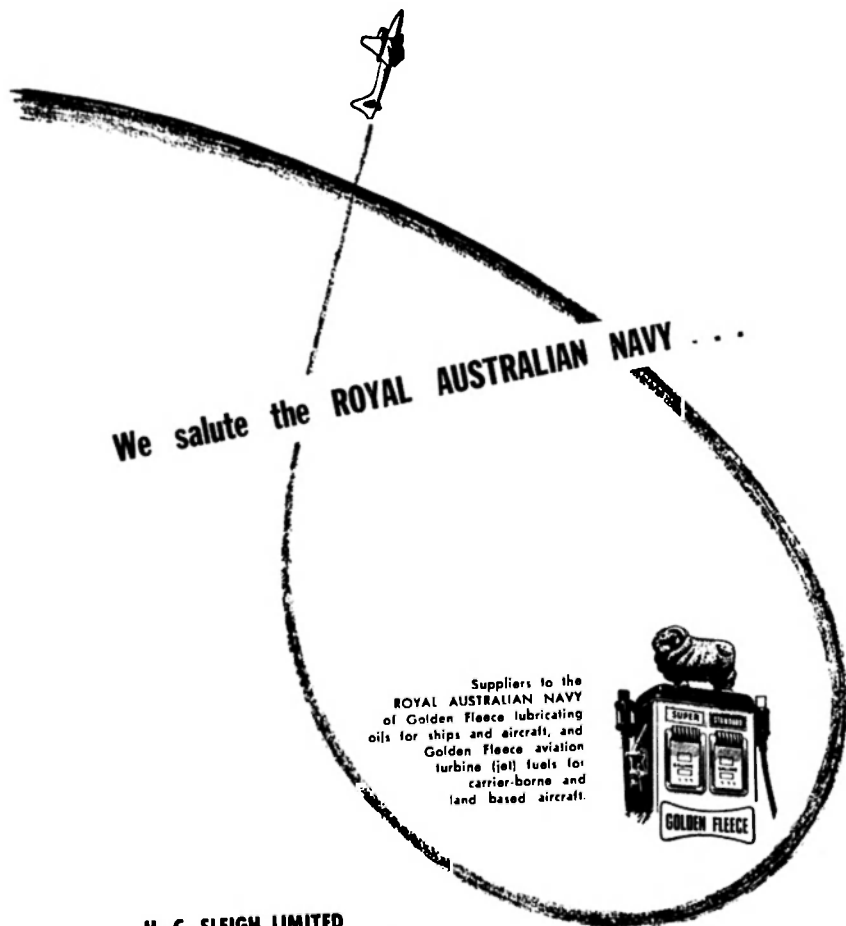


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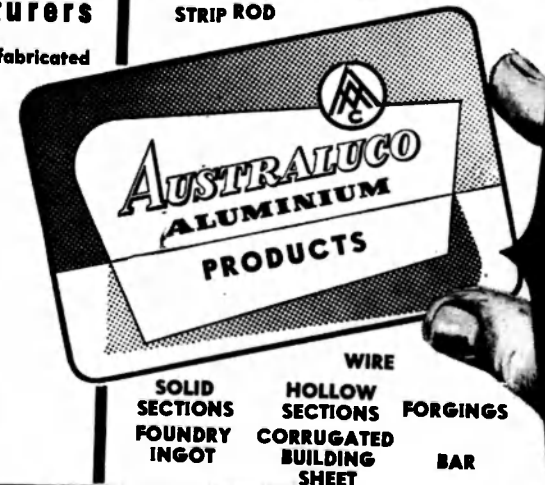
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THE NAVY

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TANKER EXPANSION

By nationalizing and subsequently blocking the Suez Canal, President Nasser gave a fresh impetus to the expansion of the tanker fleets, already growing rapidly in response to the higher world demand for oil.

In the past few months strenuous efforts have been made to accelerate the completion of vessels under construction, while an unprecedented volume of orders has been placed, many of them for vessels of the largest size.

These movements may be illustrated from the half-yearly statistics compiled by Messrs. Davies and Newman, the London oil and tanker brokers.

During the first half of 1956, according to this source, 58 tankers with an aggregate deadweight tonnage of 1,147,000, were added to the world fleet. In the second half the increase was 87 vessels, with an aggregate deadweight tonnage of 2,333,000.

Moreover, during the first half, 23 tankers were converted to other uses or scrapped whereas the corresponding figure for the second half was only 10.

Taking the year as a whole, the commercial tanker fleets of the world (vessels of 500 tons and upwards) registered an increase of 8 per cent., from 41,808,400 to 45,253,300 tons d.w.

Pre-war tonnage still forms 12 per cent. of the

total, while war-built vessels account for 25 per cent. and post-war tonnage for 63 per cent.

The familiar shift towards the flags of convenience continued apace during 1956 and if present trends persist the Liberian fleet may well be the world's largest by about 1960.

The striking changes which have occurred in the national fleets since the war, notably the registration of many U.S.-owned vessels under the flags of Liberia and Panama, may be traced in the following table:

Flag	May, 1948	July, 1956	Jan., 1957
British	5,438	8,210	8,517
Norwegian ..	2,370	6,899	7,067
Liberian	*	5,272	6,324
U.S.A.	9,638	6,241†	6,175†
Panamanian ..	1,532	3,149	3,446
French	659	1,993	2,036
Italian	649	1,946	1,992
Netherlands ..	601	1,569	1,671
Swedish	520	1,581	1,641
Japanese	*	1,192	1,184
Other	1,945	4,904	5,200

World Total 23,352 42,956 45,253

* Included under "other."

† Excluding U.S. Government tonnage.

The tonnage of tankers under construction or on order rose by almost 5.9 million tons during the first half of 1956 and by a further 8.5 million in

the second half to a present aggregate of over 26 million tons dw.

Of the 875 vessels included in this total (250 of which are actually under construction), 190 are of 40,000 tons dw. or over, compared with only 79 six months ago.

The biggest so far ordered—of 106,500 tons dw.—is to be built in the U.S.A. for the Niarchos group.

No less than 17 per cent.—the largest share—of the vessels on order are to be built in Japan. The U.K. follows with 16.4 per cent. and Germany with 16.2 per cent.

With all yards booked up for many years ahead, delivery dates are an important factor determining where new orders are placed; the countries securing the most orders in the past six months were Germany (2.2 million tons), Sweden (1.4 million) and the U.S.A. (1.3 million).

CLEARING THE CANAL

Now that the Anglo-French salvage force has left Port Said, after completing tasks allocated to it by the United Nations, it is only fair to point to the considerable contribution made by this force towards clearing the Canal.

Without the speedy and efficient operations carried out by the Anglo-French units at Port Said, any prompt approach to a general clearance of the Canal would not have been practicable. Thirteen wrecks, totalling 17,000 tons, were removed from the harbour, and two channels were cleared for the largest ships using the Canal.

The Egyptians sank 22 ships in the harbour and these varied from 100 tons to 4,000 tons displacement.

Some were sunk by explosive charges, which made salvage particularly difficult.

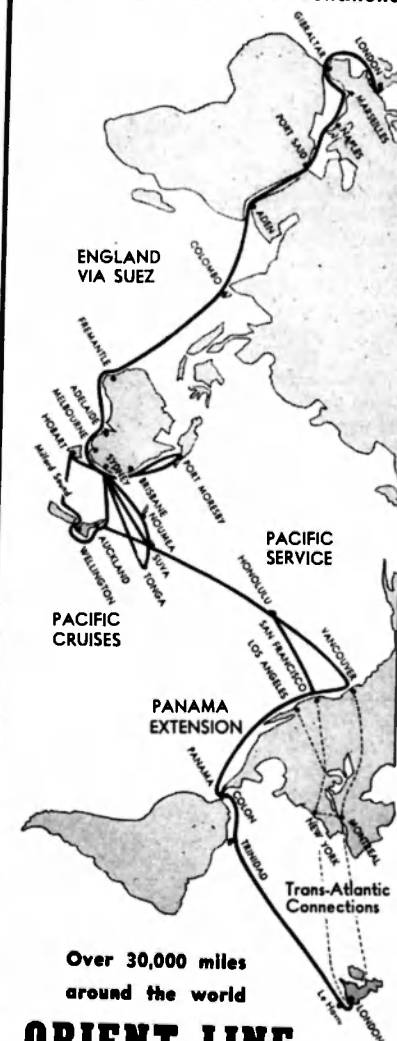
On the day of the cease-fire a salvage unit entered Port Said and began a survey of the harbour and wrecks. By November 24, a 25 foot channel through Port Said was open and the way would then have been clear for the Anglo-French salvage fleet to proceed with the clearance of the rest of the Canal.

By mid-December, 14 British, three French and two German lifting craft on charter to the Admiralty had been employed. Others were on their way and, altogether, some 40 salvage ships were employed or held in readiness.

After the withdrawal of the Anglo-French policing force on December 22, the number of Anglo-French salvage vessels was reduced to 11, which were placed under United Nations control, the crews wearing plain clothes and the ships flying the U.N. flag.

Among the wrecks raised by the Anglo-French salvage force was the *Paul Solente*, of 4,000 tons.

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RUSSIA AND THE MIDDLE EAST

By Rear-Admiral A. D. NICHOLL, C.B., C.B.E., D.S.O.

RECENT events in the Middle East, seen in terms of world strategy, are part of a well-defined picture. There was no mystery about Soviet Russia's military and political support of Egypt and the Arab countries; it followed the logical course which Communist policy has always followed towards the free world, the policy of eventual domination.

After the defeat of Japan in 1945, there were high hopes that the United Nations organisation, whose members together possessed overwhelming military strength, would be able to establish peace at last on firm foundations. Everyone started to demobilise as fast as possible—everyone except Soviet Russia. Then, all too soon, when the vast armies, air fleets and naval strength of Britain and the United States had evaporated, it was realised that Soviet Russia had not demobilised, while the consolidation of her power in the satellite countries and her intransigence and exercise of the veto in the United Nations showed clearly that Communism had not given up its aim of world domination.

The Communist seizure of Czechoslovakia sounded an unmistakable alarm in February 1948. There we were with our defences down facing the threat of Soviet land and air forces of enormous strength, poised to drive into Western Europe.

It was no good placing faith in the United Nations. With Soviet Russia sitting at the Council table and exercising the veto, UNO was helpless. Soviet expansion could only be halted by military means; the only hope was for the free nations to band together to meet the dangers and to pray that they would have time to build up their

defences. Britain took the lead in the formation of the Brussels Treaty Organisation between Britain, France, Holland, Belgium and Luxembourg.

I was a member of the British military team and I well remember that when we first met our European colleagues their most optimistic forecast was that the Russians would walk west within three months. Some said within three weeks.

The British said, "You may be right. If you are, all we can do is to stand together and leave it to our individual fighting services to do their best. We think, however, that the danger is further off. In any case, we couldn't make plans for such an early date and we suggest a basis of two years hence."

United States observers soon joined us. They came, not only to help us in our rearmament, but also to see if the European horse was worth backing. They reported that it was and the formation of the North Atlantic Treaty Organisation followed in 1949, founded on the rock of America's military strength and possession of the atom bomb.

Meanwhile, in 1948, Soviet Russia attempted to pinch-out Berlin. Resolute military steps by the United States and Britain foiled the Soviet plan. Fortunately, no military clash occurred; but the Berlin airlift was a military operation in which the Western countries knew that they were accepting a grave risk of war.

And so the story has continued. UNO was powerless to act, but the free nations united in a series of regional pacts, such as the South East Asia Treaty Organisation and the Baghdad Pact, or intervened

with military forces to halt the advance of Communist military forces.

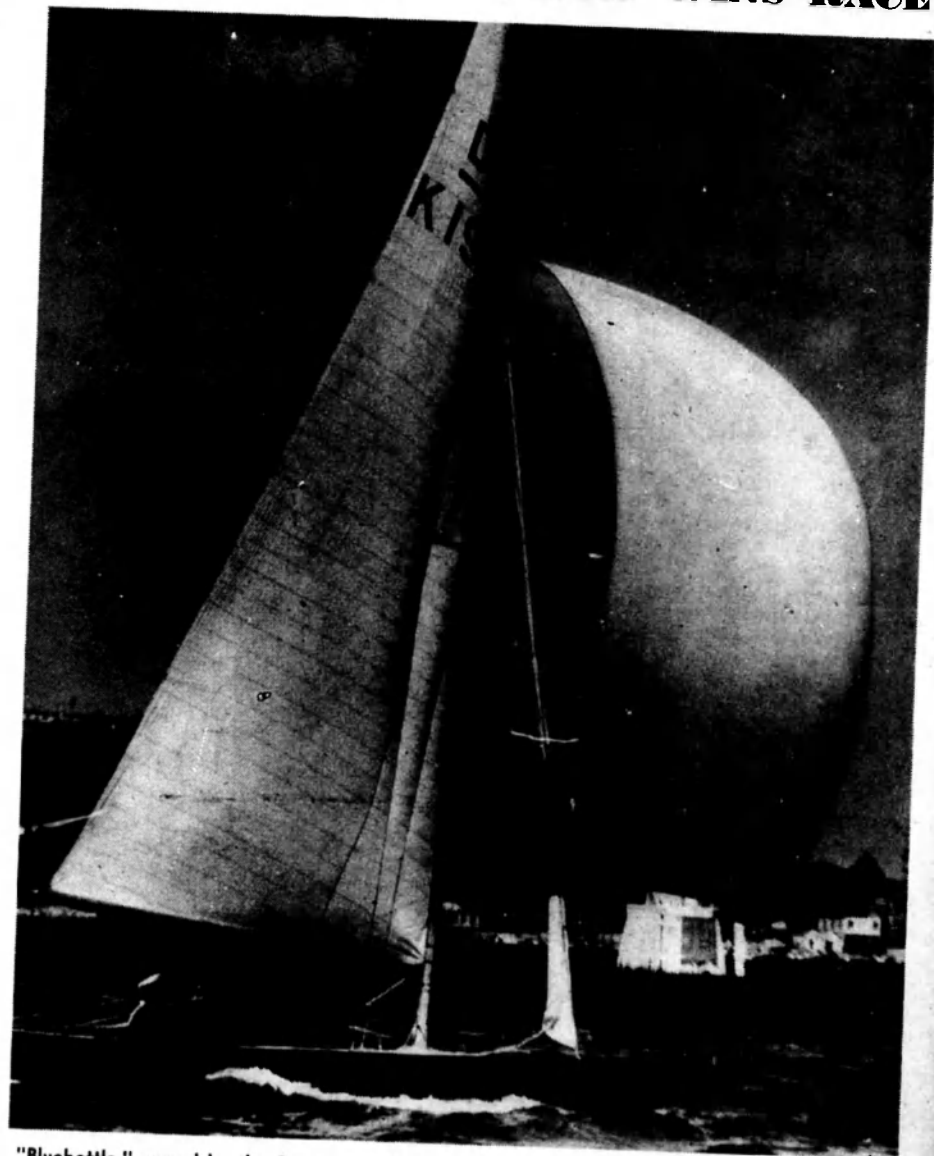
These direct interventions were sometimes by individual nations, sometimes by several acting together. The intervention against the aggression of North Korea on South Korea in 1950 has often been quoted as proof that the United Nations is capable of halting aggression but in military terms it was "civil war" within the United Nations. It was a mere accident or a miscalculation on the part of Soviet Russia, that her representative was not present to veto the action agreed by the Security Council.

Throughout the Korean war Soviet Russia, although not supplying troops in the fighting, gave strong military and full political support to the armed forces of Communist China, whom the Communists, for propaganda purposes, called "volunteers."

MILITARY steps were also taken by the United States to prevent an attack by Communist China on the Nationalist Chinese in Formosa. As a result of the mutual security treaty of 1954 between the United States and Nationalist China, the United States has deployed a fleet in the area where it patrols to prevent Communist attack by sea or air against Formosa or the Pescadores or, it is to be inferred (though the United States Government has been purposely vague on the point), against the islands of Quemoy or Matsu close to the Chinese mainland, which are held by Nationalist China. Incidentally, Communist China invariably re-

Continued on page 8

ROYAL COUPLE'S YACHT WINS RACE



"Bluebottle," owned by the Queen and the Duke of Edinburgh, easily won a Dragon class yacht race in Sydney Harbour on December 23. Skipper was Lieutenant-Commander Graham Mann. The Royal Sydney Yacht Squadron conducted the race.

February, 1957.

fers to this intervention by the United States as "aggression."

Britain has always attached vital importance to the security of the Middle East but has so far been unable to bring about a regional defence organisation, mainly due to the refusal of Egypt to co-operate in any way. An attempt to form a Middle East defence organisation to include all the Middle East countries on a basis of equality was frustrated by Egyptian intransigence and the best that could be achieved was the Baghdad Pact between Great Britain, Turkey, Iraq, Persia and Pakistan, an alliance which at least provides a protective screen for the Arab countries. Israel and Egypt.

Unfortunately, in the matter of Middle East defence, there has so far been fundamental disagreement between Britain and the United States. In the British view the security of the Middle East is of vital importance to the free world and in particular to the countries of Western Europe. Middle East oil is of the utmost importance to their economy and, therefore, to their ability to build up and maintain their military strength.

The Suez Canal, as two world wars have shown, is of immense strategic importance to the defence of the free world. The territory of the Middle East forms the bridge between Europe, Asia and Africa and its loss to Communist domination would mean, among other things, that the NATO defence system for Western Europe had been outflanked.

It has always been obvious that the Soviet military appreciation was exactly the same as Britain's. Colonel Nasser deluded himself if he genuinely thought that the support and military assistance he was getting from Soviet Russia stemmed from Russian friendship for Egypt and the Arab countries. Russian intervention in the Middle East

can be clearly seen as part of the Soviet grand strategy.

Russia's moves in the last ten years have been called the cold war but they are in every sense military operations; and in war, even if you call it cold war, economic blows can be as effective as military blows. If you can break the economy of your enemy, the road is open to victory. Soviet Russia is well aware of the vital importance of the Middle East oil to the economy of the free world, of the importance of the Suez Canal both in peace and war and of the reliance of many of the free countries on the sea and air lines of communication which pass through the Middle East.

SOVIET support of Egypt and the Arab countries was plainly intended as the first step in obtaining military control of the Middle East. Meanwhile, as events have turned out, the sabotaging of the Canal by Egypt, the interference with oil supplies and destruction of oil installations amount to an important Soviet victory which can only be discounted by the reopening of the Canal and the renewed flow of Middle East oil. The Soviet leaders care nothing for the effect on the Arab countries and on Egypt of the loss of their oil trade and prosperity which so largely depend on the operation of the Suez Canal.

So far as NATO is concerned it can at least be said that the British view has recently been gaining substantial ground.

A few months ago NATO at long last began discussions with the object of developing the organisation as a forum for frank and realistic appraisal of political problems such as those of the Middle East.

Clearly General Gruenther, who recently relinquished the post of Supreme Allied Commander in

Europe, shares the British point of view on the vital importance of Middle East defence. Speaking in London on October 25, that is, well before the Anglo-French intervention in the fighting between Egypt and Israel, he said that the situation in the central sector of Europe was now much easier than it had been in 1951, but there was now a tendency for threats to materialise on the flanks.

His words were prophetic. Israel's attack on Egypt immediately gave rise to immense military dangers, particularly of Soviet intervention. The quick action of Britain and France forestalled this.

To quote General Gruenther again, when asked on November 13 to comment on the situation in the Middle East following the Anglo-French intervention, he said, "The very fact that the enemy has had to go round the flank, that is, to practise subversion and other activities in the Middle East, is a measure of NATO's success in central Europe."

It was very much in the interests of NATO and of the free world that, following the defeat of Egypt by Israel in the Sinai battle, British and French troops, not Soviet "volunteers," took up positions on the Suez Canal.

THIS particular operation followed the classic pattern: the obtaining of local air superiority by first pinning down the Egyptian air force and then destroying the Egyptian aircraft piecemeal on the ground; the seizing of an airfield by paratroops; the subsequent landings from the sea and air to secure a port.

The whole operation provided a perfect example of the flexibility and versatility of naval power: sea forces to "hold the ring," air striking power from carriers steaming close to the coast and working with Royal Air Force bombers

from Malta and Cyprus, first destroying the opposing air force and then providing air cover for the Royal Marines in their landing and their subsequent capture of Port Said; helicopters, from carriers close in, carrying reinforcements and evacuating casualties.

In the event, as in the case of the Korean war, our naval forces and convoys met virtually no naval or air opposition. It would be unsafe to assume, however, that this would always be the case in "limited war" operations of the future. Where total war is concerned, control of the sea by the Free World would be vital.

All the defensive plans of NATO and the other free world organisations are based on the assumption that the free world would continue to control the sea. The naval policy of Soviet Russia is to dispute and disrupt that control.

We are faced with this military

balance sheet at the present time. Soviet Russia with her central position and huge, fully mobilised land and air forces is unassailable except by the strategic air power of the free world. To take a case in point, there was nothing that the free nations could do militarily to help Hungary, even if they had agreed on action; the free world does not possess the land force strength which would have been needed to drive the Russians out of Hungary.

Soviet Russia on the other hand has great military superiority over Western Europe, though deterred from attempting to use it by fear of nuclear counter-attack.

The free world has the advantage of strong naval forces, capable of contributing to strategic bombing; and with its world-wide chain of air and naval bases, it could counter-attack from many directions.

The free world by its unity and determination and by building up

its military strength has so far been able to block the advance of Communism in Western Europe, in Korea, in the Western Pacific and, now, in the Middle East.

As the nuclear power of Russia increases, however, the free world will increasingly require to rely on the mobility and flexibility of its defences, attributes which demand that it retains control of the sea by maintaining its naval superiority and its world-wide naval and air bases.

—From the London "Navy."

NEW N.S.T. INTAKE

MORE than seven hundred naval National Servicemen entered R.A.N. shore establishments in Victoria, New South Wales and Western Australia on January 7 for training with the Navy.

For 600 of them it was then first experience with the Navy. The remainder did eleven of their 22 weeks training early last year.

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Promotions Announced

Promotions were announced on December 31 by the Minister for the Navy, Mr. C. W. Davidson, for five permanent service officers of the Royal Australian Navy and eight Naval Reserve officers. They are:—

ROYAL AUSTRALIAN NAVY

COMMANDER TO CAPTAIN

Commander (Acting Captain) James M. Ramsay, D.S.C., of Toorak (Melbourne), Director of Plans Division at Navy Office. In the Korean War he received the Distinguished Service Cross and the United States of America Legion of Merit Award for outstanding service whilst in command of H.M.A.S. Warramunga. He was born in Hobart.

LIEUTENANT COMMANDER TO COMMANDER

Lieutenant Commander Dacre H. D. Smyth, of Toorak (Melbourne), serving at Navy Office as the Director of Training and Staff Requirements. He was born in England.

Lieutenant Commander Robert J. Scrivenor, of Brighton (Melbourne), Commanding Officer of H.M.A.S. Quikmatch, which is serving as part of the strategic reserve in Malayan waters. He was born in Melbourne.

Lieutenant Commander Guy R. Griffiths, D.S.C., of Sydney, serving in H.M.A.S. Melbourne, as the Fleet Gunnery Officer. He was born in Sydney.

COMMANDER (E) TO CAPTAIN (E)

Commander (Acting Captain) Leonard N. Dine, of Sydney, General Overseer, East Australian

Area, Sydney, and Staff Officer (E) to the Flag Officer-in-Charge. He was born in Sydney.

NAVAL RESERVES

LIEUTENANT TO LIEUTENANT COMMANDER

Lieutenant John W. Hill, of Kings Cross, N.S.W.

Lieutenant John A. Wyatt, of Clayfield, Queensland.

Lieutenant Geoffrey N. Durham, of Thirroul, N.S.W.

Lieutenant Ian T. McKenzie, of Fremantle, W.A.

Lieutenant Leopold J. Schell, of Moonee Ponds, Victoria.

Lieutenant Ronald L. Batchelor, of Strathmore, Victoria.

Lieutenant Basil G. Cronin, of Williamstown, Victoria.

Lieutenant Frank G. Evans, of Balwyn, Victoria.

R.N. appointments, etc.

The Admiralty announces that Her Majesty The Queen has been graciously pleased to approve the following appointments:—

Admiral Sir Ralph Edwards, K.C.B., C.B.E.: to be Commander-in-Chief, Mediterranean Station, in succession to Admiral Sir Guy

Grantham, G.C.B., C.B.E., D.S.O.

The following changes on the Flag List are announced to date 10th December:—

Vice-Admiral Sir Charles F. W. Norris, K.B.E., C.B.E., D.S.O.: placed on the Retired List.

Rear Admiral A. R. Pedder, C.B.: promoted to Vice-Admiral in Her Majesty's Fleet.

FRENCH HARNESSING TIDES POWER

French engineers have begun work on the world's first tidal power station.

It will harness the force of the tides in the estuary of the River Nance (Brittany).

They predict the station will be ready in 1963 and will generate about 820 million kilowatt hours a year.

There is a difference of 40 feet between low and high in the estuary.

A dam will be built well up the estuary, where it narrows to 700 yards.

The power station will be housed inside the dam.

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How Long Before Space Travel?

By A. V. CLEAVER, F.R.Ae.S.

(Chief Engineer, Rocket Division, De Havilland Engine Co.)

The author of this article predicts piloted satellite vehicles by 1975, an unmanned missile to the moon by about the same time, and by the end of this century the first landing on the moon.

MANY people probably still regard the subject of interplanetary flight as fit only for the comic books and cartoon strips, for Hollywood films and B.B.C. serials. Its exploitation by some trans-Atlantic pulp magazines certainly justifies the adjective "comic" a good deal more than is usually the case.

Nevertheless, most rocket engineers and scientists would, I think, agree with men that the future extrapolation of our present work will eventually render space travel entirely practicable, and behind this objective there already stands a serious international movement dedicated to its achievement. This movement consists of societies in most countries of the world, having a total membership of about 10,000, which includes all kinds of professional technical men together with a great many laymen. The International Astronautical Federation, as it is called, has held annual congresses in various European cities since 1950.

With so many matters obviously needing attention on our own planet, it is often (and not unreasonably) asked why we should bother about the others, at least for a very long time to come. One might be tempted to reply to this objection with the facetious quotation of a remark once made by a leading member of the British Interplanetary Society — "Atomic energy makes interplanetary travel not only possible but imperative." However, it really deserves a more serious answer than that.

The simple truth is that exactly the same sort of criticism might have been made when Columbus, Raleigh, Drake or Scott proposed their own voyages of exploration — with equal fairness, or lack of fairness, depending on one's personal point of view.

Space flight is at one with all the previous efforts of mankind in the fields of exploration, discovery, research and invention. It is just another manifestation of our questing drive for new knowledge and experience, and greater control over our general environment.

Perhaps it will be the greatest example of all. Without too much strain on the imagination, it is surely easy to believe that this is no more than likely to be so, though only our children, and their children and grandchildren, will know for sure.

I believe that the enormous popular interest in the subject, particularly among young people, stems from an instinctive appreciation of these things. Once one has accepted man as being the sort of creature he actually is, this attitude appears entirely sensible—a conclusion which must be set against its more extravagant forms of popular expression, such as the wilder and more juvenile examples of "science-fiction" which were mentioned earlier.

Of course, spaceships are not going to be suddenly "invented"; their development will occupy a comparatively long time. Astronautics will evolve gradually and naturally, just as aeronautics did,

with one achievement leading to another and more difficult one, and so on.

Consider the work of Cayley, and Henson and Stringfellow, then the Wrights, Bleriot, the old biplanes of the first war, Alcock and Brown, Imperial Airways and the Schneider Trophy, the Spitfires and Lancasters and the Douglas transports: a century of history, culminating in to-day's London Airport, the "Comet," and the Fairey Delta's 1,132 m.p.h. record.

A similar process of development for space-flight has already been in progress for some time, though the work undertaken so far has often (even usually) been for other, and more immediate, avowed objects.

Ancient dream

The history of astronautics may truly be said to have begun about the turn of this present century. During its first quarter, a number of pioneers realised the fundamental fact that the rocket offered a possible means (indeed, still the only one known to us) of realising this ancient dream of travel to other worlds across space.

The reason for this, of course, is that a rocket engine, by definition, carries along all the material to generate its propulsive jet; for example, a fuel (as source of energy) and an oxidant (to burn with the fuel and so release its energy), both fuel and oxidant being called "propellants."

It is thus independent of any surrounding atmosphere for its

functioning, not needing atmospheric air to support combustion. Indeed its thrust actually increases slightly (by about 15 per cent.) in vacuo, as compared with at sea level, due to the absence of atmospheric back pressure on its nozzle area; the forward thrust is the result of pure reaction, from ejecting the exhaust rearwards, and of course it always acts so long as this ejection continues.

Small and light

A rocket can therefore accelerate to a higher speed, relative to its starting point, than the speed of its exhaust relative to the rocket. Another relevant factor, arising from the essential simplicity of rocket power plants and their high working pressures, etc., is their light weight and small size for very large outputs of thrust or power; this also would be very important for any interplanetary vehicle.

In the 1920s and '30s, rocket or interplanetary societies grew up in many countries; the British Interplanetary Society was founded in 1933. Two of these societies, working with only very crude and amateur resources, were responsible for most of the early practical experimental work; these were the American Rocket Society and the German Verein für Raumschiffahrt.

Just before the war, many of the leading personalities of the latter group were mobilised by the Nazis for military rocket research, notably Wernher von Braun, who went on to become the technical director of the great Peenemünde establishment and responsible for V2 and many other rocket devices. It is no exaggeration to say that the Germans were responsible during the war for the birth of rocketry as a serious branch of scientific engineering.

Since the war, it is common knowledge that work on rocket

aircraft and missiles of various kinds has intensified in the U.S.A., the U.S.S.R., the U.K. and France.

The present position is that the Bell X-1 and Douglas "Skyrocket" piloted rocket planes have flown at over twice the speed of sound, some 16 miles high; a two-stage rocket missile (the V2 plus WAC corporal) has ascended nearly 230 miles, and some monkeys and mice have achieved the distinction of riding in an Aerobee rocket into the extreme upper atmosphere (to an altitude of about 60 miles), and returning safely in a parachuted capsule.

All these achievements will undoubtedly be far surpassed within the next five or ten years.

The Bell X-2 is already flying and working up to a higher performance than its predecessors. Announcements have also been made that work has been started on the North American X-15, to carry a pilot at Mach 10 up to perhaps 50 or 100 miles, and on a rather similar Douglas project.

In the field of unmanned intercontinental ballistic missiles (ICBMs), the Americans are working on the Convair "Atlas," the Martin "Titan," the Douglas "Thor," and on the joint Army/Navy "Jupiter" project at Redstone Arsenal, where Wernher von Braun, of the V2, is in technical charge.

Soviet plans

Our own last Defence White Paper told us that there is a comparable British project of high priority, while Mr. Krushchev has said (not surprisingly) that the Soviet Union will not be behind in this particular heat of the armaments race. These ICBMs, incidentally, will need to attain speeds of the order of 15,000 m.p.h.—some 60 per cent. of the velocity of escape from the Earth's gravitational field, and about three times

that of the fastest rocket so far built.

Most significant of all, for the future of interplanetary travel, is the announcement by both the Americans and the Russians that they hope to establish temporary artificial satellite rockets during the 1957-58 International Geophysical Year.

The general consensus of opinion in the astronautical movement, I think it is fair to say, is that we shall see piloted satellite vehicles by about 1975, with possible practical uses for military reconnaissance and as short wave radio relay stations.

Mars and Venus

Perhaps about the same time, an unmanned instrument-carrying missile might be landed on the Moon, or sent to circumnavigate it, equipped in either case with telemetry. Soon afterwards, more ambitious piloted flights into space should follow, again including the circum-lunar mission, and perhaps by the year 2000 A.D., men will have landed on the Moon and returned safely.

More ambitious expeditions, to Mars and Venus, would probably be undertaken within another generation from that historic achievement.

With some truth, it has been said that spaceflight probably will be the greatest adventure still awaiting mankind. It will certainly also be one of the most fascinating and difficult technical achievements of our species.—From the London "Navy."

OLD SOLDIER DIES

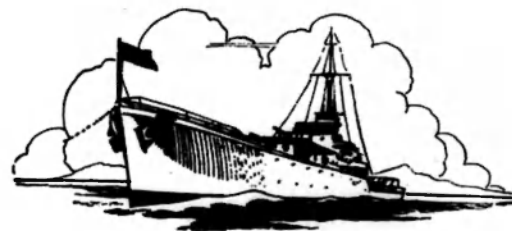
James Cooper, oldest returned serviceman in Britain, has died in Chatham (Kent) Hospital at the age of 104.

He served under Lord Kitchener at a time when the famous general was still only a lieutenant.



Sydney's new ferry, the "Koolleen," moves down Sydney Harbour after arriving from Newcastle (N.S.W.). The ferry's design has caused considerable public comment.

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NEWS OF THE WORLD'S NAVIES

R.N.V.R. Air Branch goes in defence cut

Britain will disband its Royal Naval Volunteer Reserve air branch as part of defence cuts announced in London in January 15.

The branch, formed in 1947, has a total strength of 401 pilots and observers, and about 300 other officers and 426 ratings in 11 squadrons.

The cuts include the disbandment of 20 R.A.F. auxiliary squadrons, cancellation of orders for 100 Hunter jet fighters, and the release of 120,000 Army National Servicemen from training at annual camp and drill hall parades.

The air cuts are estimated to represent a saving in aviation fuel of 17 million gallons this year.

According to the London "Daily Telegraph," the new Prime Minister, Mr. Macmillan, will intensify the economy drive.

When Chancellor of the Exchequer, Mr. Macmillan said he hoped to cut the £1,500 million annual defence bill by £200 million.

Progress on Christmas Island test-base

Rapid progress is being made in the preparation of a Pacific base from Britain's forthcoming nuclear tests, the Admiralty states.

The base is being constructed in Christmas Island, a U-shaped atoll measuring some fifty miles from tip to tip. Army units, helped by native labour, have already completed twenty-five miles of good class roads, an auxiliary airstrip and a 7,000 ft. runway suitable for bomber aircraft.

With the co-operation of the

Royal and Merchant Navies, many thousands of tons of heavy equipment and miscellaneous stores have been landed. Mail and fresh food are flown in from Honolulu by aircraft of the R.A.F. Transport Command.

The Royal Navy has also made successful landings on Malden Island, a smaller atoll 400 miles to the south, where a forward airstrip will shortly be constructed.

German warships visit Britain

Two German corvettes, the *Eider* and *Trave*, paid an informal visit to Portsmouth (U.K.) recently.

The ships were on a training cruise. Each vessel had on board a complement of three officers, 40 ratings and 20 officer cadets.

It was the first visit to the United Kingdom of German warships since before World War II.

Navy "ready at short notice"

The First Sea Lord, Admiral Earl Mountbatten, at a Navy League dinner in London on January 17 said that the Royal Navy was ready to move at short notice to any part of the world with a striking force of aircraft largely independent of Britain's shrinking overseas bases.

He said the Navy always had available a very compact, mobile and economical fighting force for limited wars.

Of the future Royal Navy, Lord Mountbatten said ships being designed to carry guided missiles would gradually replace vessels with orthodox weapons.

"Our first guided weapon trials ship, the *Girdle Ness*, is already at sea firing missiles for trial purposes," he said.

"Our first nuclear-propelled submarine is well on the drawing board and would, in fact, have been further ahead had not the Government made a very understandable decision some years ago, that nuclear power plants to provide electricity were to take priority over all else in this field."

Minesweeper takes tanker in tow

During a gale in the English Channel just before Christmas the Fishery Protection Minesweeper *Wave*, which had commissioned from reserve only 11 days earlier, went to the assistance of the London tanker *Amity*, immobilised with engine trouble, five and a half miles off Chesil Beach.

The *Wave* took the tanker in tow in difficult squally conditions and brought her into Portland.

A member of the crew of the Portland tug *Restive*, which stood by the tow, was seriously injured when he fell in the engine room when his ship gave a heavy lurch during a Force 9 squall.

U.S. battleship joins reserve fleet

One of the last three battleships operating with the U.S. fleet, the U.S.S. *New Jersey* is joining 12 other battleships in mothballs, the U.S. Defence Department has announced.

The *New Jersey* left Norfolk on December 13 for New York Naval Shipyard for the five-month process of putting the ship into condition to join the reserve fleet.

No equipment will be removed from the ship, but her ordnance and machinery will be repaired, and preservatives and "cocoon" covers applied to prevent corrosion. The process is similar to a

major shipyard overhaul, and places the battleship in condition so that she can be brought from reserve status rapidly if needed.

Launched 14 years ago — a year after the Japanese attack on Pearl Harbour — the *New Jersey* was commissioned on May 23, 1943, and joined the Third Fleet on January 24, 1944.

After she had supported carrier air strikes against Kwajalein, Admiral Raymond A. Spruance transferred his flag to the *New Jersey*, and the ship became the flagship of the Fifth Fleet. As such, she participated in the attack on the Japanese stronghold on Truk and later, with Task Force 58, took part in the famed "Marianas Turkey Shoot," which saw 402 of 545 Japanese aircraft shot down.

In August, 1944, the *New Jersey* became the flagship of Admiral F. Halsey. She took part in the Battle of Leyte Gulf and in strikes against the China coast.

The *New Jersey* took part in the first attack on Japanese home islands after General Doolittle's 1942 raid. This was a diversionary attack to cover the Iwo Jima attack. Later she supported the invasion of Okinawa.

The other two battleships still with the fleet are the *Winconsin* and the *Iowa*.

Canadians repair Cook monument

The monument commemorating Captain Cook's death at Kealahou Bay, Hawaii, has been repaired by a party of officers and men of the Royal Canadian Navy during the visit of two Canadian warships to the Bay. The ships were H.M.C.S. *Settler* and H.M.C.S. *St. Therese*.

The visit is recorded in a report from the Commanding Officer of H.M.C.S. *Settler*, Lieutenant-Commander G. R. MacFarlane, R.C.N., which has been forwarded

by Vice Admiral H. G. de Wolf, Chief of Naval Staff, Royal Canadian Navy, to Admiral of the Fleet the Earl Mountbatten of Burma, the First Sea Lord.

San sought on long-range sub

Britain on January 15 asked the United Nations to agree to ban long-range submarines, intercontinental missiles, and to limit or prohibit nuclear weapon tests.

The Minister of State for Foreign Affairs, Commander Allan Noble, put Britain's proposals to the U.N. political committee.

He suggested that the Disarmament Commission sub-committee investigate the possibilities of agreeing on the limitation of nuclear test explosions as part of a disarmament plan or separately.

He agreed that studies should be made of the proposal, made earlier by the U.S. delegate, Mr. Henry Cabot Lodge, that outer-space experiments should be internationally controlled, to assure that they were solely scientific and peaceful ends.

"A particularly menacing weapon is the long-range submarine," Commander Noble said.

"These submarines are capable of underwater endurance up to 15,000 miles. Further, they can be used as launching platforms for guided missiles.

"Such submarines are offensive and not defensive weapons.

"Clearly, a disarmament programme which banned the atomic bomb but left such offensive weapons uncontrolled would give little real security."

It would also be necessary to limit and control military aircraft, warships, armoured vehicles, guns of all types, flame-throwers, rockets, and other weapons.

Aircraft carrier for Brazilian Navy

The Admiralty has announced that negotiations for the purchase of the aircraft carrier *Vengeance* by the Brazilian Government has been successfully completed.

The ship, after modernisation, will be commissioned in the Brazilian Navy in the name of N. Ae. L. Minas Gerais.

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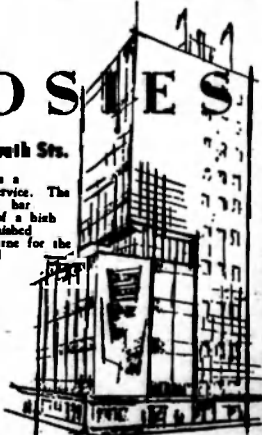
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RUSSIA'S SEA POWER

By Oscar Parkes, Ass.I.N.A.—in London.

THE sixty-seven year old *Naval Annual* as it was, now in its new guise as the *Armed Forces Year Book*, makes its ever-welcome appearance as a most valuable and interesting compendium dealing with strategical subjects, defence policy, and administration in the Services. It is not separated into sections as many of its 29 chapters are not susceptible to rigid grouping, and in this issue only a few can be selected as dealing with the naval side.

Of these, Dr. Anthony Sokol's appreciation in Chap. VII on "Sea Power and Russia" naturally claims first attention.

Most of us are pretty well grounded in the numerical strength of the Soviet Navy, but not so when it comes to estimating its nature and probable effectiveness.

Dr. Sokol writes from Stanford University in California, and his opinions are particularly valuable as carrying perhaps more weight than would those of a British author traditionally prone to the importance of Sea Power.

Naval force works both ways—both for us and against us, and the same applies to Russia. It is of little use appraising Soviet sea power in terms of naval strength alone, or in considering merely that country by itself.

Because of the recurrent difficulty of understanding sea power, even among thinking people, some of its attributes must first be examined and clarified. Its most striking feature is its continuity, which, except for political and climatic obstacles, gives ships access to all parts of the earth—a fact that geopoliticians did not realise

until a few years ago and perhaps only now grasps in its entirety.

The sea highway, covering three parts of the globe, is inexpensive and flexible because it is used by large transportation units of slow speed—one cargo ship in a year's time can carry three times as much freight in ton miles as the whole air lines of the U.S., at a cost of approximately 1 to 900, leaving air transport superior in war as a weapon and troop carrier. And the demand for supplies rises steeply during wartime, with the need for shipping almost continuously exceeding the supply.

Thus, by the most vigorous effort in shipbuilding the world has ever seen and notwithstanding terrible losses, U.S. controlled shipping rose from 12 to 55 million tons during the war.

The German submarine campaign failed because the Allies developed effective defensive/offensive measures and produced cargo carriers faster than the Germans destroyed them. The Japanese were not so successful with the result that, as the U.S. Strategic Bombing Survey points out, "the war against shipping was perhaps the most decisive single factor in the collapse of Japanese economy and the logistic support of Japanese military and naval power."

To turn to Soviet shipping needs, we are told by some experts that the U.S.S.R. are wholly self-reliant, being able to produce or find within their own lands substitutes for every essential material needed in peace or war.

While it may be true that the Eurasian mass land is potentially richer in resources than any other part of the world, the emphasis

must be on "potential" rather than actual. In reality, the self-reliance of the Communist bloc is as much a myth as the self-sufficiency of the U.S. Even if it could find all required materials for the rapidly progressing industry in its vast domain and, at the same time, meet the pressing demand for more consumer goods, the problem of transportation, the inaccessibility of large areas, and the need for machinery would still create a desperate hunger for a greater share of the outside world's wealth.

The proof lies in the constant insistence of the Communists on more trade with the West, which, through its sea power, still controls most of the readily available resources of the world and the means of carrying them where they are needed. Thus, the Communist bloc may be said to have less need for maritime trade than we do, but in a relative way only—they must have supplies from across the sea and will suffer if these are denied them for any length of time.

U.S. Concessions

During the war it was thought necessary to invade Japan, and the U.S. made concessions to Russia in order to secure aid towards this end, when all that was needed was a sea and air blockade of the Japanese islands. The resulting starvation would have forced submission in a few weeks.

On the other hand, large land masses like Russia and China would be much more resistant to such pressure although no great country could be completely immune to it. Unless we are quite positive that the next war will be

decided within a very few days, sea power does not appear to have lost much of its former military efficacy. One of its important characteristics is the ability to exert military pressure suddenly and surprisingly at any point of the opponent's coastal perimeter, forcing him to keep large reserves from the fighting lines, in readiness to meet an attack wherever it might occur.

History is full of illustrations of this principle. Three times in the last 250 years, in 1709, 1812 and

1914-15, Russia has proved itself almost impregnable against attack on land alone. Its vast expanse permitted Russian armies to trade time for space without losing the war, forcing the enemy to extend his communications until they became too vulnerable.

In contrast there are two successful efforts to defeat her with the help of sea power—the Crimean War, 1854-56, and the Russo-Japanese War of 1904-05. In the first case, allied armies, carried to Russia's soft belly by ships,

exerted sufficient pressure to force the Czar to ask for peace.

In a similar way, Japan's sea-borne mobility proved superior to the slow Russian land communications and she had to give in and accept the humiliation of defeat by a second-rate nation.

Inchon landings

A victorious blow at the Russian heartland must start with pressure as close as possible to the heart itself, which can only be accomplished by the use of sea power.

There is the example of the Inchon landings in Korea. The mere threat of such a move would make Soviet commanders extremely careful not to expose their homeland by an invasion of Western Europe which would leave their flank and rear unprotected.

In conjunction with strategic bombing a large-scale amphibious operation might easily prove decisive for the West.

In appraising Russian sea power each of its essential elements must be explored—geography, the merchant marine, the navy, bases, industrial capacity, and national psychology. If one of these is destroyed, sea power as a whole collapses.

The author then shows that Russia, while being in a favourable position with regard to land communications, is poorly situated for the exercise of sea power. With coasts along inland seas whose exits are outside Soviet control, and whose ports are frozen during a large part of the year, issue from the Baltic through the Kattegat or from the Black Sea through the Bosphorus, if accomplished, would mean ships being blocked from the ocean by the North Sea or the Mediterranean.

If their submarines were to operate only from Murmansk or Vladivostok they would have a long way to travel to reach the

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hunting grounds of the Atlantic or Pacific.

Naturally, they might try to improve their position as quickly as possible by occupying the coasts of Western Europe as did the Germans. Together with control over the Kattegat this would enormously improve their chances to do serious harm to our sea power, achieving this solely by land expansion.

Contrariwise, our own overall strategy must aim at maintaining our geographical preponderance, by keeping control of the outlets, and by extending our command to such points as Spitzbergen and others even closer to the Russian mainland, dominating their sea lanes and using short-range bombers for attacks on Russia. This strategy must be prepared for in time of peace, to be carried out with all dispatch and by all means at our disposal in wartime.

The sea lanes open to Russia in case of war are only a thin line hugging the half-frozen coasts of Northern Eurasia and the Black

Sea, and her fighting fleet is forced by geography to be divided into four—the Baltic, Black Sea, Arctic and Far East.

It is still impossible for any but minor units to be divided from one position to the other except by permission of the West. Thus, the Soviet Navy looks impressive in the aggregate, but cannot concentrate much more than about one-fourth of its paper strength at any one focal point.

Helped by a slight change in climatic conditions, during the last two decades, they have made determined efforts to force a passage through the ice, so that nowadays it is possible for them to send ships around Siberia, from the Barents Sea to Okhotsk and back during a few months each year.

This represents a potential power which must be considered in the forming of our own strategy.

One result should be the inclusion of ice breakers in the Allied squadrons to facilitate the operation of our navies in the Arctic

strengthening of Russia's sea regions. In addition there are the inland waterways, especially the Stalin canal, which connects the eastern Baltic with the White Sea, without which the Northern Route would lose much of its present significance.

Russia and her slave states are making great efforts to increase their mercantile marine by building or buying ships as quickly as possible.

Lock of sailors

Shipbuilding activities in E. Germany have been increased to 10 times pre-war output, all of its produce serving the Communist bloc. In case of war its fleet might be greatly expanded by the capture of Western ships through rapid advance on land, and all our ships should be withdrawn from danger points in the event of threatening conflict.

The Communist Navy and Mercantile Marine both suffer from a lack of people accustomed to the sea and ships such as would provide a natural supply and reserve of sailors.

Only part of the 400 submarines are ocean-going under modern conditions, with a precarious fuel supply. Despite high-sounding pronouncements by Soviet leaders, neither tradition nor present composition, nor the logic of existing circumstances point to a Russian plan of using their surface fleets for offensive operations on the high seas, at least not until much more favourable conditions can be created.

Apart from any threat to ourselves, the Russian surface fleets represent a considerable danger to the navies of Sweden, Norway, W. Germany or Turkey, especially as they have always been considered as a sort of "right wing" of their army, destined, trained and accustomed to the role of a supporting and subordinate

branch of the military establishment.

In dealing with bases, the author points out that the bases and terminals of Eurasia as well as in the U.S. and the U.K. may become the main target of Soviet naval strategy, with priority over attacks on shipping or naval fighting.

This, of course, cuts both ways, and we might as well follow a similar method by attacking ships in their own ports rather than to attempt to hunt them down individually on the open sea.

In the matter of industrial capacity, it is questionable whether this is sufficient to meet present needs and to sustain a major war as well as a major naval expansion. Only if the Soviet heartland succeeded in adding the resources of the W. European rimland could its productive strength become a menace. To prevent this catas-

trophe is one of the aims of Western policy and grand strategy.

It seems that national attitudes toward the sea and naval behaviour in general remain fairly constant over long periods of time, and from all angles Russians have never evinced a strong attachment to the sea.

This is not to infer that they have no aptitude for naval fighting at all, or are inferior in all its branches, although opposed to Western fleets the Russian Navy has been relatively inefficient.

Naval aviation

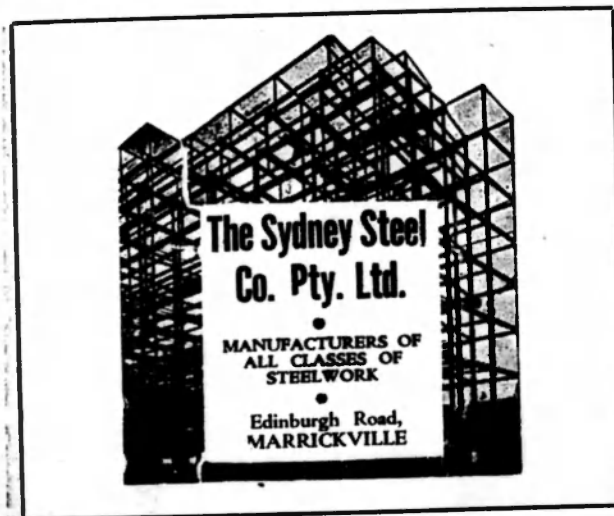
We know little about Soviet naval aviation, except that during the last war there was a marked reluctance to fly out over the water even when there was urgent need for it. Nevertheless, in coastal waters it must be assumed to be an effective weapon of defence.

Thus, while defensive methods are necessary the real aim of sea

power must be to carry the offensive to the enemy as early and as quickly as possible. It will be necessary for Allied naval forces to enter the Baltic, the Black Sea, the Northern Sea Route, the Sea of Okhotsk and the Yellow Sea to seek out and destroy the Soviet fighting fleet.

Such offensive moves—and especially the forcing of the Baltic—stand out as the most vital and dramatic problems of our strategy. When and how to execute them will be one of the hardest decisions of our leaders. I hope I have shown the importance of this chapter on "Sea Power and Russia."

Vice-Admiral B. B. Scholfield again deals with foreign naval progress. The U.S. Programme includes a carrier of the "Forrestal" type, one nuclear-powered cruiser, armed chiefly with guided weapons, four guided weapon frigates, eight guided missile des-



troys, six nuclear-powered submarines, two escorts, and 5,000 tons of landing and service craft. Conversions will be effected in the third and last of the "Midway" carriers and three more of the improved "Essex" class.

Five lightcruisers and one submarine are to be altered to carry guided weapons, and an escort carrier is to be converted into an amphibious assault ship.

The cruiser *Los Angeles* should have completed her conversion very soon, and will be fitted with a surface-to-surface launcher for the "Regulus" weapon which involves only minor alterations to the existing armament.

Guided weapons

Five smaller cruisers of the "Cleveland" class are to carry surface-to-air guided weapons as in the Boston and Canberra. The construction is also authorised of six more "Mitscher" class destroyers of 3,900 tons and seven more "Forrest Shermans" of 2,900 tons, and four more of the former and eight of the latter are to be built with guided weapon launchers in place of a 5 in. gun.

In the Russian section it is stated that 150 of the big flushed-deck destroyers are to be built—30,000 tonners of a modified "Tallinn" type. It is intended to construct a nuclear-power ice-breaker to enter service in 1960 to which great importance is attached as she should be able to open the northern route earlier than is possible with conventional breakers.

Two of the Danish 800 ton corvettes built in Italy have been delivered, and two others should be completed soon. The 600-ton submarines *Delfinen*, *Spækhuggeren* and *Tumleren* are nearing completion.

The above are selected from 10

pages of notes covering the world's navies.

In "The Naval Recruit of To-day" Captain D. J. Hoare presents a complementary survey dealing with the influences at work on the rating recruit before he joins, influences which must to some extent determine his attitude to Service life and which ought, perhaps, to have some bearing on how he should be handled.

He deals with the some, the school, employment, youth organisations, religion ("I don't think that God is half as interested in religion as the parsons make out," remarked a lad) and National Ser-

chapter by Jules Menken on the problems which face us from the other side of the Iron Curtain. He is an adept at making one's flesh creep, and one faces his contribution with a certain apprehension!

This year he deals with "Problems of Middle Eastern Strategy," and something of what he foretold months ago has now come to pass. Few developments would suit Russian policy better than that two of the NATO Powers should become embroiled in Egypt, and the hand of the Kremlin supporting its latest puppet has been clearly discerned.

Although it has imported new

Soviet Fleet

The probable present distribution of the Soviet Fleet is as below:

	Baltic	Arctic	Black Sea	Far East	Total
Battleships	1	0	2	0	3
Cruisers	6	3	7	3	19
Destroyers	30	30	20	30	110
Submarines	100	100	50	120	370

(Taken from the *Revue Maritime*, 1954. Later reports give 26 cruisers plus 6 building; 138 destroyers and escorts; and 370-400 submarines.)

vice in their effect on the potential recruit, after spending three nights a week in some of London's 286 boys' clubs, playing indoor and outdoor games and being known only by his Christian name throughout. Because the future of any nation is determined by the quality of its young people "which is profoundly influenced by their upbringing," it is a chapter deserving careful study in these days of difficult recruiting.

In Chapter XXIII—"Progress in Naval Engineering," by Commander E. S. Stanger—the whole picture of modern machinery is dealt with lucidly. In a brief 10 pages we get a very good idea of how internal combustion engines, gas turbines and submarine machinery in general have come about.

"Brassey" usually includes a

factors into the international situation none of the arguments put forward either in this chapter, or in Chapter II by Colonel Wyndham—"The European Scene"—have been invalidated; and the analyses they contain will be found particularly useful in forming estimates of the strategic possibilities of to-day.

"The Deterrent Force," by E. Colston Shepherd, deals with guided weapons in attack and defence and what he calls "the black box equipment." He considers that we are entitled to conclude that the policy of the deterrent force has begun to give results, and anyone who wishes to get some idea of what is going on in the world of ballistic weapons should study this essay.

—From the London "Navy."

THE NAVY



RIVER PLATE BATTLE

Graf Spee, by Michael Powell; published by Hodder & Stoughton (U.K.).

The Battle of the River Plate, by Gordon Landsborough; published by Panther Books (U.K.).

The sudden revival of interest in the River Plate action is, no doubt, due to the film now released. Yet, in spite of the film it is a little difficult to understand the overpowering interest of writers in this particular battle.

Within the past few months three new authors have tried their hand on it, Dudley Pope, Gordon Landsborough and Michael Powell, and even that is not the full score of chroniclers. And for all their interest in the action, there were many others in the war that were more spectacular, more dramatic and more far-reaching in their impact on the overall conduct of the war.

Michael Powell's book presumably tells the story of the film, of which he was co-director, and it is an interesting point to decide how far he is entitled to depart from the facts of the battle in the interest of what might be called "film licence."

No doubt a good film needs a little tampering with the facts and is probably all the better for it, but the same argument can hardly be advanced for a book which purports to describe an event which is a part of history. Thus Mr. Powell invents a conference at sea in the flagship between the Commodore and his captains, in which Harwood explains his proposed course of action. Such a conference was never held. To many

students of this battle it says more for the sagacity and leadership of all concerned that they so brilliantly carried out the Commodore's ideas without the need for this mythical briefing.

Mr. Powell falls into some other small errors, of which one at least may irritate the careful reader. He credits the *Graf Spee* with four turrets, while in fact she had two only. This seems an unnecessary carelessness, which the most elementary research would have avoided.

Mr. Landsborough's book keeps much closer to the actual events of the action, though he also makes mistakes. Twice he records that the *Rawalpindi* was sunk by the *Deutschland*; it was of course the *Scharnhorst* and *Gneisenau* that were responsible. Here again a little elementary research would have revealed the truth. Yet in his account of the action, and of the diplomatic moves and the propaganda which followed the *Graf Spee*'s entry into Montevideo, he provides a more realistic and accurate view than does Mr. Powell.

In spite of their faults both books are very readable, and both bring out the essential drama of this battle fought so brilliantly against such heavy odds. Yet neither can compare really favourably with Mr. Dudley Pope's account, which was published early last year.

—P.K.K., in the London "Navy."

"P" PARTIES

Open the Ports, by J. Grosvenor and Lieutenant Commander L. M. Bates, R.N.V.R.; published by William Kimber (U.K.). "P" parties presumably means

"Port Parties," and this book deals with the unostentatious and hazardous work of a small body of naval officers and men, mostly reservists and volunteers, specially organised and trained for the clearance of mines, booby-traps and other similar under-water contrivances from the ports of France, Belgium, Holland and north-west Germany in 1944-45.

This was necessary to permit the safe entry of ships carrying the masses of stores and miscellaneous equipment vital to the success of the invasion and its follow-up.

The dangerous task was done by skilled divers working alone in non-magnetic diving suits provided with their own breathing apparatus. Walking or groping their way along the sea bed in comparatively shallow water they worked on the mines they found and rendered them innocuous before recovery.

More often than not, in the darkness of stirred-up mud, they worked by touch. The least mistake in dealing with the fiendish contrivances, as deadly or even deadlier than unexploded bombs on shore, would have spelt disaster.

The patient, cold-blooded gallantry of the men concerned well merited the valedictory signal from the Admiralty on their disbandment. After referring to their "splendid work," it went on to say that the ingenuity and courage shown had contributed to the success of the operations of the Allies. Judging from the list of honours and awards for their service this was something of an understatement.

The book, which is well illustrated, is interesting. But it lacks an index, and might have been better arranged and far better written.

—"Taffrail," in the London "Navy."

February, 1957.



Vic Meyer, owner-skipper of yacht "Solo," and crew-member Tom Ball plot the opening course for the Sydney-Hobart yacht race. "Solo" was second to finish.

"SPITS" PASS INTO HISTORY

THE Spitfire, symbol of the Battle of Britain, recognised as the greatest aircraft of World

War II, and now a weather observation plane, operating at high altitudes, passed into history in the early days of 1957.

The last three of this famous aircraft, which have been flying

regularly under Air Ministry contract, ceased to operate.

Fighter Command, R.A.F., will still maintain one, but it will fly only once a year—in the Battle of Britain Commemoration Fly-Past in September.

THE NAVY



MARITIME NEWS OF THE WORLD

From our Correspondents in
LONDON and NEW YORK

By
AIR MAIL

Battle with penguins for Antarctic base

A joint N.Z.-U.S. expedition has set up a base at Cape Hallett, Antarctica, after seizing a four-acre beach-head from 150,000 penguins, according to a "New York Times" correspondent with the Operation Deep Freeze party at McMurdo Sound.

One American and three New Zealand scientists and 10 U.S. Navy Seabees are settled at the base, where the scientists will make observations during the International Geophysical Year, 1957-58.

In mid-December the U.S. Navy was compelled to shift the site of the base from Cape Adare because a teeming colony of penguins made plane landings hazardous.

The battle with more penguins at Cape Hallett began when a landing was made on a beach of volcanic ash along the west side of the cape, which rises 1,000 ft.

The triangular beach area was completely occupied by Adelie penguins that had just completed hatching their eggs. Penguin chicks were everywhere.

However, as this was the only level ground for the station, a small portion 100 yards square was fenced off.

The penguins and their offspring eyed these preparations

with interest, but did not move," the correspondent says. "They know no enemies that walk either on two feet or four."

"Then the battle began. Sailors gathered the squawking youngsters into baskets while shipmates threw nets over the struggling adults."

"The four acres of ground were a scene of bedlam, the air pierced by sharp, indignant cries until all the birds in the area had been moved outside the enclosure."

Then a storm struck the area. When the wind had died down and the air had cleared, the fence was down and the birds had returned to their homes.

Once more the Seabees returned to the fray in an attempt to gain a firm foothold on the Cape Hallett beach.

Later, a tractor bulldozed the area so that 11 buildings could be erected.

The builders found the ground a mixture of gravel and penguin guano to a great depth—the residue of centuries of penguin habitation.

Australian loan for Canal clearing

The Australian Federal Government will make a loan of one million dollars (£446,428) to the United Nations towards the cost of clearing the Suez Canal.

The Minister for External Affairs, Mr. R. G. Casey, announced this in Canberra on January 16. He said that the loan was to help to meet the immediate commitments to the contractors engaged to clear the canal.

The money was to be repaid by the United Nations.

It did not carry any implication that Australia accepted an obligation to share in the final cost of making good the damage done by Egypt in deliberately sabotaging this international waterway.

Mr. Casey added: "In offering this loan to the United Nations, the Australian Government wishes again to make it clear that Australia expects negotiations for a settlement of the Suez Canal question without delay."

"There must be an early restoration of the rights of the countries using the canal under the 1880 Convention, particularly observance of those provisions which stipulate that all countries must at all times have freedom of passage through the canal without discrimination."

"In coming to its decision to lend approximately £450,000 to the United Nations, the Australian Government had very much in mind the fact that closure of the canal is costing Australia more than this amount each month,

February, 1957.

TIGHT BINDING

principally due to the increase in charter freight rates.

"The Australian Government's decision will consequently further the interests of both exporters and importers in Australia, as well as the Australian economy generally.

"In addition, Australia will benefit from any relief of the present world tanker shortage from a re-opened Suez route."

Mr. Casey said a number of other countries were making similar loans.

Glass boat for African service

One of the biggest glass fibre hull boats ever built in Britain was exhibited at the National Boat Show, which opened at Olympia, London, recently.

She is the 31-foot *Mariposa*, built at Portsmouth. Both her hull and deck are of a glass fibre and plastic mixture.

After the show the *Mariposa*

will go to service in the rivers of the Cameroons in Africa.

Air base at Gan Island

The proposed staging base for R.A.F. aircraft on Gan, one of the Maldivic Islands, in the Indian Ocean, will be an additional link in the chain of Commonwealth communications. It will not be entirely new because an airfield was built on this island during the war and subsequently abandoned; its remains, largely overgrown, still exist.

The Maldivic Islands have been under the protection of Britain since 1887. An agreement with the Sultan, made in 1948 and reaffirmed in 1953, gives the United Kingdom Government the right to establish and maintain in the Maldivic Islands such facilities for Her Majesty's forces as H.M.G. in the United Kingdom may, after consultation with the Government of the Maldivic Islands, determine to be required for the defence of the Islands or for any part of the Commonwealth.

The Maldives are about 500 miles south-west of Ceylon. There is a large number of small islands in the group and the capital is Male. Gan Island is one of 27 islands forming the Addu Atoll, about 450 miles from the capital. It is about 1½ miles long and about ½ mile wide, and has a population of 500.

Search for King John's treasure

In England a treasure hunt for a crown, sceptres, swords and silver cups is in progress in land reclaimed from The Wash.

Back in the year 1216, King John of England, crossing the stretch of water between Norfolk and Lincolnshire, lost his baggage in a storm. Efforts to retrieve the treasure have gone on for 700 years.

Weapons base ceremony

▲ PLAQUE commemorating the 16-year occupation of Leigh Park House, Portsmouth, by H.M. Underwater Countermeasures and Weapons Establishment and the achievements of the establishment during World War II, was unveiled by the Lord Mayor of Portsmouth recently.

During the war mines designed and developed at Leigh Park accounted for the sinking of 1,047 enemy ships and damage to 541 others.

Anti-submarine weapons designed and developed there played an important part in the Battle of the Atlantic. In 1956 the establishment moved to West Leigh House, Havant.

At the ceremony, the Commanding Officer of the establishment, Captain P. M. B. Chavasse, D.S.C. and Bar, R.N., welcomed the Lord Mayor and others present.

In unveiling the plaque, the Lord Mayor said it was difficult to believe that Leigh Park House, set in 100 acres of parkland, was the nerve centre of naval scientific research in the development of weapons to combat the enemy at sea during the last war.

During the early years of the war our ships, both naval and mercantile, and the men who sailed in them, were in grave peril as a result of attacks on convoys in the Atlantic and the Mediterranean.

The turn of the tide came in 1943 when the determination of those engaged in the development of mines and other underwater countermeasures began to bear fruit. It was another 18 months before the Royal Navy attained supremacy, and there was no doubt that the Establishment at Leigh Park played a vital part in achieving this.

Saving Life Beneath the Seas

By "PERISCOPE"

ABOUT eight years ago petty officer diver William Bolland, Royal Navy, reached a depth of 535 feet in Loch Fyne. Recently the Admiralty announced that Senior Commissioned Boatswain George Wookey, of Plymouth, went down to a depth of 600 feet in a helmeted flexible diving suit in Norwegian waters—a world record for deep diving. But, one may ask, why is the Royal Navy making these experiments in deep diving? Why is the Admiralty interested in a problem which would seem more suitable for investigation by salvage firms and marine insurance companies?

The Admiralty's main interest in deep diving is not the salvage of ships' cargoes from ever-increasing depths but in saving life from sunken submarines.

When, in the early thirties, salvage was finally abandoned as a method of saving life from a submarine investigation had shown that by donning the Davis Escape Apparatus, men still alive in a submarine at the bottom of the sea had a good chance of reaching the surface provided the depth was no more than about 200 feet.

Bulkheads in all submarines built subsequent to this time were accordingly strengthened to ensure that they would stand the pressure at that depth if a compartment were damaged and open to the sea.

Further research, however, proved that the main hazard is not the ascent, but during the period the compartment is being flooded up to equalise pressure and thus to enable the hatch to be opened. After some hours diving, the air becomes foul from CO₂ which, if breathed for any length of time

at a pressure equal to 150 feet, is lethal.

It was also found that breathing pure oxygen from the Davis Escape Apparatus (to avoid "bends," or diver's paralysis, resulting from a quick ascent to the surface after breathing the nitrogen in the air under pressure) introduces the no less serious danger of oxygen poisoning after a period of about five minutes.

The method now adopted for saving life down to a depth of 200 feet is therefore to make a "free" ascent, wearing only an immersion suit, after breathing a mixture of oxygen and nitrogen from bottles during the period the compartment is being flooded up. The bottles are built in at each end of the vessel and are fitted with a tube and mouthpiece for each man. It was at first hoped that a one-man chamber fitted with an escape hatch at each end of the submarine would be a more efficient arrangement.

It could be quickly filled with purified air and drained by the others in the compartment after each man had ascended to the surface. But experiments have proved it to be inherently unreliable.

THE hull of a submarine has, however, always been designed to withstand a greater pressure than 200 feet to enable her to dive deep when being hunted by an anti-submarine vessel. The hulls of new submarines are, indeed, now being built to withstand the pressure at depths of 600 feet and more in view of the constantly growing effectiveness of anti-submarine detection and destruction devices.

The Admiralty has, therefore,

for some years been considering the possibility of saving life when men are trapped on the bottom at depths greater than 200 feet.

Since the war, the United States Navy have had available a rescue chamber or bell which can be manipulated by a diver to plumb and be attached to the hatch of a submarine which is lying on an even keel. The hatch can then be opened and the trapped men are able to walk up from the submarine into the chamber without having suffered the discomforts and dangers of flooding up, and making a free ascent to the surface.

Even so, however, the chances of survival are far less than if a free ascent were made from a depth of 200 feet. The vessel must be lying approximately on an even keel and, above all, she has first to be located; though this can be assisted by the indicator buoys and underwater signal ejectors (for firing smoke candles) with which existing submarines are equipped.

IN any event, the Admiralty has

adopted the rescue bell as a practicable method of escape, and all new submarines are to be equipped with an escape hatch at each end of the vessel, fitted to take the bell. They are also to have their bulkheads strengthened to the full diving depth of the submarine, with air supply and exhaust connections at the bow and stern to enable the air to be refreshed while the rescue bell is arriving, or in case operations have to be suspended due to the weather.

This method must depend, however, on the ability of a diver to operate at that depth for a sufficient time to manipulate the res-

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cue bell and attach it to the hatch of the submarine.

It is thus of the highest importance that continued progress should be made in solving the problems still presented by diving at great depths.

Diver Wooley, when he reached a depth of 600 feet last October in his helmeted diving suit, was receiving a breathing mixture of oxygen and helium. But this must be regarded very much in the nature of a freak dive from an operational viewpoint.

A diver who has been on the bottom at 600 feet for no longer than five minutes has to be "decompressed" for five hours and 38 minutes under gradually reducing pressure before finally being allowed to breathe air at atmosphere pressure.

It is true that most of this time he spends not in the water but in a Submersible Decompression Chamber which is lowered down to him and which he enters through a lower door at about 200 feet, the chamber having an attendant and being kept clear of water by air pressure on the diving bell principle.

None the less, for a practicable diving operation, it is essential that there should be an improvement on the routine dives to a depth of 430 feet now carried out with ease for a maximum of about 20 minutes, using an oxy-helium mixture (compared with a depth of 100 feet when breathing air).

The mixture of oxygen and helium is a great improvement on air but a diver using it at depth takes longer to "decompress" because the helium gas penetrates his tissues. The longer he stays down and the deeper he is, the more helium is absorbed. On the other hand, the mixture is superior to air for two reasons. The nitrogen in air produces a narcotic effect which prevents the diver working at full efficiency in depths

exceeding 240 feet. Secondly, the oxygen content of air is such that it reaches a toxic pressure at just under 300 feet. 300 feet can thus be accepted as the outside safety limit for a diver using compressed air.

THERE is no such limit for the oxygen-helium mixture. Helium seems to have no narcotic effect whatever. If it exists at all, it is likely to be at a depth beyond that at which other limiting factors will intervene. The principle one at the present day, as already pointed out, is the decompression time. Oxygen poisoning is avoided by limiting the percentage of oxygen in the mixture. The mixture, incidentally, does not provide adequate oxygen until a certain depth is reached. A change over has to be made from air to mixture at a fixed level, both in the descent and during the ascent, or the diver will suffer from lack of oxygen at shallower depths.

The problem of "decompressing" in the shortest possible time without risk of "bends" is a complex one, particularly when using helium, and has not yet been solved. Encouraging results are, however, being obtained as the result of the research work now being done of this subject at the Royal Naval Physiological Laboratory, Alverstoke, Hampshire.

It is perhaps worth pointing out that the invention of the aqualung has in no way outdated the flexible-suited helmet diver, whose operations are controlled by a surface vessel. The aqualung is purely a shallow-diving apparatus. The French, who are the acknowledged experts in its use, maintain that none but an expert should venture with it below 200 feet and the "fatal limit" is not far beyond 260 feet. In other words, the deep diver begins roughly where the aqualung diver leaves off.

—From the London "Navy."

New Officer Structure

UNDER a new officer structure introduced into the Royal Australian Navy last month, more use will be made than at present of the experience and knowledge of senior officers in the Engineering, Electrical, and Supply and Secretariat branches, the Navy Office has announced.

Officers of these branches, which it is intended to abolish as individual branches, will play a more important part in the higher administration of the Navy and will be eligible for senior appointments, including posts held by Rear-Admirals, hitherto reserved exclusively for officers of the seaman branch.

On the establishment of the new structure, all officers of the Engineer, Electrical, and Supply and Secretariat specialisations, together with officers of the seaman specialisation, will be placed on a single general list of officers.

The Minister for the Navy, Mr. C. W. Davidson, said: "Conditions under which modern sea warfare is likely to be carried on demand the possession of increased technical knowledge by officers who exercise operational command. They also demand that officers who are to hold command at sea in the more senior ranks should be specially selected and should be given adequate opportunity to gain essential experience at sea."

"In the new structure particular regard will be paid to the promotional factor with the object of encouraging the best type of young Australian to adopt a naval career."

Mr. Davidson added that the full effect of the innovation, which had been rendered desirable by the rapid revolutionary changes made

Continued, column 3, page 2

WHAT IS ATOMIC ENERGY?

By a Special Correspondent

As far as Britain is concerned the atomic age is here. Already the housewife and the workman, the doctor and the farmer are using atomic-produced power, or the products of the new atomic industry, every day, as part of their daily lives. But what is this atomic energy? What are protons and neutrons? What is chain reaction? What is fission?

THESE are questions occurring to ordinary people in every country in the world.

The B.B.C. recently arranged a series of talks designed to explain atomic energy in the simplest possible terms. Professor Jack Diamond, one of the original British atomic team in Canada, who has been in nuclear engineering ever since, and who is now Professor of Mechanical Engineering at Manchester University, gave the first talk on the fundamental physics of nuclear energy. This is what he said:

"Your dictionary will probably define an atom as a body too small to be divided, but scientists have known for half a century that this is not true. The generally accepted picture of the atom shows a nucleus surrounded by electrons moving in orbits; that is to say, it is a system rather like the planets moving around the sun; and each of these electrons—the planets—has one unit of negative electricity."

"According to this picture, not only is the atom divisible but its centre or nucleus can also be split up into parts. It is composed of protons, each having a positive electrical charge, and neutrons, which have no charge at all. Neutrons and protons are comparatively heavy particles, very much heavier than an electron, and practically all the weight of an atom is in the protons and neutrons which make up the nucleus."

"The number of protons in a nucleus determines a chemical element, but in any given element

the number of nuclear neutrons may vary slightly. For instance, the nucleus of every atom of iron has twenty-six protons, but some iron nuclei have twenty-eight neutrons, others thirty neutrons, and there are even two other variations. Atoms of an element having different numbers of nuclear neutrons are called isotopes. Isotopes of an element are identical chemically, but because of the different number of neutrons in their nuclei they behave rather differently in some respects. This leads us to one most important element—uranium."

Importance of uranium

"All uranium atoms have ninety-two nuclear protons—that is what makes them all uranium—but there are several uranium isotopes with different numbers of neutrons. The three isotopes of most interest to us are called Uranium 233, Uranium 235, and Uranium 238; the numbers indicate their atomic weights. Only the isotopes U235 and U238 occur to any extent in nature. Natural uranium consists almost entirely of U238 and only a small part of it is U235."

"Let us examine the nucleus of the isotope U235. The forces which bind the ninety-two protons of similar charge closely together represent a large store of latent energy. If the nucleus can be split up, some of this binding energy will be released. This is what we mean by 'atomic' or 'nuclear' energy—and the key to the splitting, or fission, is the neutron;

which, as a projectile, is likely to split the atom it hits.

"If a neutron moves in from outside and enters the nucleus of a U235 atom, there is a very good chance that it will split the nucleus into two parts. Some of the binding energy of the nucleus is thereby released, and the two smaller nuclei, called fission fragments, fly apart at high speed, carrying most of the released energy as kinetic energy. They are then slowed down by hitting nearby uranium atoms and heat is generated in the uranium. This result of fission is extremely important because it is this heat which may be turned into power by removing it from the uranium and driving an engine with it."

"This leads me to an important fact in nuclear fission. Almost immediately after an atom is split by one neutron two or three other neutrons are emitted at high speed. If there are more uranium atoms nearby these new neutrons can cause further fissions, and so on. Thus a continuous chain reaction is possible. Now a nucleus reactor is designed to work by controlling this chain reaction."

Fission fragments

"The fission fragments, which were created in rather a hurry, are unstable and eventually radiate energy to achieve stability. After nuclear fission there is a lot of radioactivity and most of it is due to the fission fragments."

"I said just now that the neutrons emitted after fission have

very high speeds. They are called fast neutrons. Although there is a chance of a fast neutron causing fission in one of the nuclear fuels I have mentioned, it has a much greater chance if its speed is reduced and the greatest chance of all when its speed is what we call thermal: that is, when it has a speed appropriate to room temperature — 2,200 metres per second.

"Reactors which make use of thermal neutrons to cause fission are called thermal reactors. There are many more thermal reactors in the world to-day than fast reactors. This is because the very much greater probability of fission by thermal neutrons in U235 makes it possible to use very dilute fuels such as natural uranium in which only one part in 140 is U235. From the point of view of a thermal reactor we must regard the more plentiful U238 isotope largely as a dilution, although it must be remembered that U238 absorbs some of the available neutrons to form plutonium, and this is a valuable nuclear fuel.

"But to get back to the thermal reactors themselves. Something must be done to slow down the fast fission neutrons, and the best way so far found is to put near the uranium a material called a moderator which slows the fast neutrons down by making them collide with the nuclei of light atoms. The lighter the nuclei the more energy is lost per collision, and hydrogen, deuterium, beryllium, and carbon may be used.

"Nuclei other than nuclear fuel may absorb neutrons without a fission. Materials vary enormously in this respect and great care must be taken in the design and erection of nuclear reactors to maintain freedom from impurities which would absorb neutrons wastefully. The moderators I have just mentioned — hydrogen, deuterium,

beryllium, and carbon—have low neutron-absorbing power and are chosen partly for that reason. The carbon is in a very pure form called graphite.

"We can now begin to visualise the form which a thermal reactor must take. In a typical example, with natural uranium fuel and graphite moderator, rods of fuel in metal cans are laid in long holes formed in the graphite structure. They are placed in metal cans to prevent corrosion and escape of fission products. The distance between the holes in the graphite structure is governed by the amount of moderator necessary to slow down to thermal speed the fast neutrons born in the rods.

"Although more neutrons are emitted from each atom that is split, unfortunately some of them are lost to the surroundings, so the mass of fuel and moderator must be big enough to maintain a continuous chain reaction despite this loss. The amount which will just do this is called the minimum critical size.

Steady power level

"As I said, the chain reaction must be controlled. It must be possible to maintain a steady power level. This may be achieved by inserting into the core rods of neutron absorbing material such as a boron carbide. These control rods absorb some of the neutrons and so allow the reactor to be kept working at any power required.

"The neutrons and other radiation created in the reactor are dangerous to human beings, and some of these harmful particles and rays can escape from the re-

actor and so a thick absorbing shield must be placed round the reactor to protect the operators. This is commonly made of steel and several feet of concrete.

"All the time the reactor is working the heat generated in the uranium fuel rods must be removed by passing a cooling fluid over them. This fluid in turn gets hot and must be cooled outside the reactor. Obviously the fluid must be chosen carefully as it must not be one which absorbs neutrons heavily or the reactor will not work.

"In a typical thermal power reactor the cooling fluid is circulated first past the rods in the reactor, where it is heated, and then to a heat-exchanger. Here the heat is used to generate steam which drives turbines. The circulating fluid, now cooled, is returned to the reactor where it is reheated and the cycle is repeated.

"The temperature of the cooling fluid has an important effect on the efficiency of a power plant, and many of the problems of the designer arise from his desire to achieve as high a temperature as possible. Thus the materials of construction of power reactors must not only have good nuclear properties — they must be strong and resist corrosion at a sufficiently high temperature as well. Such materials are few and very many difficulties have to be overcome."

"FLYING BEDSTEAD"

The Rolls Royce Company is continuing experiments with its vertical take-off machine known as the "flying bedstead."

The original wingless machine, which took to the air in August 1954, has been improved upon. It stands on four long sprung legs until the pilot starts the compressed air jets discharging through nozzles. Then the "bedstead" rises straight up.



U.N. COMMITTEE SEEKS FORMULA ON TERRITORIAL WATERS

By "NEPTUNE" — in London

IT is a curious coincidence that Colonel Nasser should have laid claim to nationalise and control the Suez Canal at a time when the United Nations are considering a maritime code, drafted by a committee of international jurists, which seeks to harmonise the present conflicting views on territorial waters.

International Law gives every State the right, for purposes of its own defence and security, to exercise Sovereignty and control over its rivers and territorial waters, in the same manner as over its land territories. But there is much disagreement among the nations regarding both the extent of the maritime belt over which they may claim sovereignty and also over the degree of control which they can exercise over that belt in time of peace. The former question is of the highest importance to Britain as a great maritime power.

A canal, or artificially made passage way which passes through the territory of a State, must obviously be included in the term "rivers and territorial waters." But where it provides the shortest and most economical route for ships of all nations to pass from one ocean to another, the right to exercise control has been modified in special arrangements embodied in a Treaty.

The United States, for example, guaranteed in a Treaty with Britain in 1901, that the Panama Canal should be free and open to merchant vessels and warships of all nations in peace and war.

Similarly, in 1888 the nine European Powers who make most use of the Suez Canal signed a Convention declaring freedom of passage for ships of all nations at

all times and in 1946 Russia also said she was in favour of international control.

Vitality important as the Suez Canal is to Great Britain, it is only one aspect of the broader question of territorial waters as a whole. Britain, the United States and other maritime powers have always argued for the widest possible freedom of the seas, both in peace and war. Since the early years of the last century they have consistently adhered to the traditional three-mile limit—from low water mark, or from the entrance to bays where these narrow to a width of six miles.

Other nations, more concerned with peace time considerations, claim a wider belt. Norway claims four miles, Italy and Spain six, and Russia 12 miles. Indeed, some South American countries claim as much as 200 miles.

The three-mile limit has been much criticised by writers on international law on the ground that it is not consistent with present-day conditions. It was, in fact, fixed at a time when the extreme range of a coastal battery was no more than about three miles.

The importance of the extent of the belt lies in the fact that any hostile act in the territorial waters of a neutral nation, such as the sinking of an enemy warship or the capture or search of a merchant vessel, is strictly forbidden.

On the other hand, belligerent warships are at liberty to make a passage through neutral territorial waters though they must not remain loitering about or make use of a neutral port for more than 24 hours, except for reasons of weather or necessary repairs.

THE main reason why some States want a wider limit than three miles is the desire to conserve their fisheries in their coastal waters. In the view of the British Government this can and should be done by agreement between the parties concerned, as was made clear in the House of Commons three years ago by the present Foreign Secretary.

"H.M. Government," he said, "consider that the true interests of all seafaring nations are best served by the greatest possible freedom to use the seas for all legitimate maritime activities and they view with concern the increasing encroachments on the high seas which have taken place in recent years in many parts of the world. At the same time, H.M. Government will continue to co-operate in securing the fullest possible measure of conservation of fisheries by means of international agreement through the commissions set up under the International Fisheries Conventions."

There can be no doubt that the British Government is carrying out this policy and doing all it can to meet the legitimate wishes of the non-maritime States, even sometimes at the expense of our own inshore fishermen. The Government has loyally abided by the decision of the International Court of Justice in 1951, in the Anglo-Norwegian dispute, that in view of the indented nature of the coast of Northern Norway, she should be authorised to fix new base lines extending considerably the belt of her territorial waters. Yet despite appeals from British fishermen, we have not altered the traditional limit used for our own territorial waters.

Similarly, in a recent agreement with the Soviet Union which, in general, gives British fishing vessels the right to fish up to a distance of three miles from the Soviet coastline at low-water mark, we have agreed to the exclusion of certain areas extending up to 12 miles from the Russian coast.

Both countries are satisfied — Russia concedes to our fishing vessels the general principle of the three-mile limit; we, on the other hand, agree that in certain areas we cannot fish nearer than 12 miles from the Russian coast.

MEANWHILE the draft code **IV** of international law now before the United Nations embodies new proposals which will certainly result in much argument and discussion. Coastal States, for example, are to have the right to take unilateral action for the conservation of fisheries in "con-

tiguous" waters, i.e., in waters beyond the territorial sea, subject to compulsory arbitration if other States object.

It is also proposed that the right of a State to exploit the "continental shelf" in adjacent waters—to exploit the pearls on the sea bottom or the oil buried beneath it—should be recognised where the depth of the shelf is 200 metres or beyond. At present the limit of depth is "not greater than 200 metres."

An even more drastic recommendation is to abandon the ancient right of "innocent passage" of warships through the territorial waters of a foreign State in time of peace. The coastal State concerned is to require notice of the impending passage and be authorised to impose conditions—a clear departure from the broad principle of the freedom of the seas.—*From the London "Navy."*

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For Sea Cadets

The Rescue of the "HOPELYN"

By Ken Lomax

COMMANDER Carver, R.D., R.N.R., peered through the window of the Gorleston Coastguard look-out. He watched the sea, banked up by the vicious north-easter, sweep over the north end of North Scroby Sand and hurl itself at the stranded ship which was occasionally visible through the driving spray. Somewhere out there, too, was the Gorleston lifeboat, anchored most probably, waiting for a chance to veer down to the stricken vessel. And this was her second trip, he reflected, she's already made one attempt.

He remembered the words of the coastguard who had met him that October morning. "Caister boat was unable to get away, sir, so they sent the *Kentwell*. Aye, some time before midnight last night. Had an awful pull against those seas to reach her, and then coxswain found he couldn't do anything 'till daylight, so he anchored. Well, when dawn came there she was, the *Hopelyn* of Newcastle, the waves sweeping right over her and not a sign of life anywhere on board. Fleming—that's the coxswain—reckoned there were no survivors so he came back. Well, just after I came on duty I saw a flag flying from the wreck, so I told the lifeboat about it and they set off again about ten o'clock, an hour or so before you arrived, sir."

The commander turned from the window and glanced at the clock above the desk. Fifteen-thirty. Low water now. He reached out for the open log-book lying on the scarred oak top of the desk. October 20, 1922. He ran his eyes down the page, noting

with approval the concise manner in which the events of the morning had been entered, and he checked on the times. The boat had been out for almost sixteen hours altogether; it was obviously no job for a pulling boat.

He reached for the phone and called the number for the Lowestoft Lifeboat Station.

An hour later Commander Carver boarded the motor lifeboat *Agnes Cross* and shook hands with her coxswain. "Well, Swan, you know the situation—what do you think?"

Coxswain Swan's bearded lips broke into a grim smile. Without replying he moved to the helm, grasping it with salt-hardened hands. "Cast off fore and aft. Full ahead." For him there was no other course to follow.

As the lifeboat steamed out of the harbour she was hit by the full blast of the gale, which had now backed to the north-west. The crew hung to the handrails as she corkscrewed about in the heavy seas, now rearing up on her stern like a ladder leaning against a wall; now burying her bow into the foaming water as though she would try a porpoise dive to the bottom.

But Swan nursed her along with all the skill at his command, checking the racing screw when her stern reared up, swinging her head into the heaviest seas, which swept her with drenching spray from bow to stern, working her yard by yard towards the wreck.

Commander Carver glanced anxiously at the sky. It would be dark before they reached the *Hopelyn*, perhaps too dark for them to effect a rescue. He turned

to speak to the coxswain, but before he could do so there was a shout from one of the boatmen. "There she is—right ahead. And I can see something else, too—looks like a tug."

The commander strained his eyes into the spray-swept darkness. As the *Agnes Cross* reared up on a wave-crest he saw the tug in a flurry of foam, and realised what it was. "Swan," he called. "That's the Gorleston boat returning. Heave to and ask them for the latest report on the wreck."

Swan ordered the mechanic to ease back the throttles and the two boats bobbed and curtsied to each other a few yards apart. He cupped his hands to his mouth and bawled above the howling of the wind. "Ahoy there, Fleming, what news?"

They strained to hear the reply before the wind whipped the voice away into the night. "Couldn't get alongside because of the terrific seas. There's an old wreck about thirty yards off and when we tried to get through we struck the sand. Look." He waved his hand and pointed, and they could see the broken mizzen outrigger and the stove-in 'wale.

Commander Carver tapped Swan on the shoulder and motioned him to be silent. Then he called to the other boat. "Fleming, we're going on to the wreck; will you come back with us?"

"Aye, aye, sir. If you can take me off I'll be glad to."

Coxswain Swan needed no telling what to do, the commander noted with a satisfied smile. He handled the pitching lifeboat as though they were on the park lake, edging her nearer and nearer to



The object of the Navy League in Australia, like its older counterpart, the Navy League in Britain, is to insist by all means at its disposal upon the vital importance of Sea Power to the British Commonwealth of Nations. The League also sponsors the Australian Sea Cadet Corps to interest the right type of lads in the Royal Australian Navy—either to start them upon a career or to provide a healthy pleasurable means of qualifying them to be of service in the Senior Service in the event of emergency.

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the *Kentwell* until Fleming was able to scramble aboard while the two boats were in the trough of a sea. Then he ordered full ahead, and as the boats rode up on the next wave the *Agnes Cross* slid away towards the wreck.

But after one look at the scene Commander Carver realised that there was nothing they could do that night.

As he had feared, the intense darkness and the heavy seas made a rescue impossible; there would have been two wrecks instead of one. Reluctantly he ordered the coxswain to put back to Gorleston.

At 4.30 the next morning they nosed out of the harbour once more. The wind had veered to the north-east again and it was still blowing a full gale.

As they battled through the angry seas the sky began to show the first light of a cold dawn, and Commander Carver knew that this time they would have the whole day before them. If a successful rescue were to be made it would be to-day.

It was daylight when the lifeboat reached the wreck, only her bridge, funnel and fiddley casing showing above the water. Her fore and after decks were completely submerged, and the commander frowned as he noticed the split hull and the jagged edges of projecting plates. He could see that there was barely room for the lifeboat to come alongside.

Swan coned his boat up to windward of the wreck. "Stand by to let go," he called to the anchor hand. He eased her bow into the wind, noting his position in relation to the *Hopelyn*, noting the set of the tide. He slowed his engine and let the boat drift towards the stern of the wreck, then "Let go anchor!"

The *Agnes Cross* strained at her cable like a mad dog as they veered

her down towards the wreck, and the commander knew that even though they were anchored they would have drifted on to those jagged plates had it not been for their powerful engine.

Inch by inch, held by cable and motor together, the lifeboat sheered alongside the sunken ship. The boatmen caught the ropes flung down from the wreck and hung on while the sailors slid down to safety. Willing hands seized the shivering seamen, hustled them on board and wrapped them in blankets and warm clothing. Swan counted twenty-four — twenty-four half-drowned men snatched from death. The rescue had taken thirty seconds.

He signalled to the motor mechanic. "Half ahead. Heave up the anchor, Forrard."

A cry came back from the bow, urgent, insistent. "Cable's fouled on the wreck, Cox, she won't come up. Keep going ahead or we'll strike—I'm going to cut her free."

Swan ordered full ahead, keeping his eyes on the half-submerged wreck waiting to tear the lifeboat to pieces on her torn steelwork. He caught the flash of the axe as the bowman swung at the fouled cable, heard the thud of the blade biting into woodwork, then the welcome cry "She's clear."

They were only just in time. As the bow came round a huge sea caught the boat broadside on and buried her under solid water. But she had begun to move; she thrust her nose through the sea, shook herself like a dog and rose to the surface.

Commander Carver shook the water from his eyes and looked back at the wrecked *Hopelyn*. Slowly it became lost to sight behind the blowing spray as the *Agnes Cross* sailed for home.

—From the "See Cadet" (London).

NEW OFFICER STRUCTURE

Continued from page 26

in recent years in the complexity of ships and the design of equipment, would not be felt for some years.

The new structure would be similar in most respects to one to be introduced into the Royal Navy and the Royal New Zealand Navy on January 1, but it would be modified slightly to meet R.A.N. conditions.

Ratings promoted from the lower deck to commissioned rank and placed on a special duties list (which replaces the existing Branch List) would be affected to some extent by the change, as the titles used at present would be altered. The existing title of commissioned boatswain would, for instance, become that of sub-lieutenant (S.D.) and the title engineer sub-lieutenant (S.D.) would be substituted for that of commissioned engineer.

A senior commissioned gunner would become a lieutenant (S.D.) and a lieutenant in the present branch list a lieutenant-commander (S.D.).

It was hoped that the enhanced status of special duties officers would encourage larger numbers of ratings to qualify for promotion.

The officer structure of the Citizen Naval Forces, Mr. Davidson said, would conform generally with the structure of the Permanent Naval Forces but a general list of reserve officers would not be kept.

Keep a Good Lookout

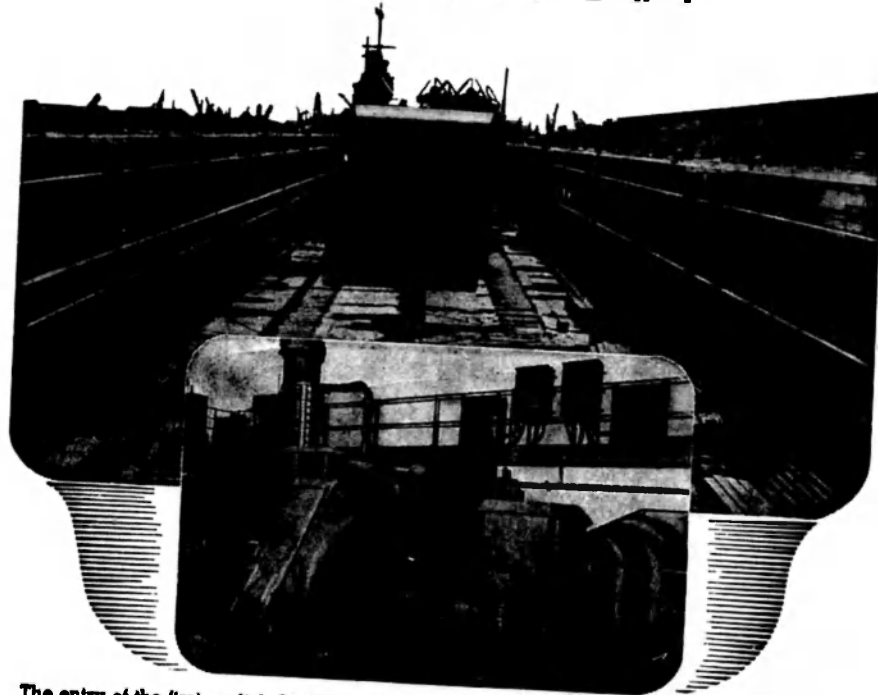
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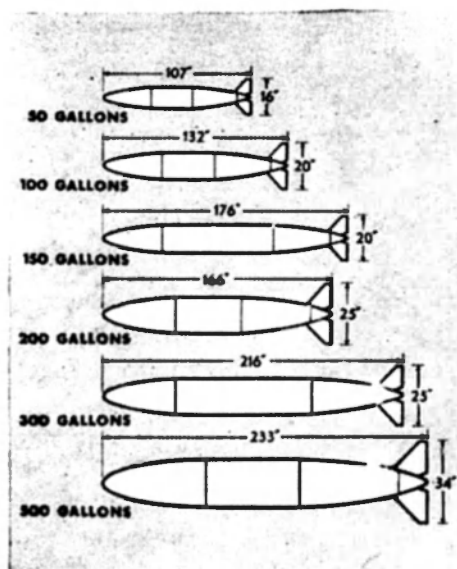
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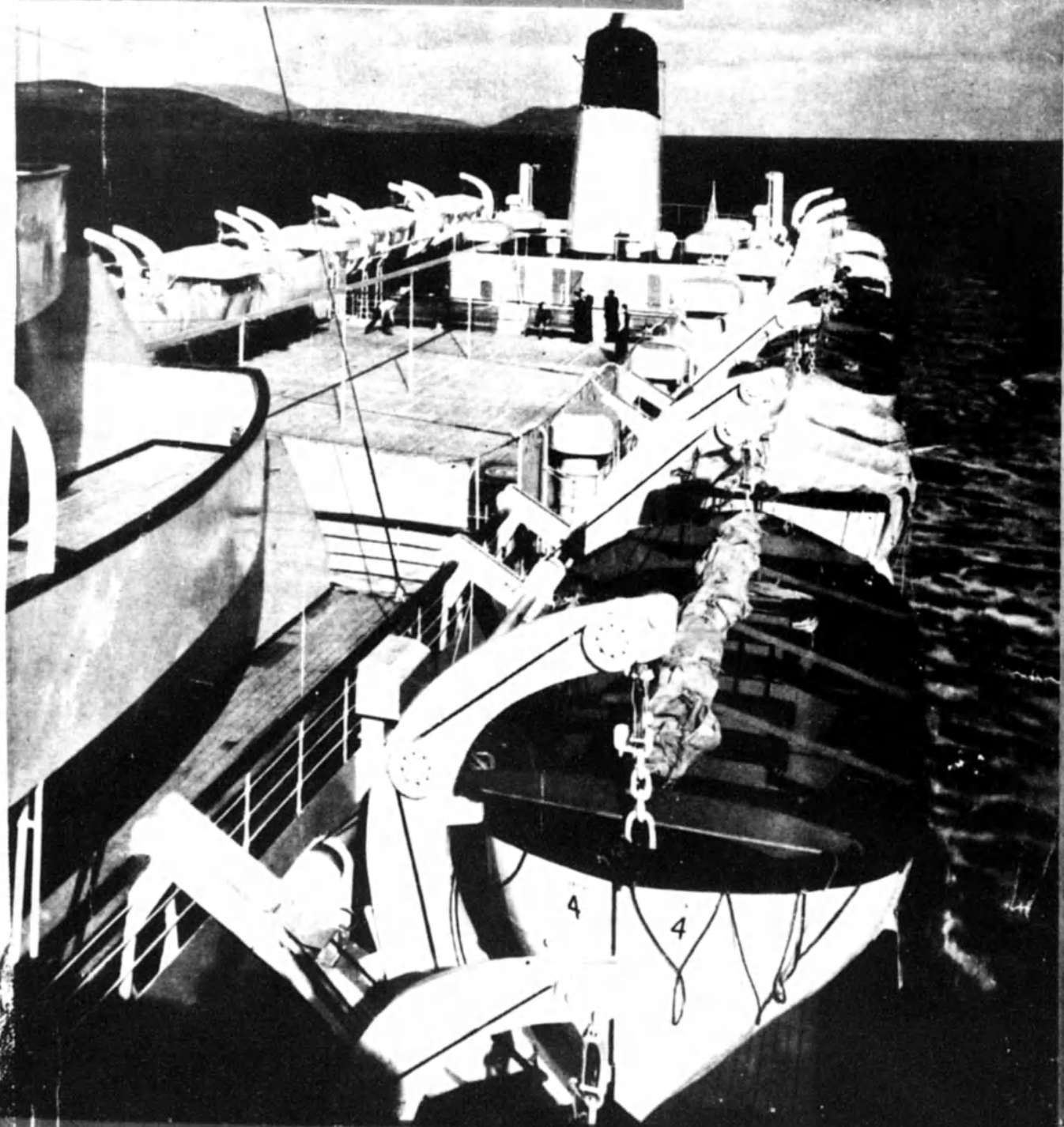
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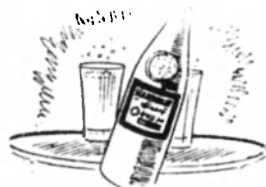
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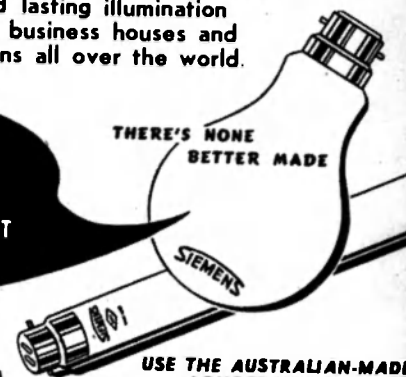
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TRAVEL SHAW SAVILL

THE NAVY

March, 1957.

THE SUPER-TANKERS

The possibility of building tankers of 100,000 tons in the United Kingdom has been referred to by industrial leaders in Britain in the past few weeks.

Viscount Knollys, chairman of Vickers-Armstrongs, said that the firm's Barrow-in-Furness yard had on order two ships of 42,000 tons and three more of 50,000 tons, and was "examining the possibility of building tankers of even greater deadweight tonnage—for 85,000 and even 100,000 tons as well as increasing dry dock facilities for such mammoths.

Oil shortages caused by the closure of the Suez Canal and the Middle East pipelines have focussed public attention on the problems of oil supply.

World oil consumption outside the Soviet bloc was about 700,000 million tons in 1955.

The United States, the largest consumer, took about 400,000 million tons, producing about 350,000 million tons itself and importing the balance mainly from the neighbouring Caribbean.

Western Europe consumed under 120,000 million tons, but most of this has to be brought from the Middle East, over 2,000 miles away.

Altogether 400,000 million tons of oil (five times as much as in 1938) were carried by sea in 1955.

Over the next 20 years the demand for oil is expected at least to double, while the ton mileage of oil carried by sea is likely to grow more rapidly.

The largest proven reserves of oil are in the Middle East and it is expected that Middle East oil will have to supply a wider area, and even to fill a growing gap between demand and supply in the Western Hemisphere.

The very large tanker is regarded widely as the cheapest way of carrying oil for long distances. Neither weight of steel, size of crew nor fuel consumption are increased proportionately with size.

The costs per ton mile of a tanker that can carry 85,000 tons are likely to be about half those of a 19,000 tonner.

Both oil companies and independent shipowners with tankers for charter have begun to order bigger tankers during the last five years.

But until recently many of them did not want to operate tankers too big to pass fully loaded through the Suez Canal, whose use halved the journey from the Middle East to Europe.

This set an upper limit of about 35,000 tons capacity. In the past year, however, orders for much bigger tankers have been placed in various countries.

This latest development is based partly on proof of the lower cost of large tankers and partly on the realisation that only a fifth of world oil movements by sea pass through the canal and that this proportion is likely to decrease as more use is made

of pipelines, and the demand for oil becomes larger and more widely distributed.

Moreover, even from the Persian Gulf to Europe, the economics of super tankers and the savings of canal dues will go a long way to pay for the longer journey via the Cape.

All these considerations are independent of the questions of political or strategic advantages of minimizing dependence on the Canal.

Five years ago there were no tankers of over 20,000 tons. By the end of June, 1956, the operating world fleet of oil tankers of 29,000 deadweight tons and over amounted to 103 ships with carrying capacity of 3.4 million tons, about eight per cent. of the total tanker tonnage; by the end of November, 1956, there were 311 tankers of 24,000 deadweight tons and over with a total carrying capacity of 9.25 million tons.

Only 39 tankers, however, with a capacity of 1.5 million tons were of 33,000 deadweight tons or over.

The super-tanker fleet is to increase rapidly. By September, 1956, there were 170 tankers of 35,000 tons and over, under construction or on order in the world shipyards, and it was expected that by

1961 the world super-tanker fleet (tankers over 29,000 deadweight tons) would amount to 17 million deadweight tons, about 30 per cent. more than the whole tanker fleet now in service.

It was revealed at a recent launching that a British tanker firm will have six tankers, each of 32,000 tons, launched within the next six months.

The super-tankers would provide sufficient additional capacity to meet the expected increase in demand for oil even if there were no further development of the canal and the pipelines.

Since September tanker building programmes have been further revised and many more tankers are on order, some of them additional to previous orders and some substituted for smaller tankers.

There is at present a lack of oil ports at which very large tankers can load and discharge direct, and of dry docks which can take ships of this size.

These difficulties can, however, be overcome. Channels at existing ports can be widened and deepened, or new ports can be built such as is planned at Milford Haven in South Wales.

In other cases, flexible submarine pipes or offshore jetties can be used for loading and unloading tankers.

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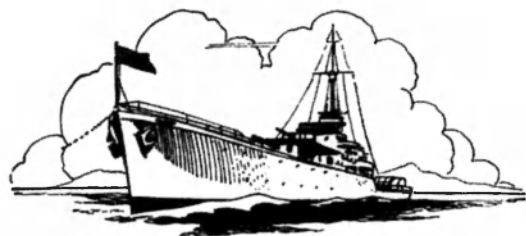
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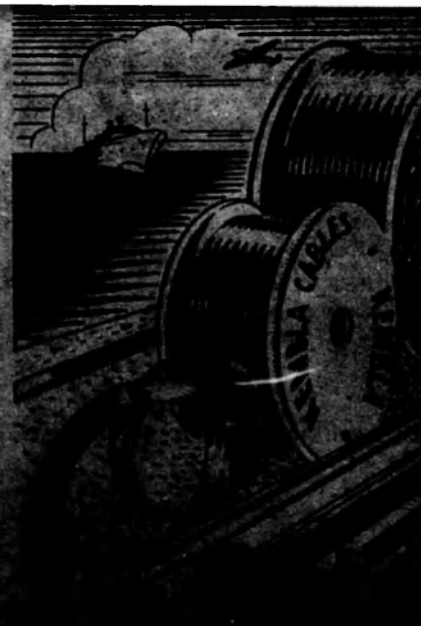
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THE NAVY

RUSSIA'S "SVERDLOVS"

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

This description of the "Sverdlov" class of Soviet cruisers is based on personal observations by the author during the recent visit of Russian warships to Britain.

AFTER the U.S. heavy cruisers of the "Des Moines" class, the "Sverdlovs" are the largest cruisers afloat, with a length of 689 ft., beam 73 ft., and a draught of 24½ ft. or thereabouts—the Russians use a system of draught marks which bears no relation to the metric scale or any recognised system of measurement. On the occasion of her last visit to Britain, the *Sverdlov* showed the figures 20 at the waterline with 30 above and 30 below, which you can translate as you like.

Now draught has to be limited for Baltic work, and Fisher kept the "Glorious" class down to 24.3 ft. although the *Rurik* of 1908 was allowed 26 ft. for her 15,000 tons.

Allowing the *Sverdlov* 24½ ft. as a reasonable figure for her size, with a block co-efficient of 0.545 which would be expected by British practice, her displacement works out at 19,200 tons—or between 16,000 and 17,000 tons standard—in which case the 12,500 tons credited to her by the Press reports is a considerable underestimate.

The main armament of twelve 6-in. guns are in fore and aft triple turrets with thick armour faces of apparently about 8 in. with 6 in. on the sides. A secondary armament of twelve 3.9-in. is carried on the broadside, paired in large 1 in. gunhouses which suggest automatic working as A.A. defence.

About thirty 37 mm. in pairs are mounted on the superstructure and shelter decks. Two sets of five 21-in. torpedo tubes are carried amidships, and two sets of mine rails are laid each side of the

quarter-deck from the after shelter deck to the broad stern. Stowage is believed to be 140 mines.

According to a Swedish report the *Sverdlov* proceeded home from Spithead in 1953 in company with the *Gota Lejon*, which increased speed in order to test that of the Russian, but was left astern at 33 knots. Her turbines are reported to be of 130,000 s.h.p. driving four propellers, with bunkerage for up to 3,000 tons of oil fuel.

When leaving Portsmouth in 1953 the blowers sounded particularly noisy and conditions for the engine room staff must have been uncomfortable.

An outstanding feature is the huge control tower surmounted by an armoured rangefinder for visual control of the main armament, with a similar instrument aft and one in each of the four 6-in. turrets. We have discarded optical rangefinders as being obsolete—incidentally saving skilled manpower and a lot of top weight—and rely entirely on radar for our ranging. It is probable that the visual ranging is used primarily by the Russians when conditions are suitable, and in the event of their radar equipment being put out of action. The secondary armament director can be seen amidships.

The radar equipment is extensive and could have been modelled upon that installed in the *Royal Sovereign* loaned to Russia in 1944, which included controls for both her main and secondary armament. So far as can be ascertained its distribution is as follows:

(1) FOREMAST.

Top platform carries a warning combined antenna larger

than the type observed in 1953. Also mounts a Very High Frequency aerial array possibly "Identification Friend or Foe."

Fourth Platform. A V.H.F. aerial possible I.F.F.

Third Platform. Direction Finding long aerial.

Second Platform. Surface gunnery antenna.

First Platform (above Director). Main armament fire control.

Platform forward of control tower. Navigational radar similar to British type.

(2) MAINMAST.

Top Platform. Air warning array similar to our large cheese type.

Third Platform. A V.H.F. array possibly for I.F.F.

First Platform. Main armament fire control.

As regards structure, the hull appears to be very well thought out and strongly built. Welding is general throughout, the only riveting appearing at the sheer strake and partially at the main deck level amidships.

Longitudinally the hull is machine welded, with vertical hand welding finish being inferior to the British but superior to American standards. The superstructure and funnels, made of very thin steel or some light alloy, showed considerable buckling.

Upperworks are capable of being quickly remodelled and bridge-work will need to be built in—at present the three tiers are too high and sprawling judged by our present needs. Never was there so

much canvas screening required for weather protection. The decks look peculiar, being laid in short lengths of soft wood at right angles, to facilitate removal before action.

Accommodation and equipment below is excellent with a high standard of cleanliness—a deck hand spent quite a time trying to remove a cigarette stub from the scuppers with a huge cotton mop rather than toss it over the side.

Uniforms of W.O.s and N.C.O.s are liberally adorned with gilt stripes and coloured bands on the cuffs, stars on the shoulder straps, and badges elsewhere so that an imposing officer who might well have been a Surgeon Captain turned out to be a sort of cook—or so I understood. Trousers of an exaggerated "Oxford Bags" style are favoured, and one little man was so arrayed as even to conceal his toecaps. — *From the London "Navy."*

SHARK WARNING FOR NAVY DIVERS

THE following Navy Order has been published for the guidance of captains of H.M.A. ships when diving operations—including spear-fishing—are being conducted:

Sharks seem to be so entirely unpredictable in their habits and natures that it is difficult to give any definite guidance to Captains when to allow and when not to allow recreational swimming or diving in a rig other than a water-proof diving dress.

There is no record of a diver dressed in a suit ever having been taken by a shark, and it seems reasonable to assume that this immunity exists because the diver may not "smell" good to eat.

However, the heat generated inside completely water-tight suits,

in the hotter seasons, makes it undesirable to insist on their being worn where there is no certain shark hazard, though underwater swimmers and divers should always be given the option of wearing a suit if they wish, or a complete body covering, such as a pair of overalls.

Notice should be taken of the local information regarding the shark risk appertaining to the area.

No explosive charges should be fired shortly before diving, as it has been proved that they cause sharks to congregate to feed on fish damaged by the explosion.

A precaution, however, which is always worthwhile is to make sure that the diver does not release any blood into the water, as this is notoriously attractive to sharks. For this reason:

- Divers wishing to go down without a suit should be examined for unhealed cuts and sores, and if a waterproof dressing is unlikely to prevent the permeation of blood into the water, they should be made to wear a suit.

- When working in places where a diver is likely to cut himself (ship's bottoms, moorings, etc.) at least an overall suit should be worn.

- Any diver who knows that he has cut himself should immediately leave the water.

When carrying out recreational diving or underwater fishing in shark hazard areas, a diver on surfacing should immediately come inboard or again submerge and not wait about on the surface, as this is considered to be the greatest danger spot for attack.

Fish should never be carried underwater but must be brought to the surface for disposal.

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PROPELLER BROKEN BY ICEBERG.

Seamen of the U.S. attack cargo ship "Arneb" inspect the ship's propeller at Cockatoo Island dry dock after the ship arrived in Sydney last month. One of the blades was snapped when the ship was squeezed between an iceberg and the mainland in Antarctica.

THE NAVY

March, 1957.

Personalities

GENERAL MANAGER FOR DOCKYARD

CAPTAIN R. G. Parker, O.B.E., R.A.N., formerly general manager of the Naval Dockyard at Williamstown (V.) and general overseer, South East Australian Area, became general manager of the Naval Dockyard at Garden Island, Sydney, on January 15.

Captain Parker is succeeded at Williamstown by Captain L. N. Dine, R.A.N.

Captain Parker was awarded the O.B.E. in 1944 for leadership and enterprise while serving in H.M.A.S. Hobart. He had earlier been mentioned in despatches.

MONTEREY'S MASTER

Captain M. C. Stone, master of the new Monterey, has been a Matson Lines officer since 1930 and has spent many years on ships running between the United States and the South Pacific.

He first sailed to Australia 35 years ago on the four-masted barkentine *George U. Hind*.

The *Hind*, owned by the late James Rolph, then mayor of San Francisco, sailed to Australia in the course of a round-the-world voyage in 1920.

Stone, born in England, joined the Matson Company as a junior third officer on the old *Ventura*. Much of his service with Matson was aboard the former *Mariposa*.

His last command before he was appointed master of the new Monterey was the freighter *Hawaiian Craftsman*.

Before the United States entered World War II, Captain Stone was master of the freighter *Olopana*, which was sunk by a German submarine on the Murmansk run. The *Olopana* was one of 24 Allied ships sunk in a 36-ship convoy.

Captain Stone holds the rank of

commander in the U.S. Naval Reserve. After World War II, he served as Matson's port captain in San Francisco for five years.

ROYAL NAVY

The following changes on the Flag List have been announced:

Placed on the Retired List: Admiral Sir William G. Andrews, K.B.E., C.B., D.S.O., M.I.E.E.; Vice-Admiral Sir Peter G. L. Cazalet, K.B.E., D.S.O., D.S.C.; Rear-Admiral R. L. Fisher, C.B., D.S.O., O.B.E., D.S.C.

Promoted to Admiral in Her Majesty's Fleet: Vice-Admiral Sir Caspar John, K.C.B.

Promoted to Vice-Admiral in Her Majesty's Fleet: Rear-Admiral G. B. Sayer, C.B., D.S.C.; Rear-Admiral A. N. C. Bingley, C.B., O.B.E.

The following appointments have been announced:

Vice-Admiral G. V. Gladstone, C.B., to be Commander-in-Chief, Far East Station, in succession to Admiral Sir Alan K. Scott-Moncrieff, K.C.B., C.B.E., D.S.O. and Bar (October).

Rear-Admiral Sir St. John R. J. Tyrwhitt, Bt., D.S.O., D.S.C. and Bar, Flag Officer, Malta, in succession to Rear-Admiral W. G. Brittain, C.B., C.B.E. (April).

Rear-Admiral R. T. Sanders, M.I.Mech.E., Deputy Chief of Naval Personnel (Training and Manning) and Director of Naval Training, in succession to Rear-Admiral B. Bryant, C.B., D.S.O. and two Bars, D.S.C. (February).

Rear-Admiral L. G. Durlacher, O.B.E., D.S.C., Flag Officer Commanding Fifth Cruiser Squadron and Flag Officer, Second-in-Command, Far East Station, in succession to Rear-Admiral W. K. Edden, C.B., O.B.E. (August).

Rear-Admiral G. A. F. Norfolk, D.S.O., Deputy Chief of Naval Personnel (Personnel Services) in succession to Rear-Admiral L. G.

Durlacher, O.B.E., D.S.C. (April). Rear-Admiral J. Lee-Barber, D.S.O. and Bar, Admiral Superintendent, H.M. Dockyard, Malta (February).

Rear-Admiral V. C. Begg, D.S.O., D.S.C., Chief of Staff to the Commander-in-Chief, Portsmouth, in succession to Rear-Admiral P. W. Burnett, D.S.O., D.S.C. and Bar (February).

Captain G. D. A. Gregory, D.S.O. and Bar, Commodore Hong Kong to serve in the rank of Commodore 1st Class while holding this appointment.

NEW "JET-FLAPS" FOR AIRCRAFT

The jet-flap principle first announced last year by the U.K. National Gas-Turbine Establishment has captured attention in world-wide discussions on what the next generation of airliners is going to look like.

For the jet-flap the jet-efflux from an aircraft's engines is discharged horizontally from the trailing edge of the wing in a long span-wise sheet, instead of from circular orifices directly behind the engines. On take-off and landing, this flat jet-sheet is directed downwards at an angle thus forming, in effect, an aerodynamic flap of a size which would be impossible with a "solid," or mechanical, flap. The effective area is, in fact, similar to that of the wing itself. In addition, a certain amount of direct lift is obtained on the "jet deflection principle."

The National Advisory Committee for Aeronautics is reported to be "looking into the possibilities" of the device. The Committee estimates that the jet-flap could cut take-off distance from 8,500 feet to 5,500 feet, landing run from 7,000 feet to 3,700 feet, take-off speed from 150 m.p.h. to 115 m.p.h., and landing speed from 115 m.p.h. to 80 m.p.h.

COMMONWEALTH NAVIES MUST HAVE . . .

Self-Sufficiency at Sea

By Rear-Admiral A. D. Nicholl, C.B., C.B.E., D.S.O.

THE defence of the free world as well as the defence of the British Commonwealth entails the world-wide control of sea and air communications. This, in turn, requires the strategic mobility of naval and air forces, a mobility which depends on a world-wide chain of bases, operational headquarters and radio stations. The defence plans of N.A.T.O. and the defensive arrangements of S.E.A.T.O. and the Baghdad Pact are all based on the assumption that the free world will continue to have these facilities.

In this matter, the British Commonwealth makes a vital contribution to the defence of the free world for, in fact, only the British Commonwealth possesses naval and air bases all over the world. By virtue of its bases the British Commonwealth is able to operate naval and air forces in all the sea areas of the world. Bases in Britain, Canada and Gibraltar, facilities in the West Indies, West and South Africa and the Falkland Islands serve the North and South Atlantic; Gibraltar, Malta and Cyprus cover the Mediterranean; naval resources at Aden, Mombasa, Trincomalee, Singapore and West Australia are available for the Indian Ocean; and Singapore, Hong Kong, and bases in Australia and New Zealand meet requirements in the Far East and South-West Pacific; Canada in the East Pacific. In addition to these established naval facilities, there are, of course, all the commercial resources for docking, repairing, refuelling and supplying ships in British territories everywhere. Presumably also, in the event of war, the naval and commercial resources of all the

allied powers would be equally available. The potential base support for British Commonwealth naval forces is, therefore, immense. At the same time, it is obvious that the availability of some overseas bases may be affected by political considerations. A very recent example is provided by Ceylon.

A new Government of Ceylon has made it clear that if Britain were to be involved in hostilities in which Ceylon is not involved, the naval, air and radio facilities at present enjoyed by Britain in Ceylon would be denied to her. Trincomalee is a fuelling depot, storage base and anchorage so far as the Navy is concerned and its denial would enhance the value of other naval facilities in the Indian Ocean, such as those of Aden and Mombasa, and the anchorage at Addu Atoll in the Maldives. Where the Royal Air Force is concerned, however, it is necessary, with the present range of transport aircraft, to establish staging facilities alternative to those of Ceylon. As a strategic precaution, in view of the attitude of the Ceylon Government, the British Government have decided to re-establish the airfield which was constructed in the Maldives during the last war. There is no question of building up a full-scale Air Force base in the Maldives from which strategic operations could be conducted; the intention is rather to provide facilities for refuelling, servicing and emergency aircraft repairs. With the establishment of this airfield, air communications with the Far East would only be increased by something under 300 miles while, for long-range aircraft such as the

Britannia, the Maldives airfield will provide a new and shorter route to Australia.

There are limitations on direct radio communication between the United Kingdom, the Far East and Australia which are at present overcome by the existence of the radio link in Ceylon; as in the case of the air facilities, therefore, the British Government is also establishing wireless facilities in the Maldives.

There is another most important consideration which arises from political trends. The attitude of the Ceylon Government may well be reflected elsewhere in the Commonwealth territories which have recently attained national sovereignty. It is understandable that such countries may not wish to have foreign troops permanently stationed on their soil and this will particularly affect air bases and the troops required to guard them. No doubt a somewhat different view would be taken of warships which can come and go and the whole situation points to the increasing importance of our naval forces in the coming years. None of these new states is able to provide its own defences against attack on any large scale and no doubt they would call for military help if threatened with aggression. In such circumstances it might only be possible to bring help by sea. The conclusion is that we must aim for greater self-sufficiency at sea. Carriers are able to provide local air cover but they may need the resources to establish squadrons ashore; a Fleet Train must be available to provide a floating base until shore facilities can be set up; the Navy's amphibious

bious forces are becoming increasingly important.

The free world by its unity and determination and by building up its military strength has so far been able to block the advance of Communism in Western Europe, in Korea, in the Western Pacific and, recently, by the action taken by Britain and France, in the Middle East. In the Middle East there is a military vacuum and the defence of the area against a full scale attack by Soviet Russia would require a scale of land, air and naval defence which could only be provided by a combination of the strongest powers of the free world. To be fully effective, the defence of the Middle East demands the existence of a supply and repair base similar to the British base in Egypt which the Egyptian Government states it has destroyed. In the circumstances, the British base in Cyprus, always available to the free world, is of the utmost importance to Middle East defence, and, therefore, to the defence of Western Europe.

Soviet Russia with her central position and huge, fully mobilised

land and air forces is virtually unassailable, except by the strategic air power of the free world. Russia has great superiority in conventional forces over Western Europe, but it deterred from attempting to use them by the fear of counter-attack with nuclear weapons. For, where the possibility of nuclear war arises, the advantage, at the present time, lies with the free world. Not only is the strategic air power and stockpile of nuclear weapons of the free world greater than those of Soviet Russia, but their strong naval forces, capable of contributing to strategic bombing and of counter-attacking from every point of the compass, would present Soviet Russia with an immense defence problem.

It must be accepted as almost certain that Russia will steadily close the gap between her nuclear strength and that of the free world. As Russia's nuclear power increases, therefore, the control of the sea by the free world will become more and more important.

—From the London "Navy."



BIG NEW LINER FOR P. & O. LINE

THE P. and O. Line has announced plans to build a 45,000-ton 274-knot liner for the Australian and Pacific run which will carry more passengers than the Queen Elizabeth.

It will be the biggest liner to run between Britain and Australia, and is estimated at present to cost about £A15.6m.

It will carry 2,250 passengers—600 first-class and 1,650 tourist—and will cut the present Britain-Australia trip to three weeks.

Harland and Wolff Ltd., of Belfast, will lay the keel towards the end of this year. Delivery is expected late in 1960.

The ship will have a length of 814 ft., beam of 102 ft., and draft of 31 ft.

It is believed it will be the biggest passenger liner built in a British shipyard since the *Queen Mary* (81,237 tons, launched 1936) and *Queen Elizabeth* (83,673 tons, launched 1940).

Passenger amenities will include air-conditioning throughout and three swimming pools.

The whole superstructure will be aluminium.

The ship will be air-conditioned throughout, including all crew accommodation.

Lifeboats will not be carried at the traditional height of the boat deck but will be stowed three decks down lying in flush with the ship's side.

The ship will be fitted with two sets of Denny-Brown stabilisers.

Baggage and stores will be handled by electrical conveyors and elevators.

It will be the first British passenger ship to be powered entirely by A.C. current. There will be four turbo alternators each of 1500 kilowatts, 440 volt, three phase, 60 cycles.

Malayan Helicopter Squadron

From a Special Correspondent in London

WHEN No. 848 Naval Helicopter Squadron was withdrawn from Malaya early in January, this closed a chapter in the history of the Fleet Air Arm during which some of its officers and men operated with skill and daring over the whole of the Malayan Federation for almost four years.

The responsibilities of the Squadron included the lifting of troops, freight, casualties, V.I.P.s, explosives, tractors, tracker dogs, aborigines, and a host of other loads including terrorist casualties.

Wherever a task had to be done it was performed with good humour and tireless energy, and now, if a pin is stuck at random in a map of Malaya, there, within a few miles, a helicopter of the

Royal Navy will have been operating.

How did a Fleet Air Arm Squadron become involved in deep jungle operations far from its natural element, the sea? The Malayan security forces speak of "the bad old days" when soldiers spent days foot-slogging through the jungle before they could get to grips with terrorists.

The need for some means of relieving them of these long and bitterly exhausting marches was apparent.

Towards the end of 1952 ten Sikorsky 55 helicopters were accepted by the Royal Navy under the Mutual Defence Aid Pact and were formed at Gosport into No. 848 Squadron.

This Squadron was trained expressly to meet the Malayan emergency and it embarked in H.M.S. *Theseus* on December 12, reaching its future base at the Royal Naval Air Station, Sembawang, Singapore, on January 8, 1953.

During its overseas service the squadron's major task was the movement of troops into and out of the jungle, and its capacity for this form of service was early illustrated by the fact that in one operation it moved 1,800 troops in four days.

Within its first six months' service in Malaya it carried 4,000 troops, moved 100,000 lb. of freight and flew 1,500 hours.

The tasks of the squadron also included the evacuation of wounded from the jungle to military hospitals, the dropping of leaflets in areas occupied by terrorists (one pilot released 700,000 leaflets in one two-hour operation), and jungle reconnaissance.

In January, 1954, the squadron

earned the Navy's most coveted aviation award — the Boyd Trophy — presented annually for the most outstanding feat of aviation in the Royal Navy.

The citation stated: "The remarkable results while operating under arduous circumstances . . . can only have been achieved by outstanding effort by air crew and ground crews."

In May, 1955, the Commanding Officer of the squadron, Lieutenant-Commander Brian Patterson, M.B.E., R.N., and Lieutenant Ronald Leonard, R.N., were awarded the D.F.C. for outstanding service with the squadron. An aircrewman received the D.S.M., an artificer the B.E.M., and two other officers were mentioned in dispatches.

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NEWS OF THE WORLD'S NAVIES

R.N. launchings, acceptances

A list of ships launched in the period July-December 1956, issued by the Admiralty, include one submarine (the *Rorqual*), nine coastal minesweepers, two inshore minesweepers, two fast patrol boats, one seaward defence boat, and one tug.

Acceptances included two Blackwood class A/S frigates (the *Keppel* and the *Pellew*), one Whitby class A/S frigate (the *Whitby*), eight coastal minesweepers, and five inshore minesweepers.

Battle class ships for Pakistan

Two Royal Navy destroyers recently sold and handed over to the Pakistan Government are H.M.S. *Gabbard* and H.M.S. *Cadiz*, Battle class ships.

The *Gabbard* will be known as P.N.S. *Badr* and the *Cadiz* as P.N.S. *Khaibar*.

Navy flag for Parachute Brigade

Vice Admiral M. L. Power, Flag Officer Aircraft Carriers, has sent the following letter to Brigadier M. A. H. Butler, D.S.O., M.C., commanding the 16th Independent Parachute Brigade Group.

"It is with the greatest of pleasure that I send you my flag which was flown in Her Majesty's Ship 'Eagle' on November 5, 1956, when the Carrier Squadron, Her Majesty's Ships 'Eagle', 'Bulwark' and 'Albion', had the honour to support the landing of the 16th Parachute Brigade in Port Said.

"I would be pleased if you would accept this flag as a token of my own personal admiration of the great gallantry and superb fighting ability displayed by your officers and men in this historic operation. All my Captains,

officers and men of the Carrier Squadron join me in this.

"The Fleet Air Arm is as proud and pleased as can be that we had the good fortune to be of some assistance to your brave men. I trust that the excellent co-operation in battle which we have achieved with you will continue undiminished in peace and in war, and that should a similar opportunity arise in the future, the Fleet Air Arm will again have the honour and distinction of your company."

During class ship is commissioned

The Royal Australian Navy's new Daring class ship H.M.A.S. *Voyager* was commissioned last month.

The *Voyager* is a sister ship to the *Vendetta*, launched at Williamstown (Victoria) Naval Dockyard in May 1954 and the *Vampire*, launched at Cockatoo Island Dockyard (N.S.W.) last October.

They are of all-welded construction.

Brazil gets two U.S. submarines

Brazil has become the first Latin American country to receive ships from the U.S.A. under terms of the Bilateral Military Agreements.

The ships involved are the submarines *Muskallunge* and *Paddle*, which have been transferred on loan to the Brazilian Navy.

Their new names are *Riachuelo* and *Humaita*.

"Nautilus" to be refuelled

The U.S. atomic powered submarine *Nautilus* will be refuelled for the first time this spring, the U.S. Navy has announced.

Special equipment and techniques will be used. The *Nautilus* is designed to permit refuelling

during any normal overhaul period.

The present uranium core of the *Nautilus*'s reactor will be removed and a new core installed. The old core will be sent to Arco, Idaho, for examination and to reclaim unused uranium.

The *Nautilus* first got under way on nuclear power on January 17, 1955. Since then, the *Nautilus* has steamed over 55,000 miles from power generated by her reactor.

German salvage sunken warships

Four scuttled submarines of the Kriegsmarine will be used as training ships for the new German fleet.

Two have already been raised and two more have been located in the Baltic Sea and will soon be refloated.

Additionally, the German firm "Kaus und Steinhäuser" has been authorised to carry out the recovery of 150,000 tons of German munitions lying on the bed of the North Sea. These were dumped there by the Kriegsmarine at the end of the war in order to prevent the Allies from seizing them.

R.N.'s new aircraft completes trials

Britain's first aircraft to go into production fitted with "blown flaps"—the Supermarine N 113 single-seat naval fighter—recently completed a series of deck landings and catapult launchings in H.M.S. *Ark Royal*.

In what is known as flap blowing or supercirculation, air tapped from the turbo-jet engines is blown over the wing at a much lower speed than normal during the ap-

proach to land. The "flatter" approach angle also improves the pilot's forward view.

In the N 113, a swept-wing fighter powered by two Rolls-Royce Avon turbo-jets installed in the fuselage, each engine is fitted with a valve from which air is fed through pipes leading to the wings.

The air moving over the flaps is prevented from breaking away and becoming turbulent; instead it flows smoothly over the upper surface of the flap.

The N 113, the fastest naval aircraft yet developed in Britain, is in production for the Fleet Air Arm and is stated to be capable of carrying an atomic bomb.

Six Blackwood class now in service

With the provisional acceptance of H.M.S. *Grafton*, six of the anti-submarine frigates of the Blackwood class are now in service with the Royal Navy.

Those already completed are H.M. Ships *Hardy* (December 15, 1955), *Dundas* (March 9, 1956), *Murray* (May 29, 1956), *Keppel* (July 6, 1956) and *Pellew* (July 26, 1956).

The *Grafton* was launched at Cowes on September 13, 1954, by Lady Grantham, wife of Admiral Sir Guy Grantham, G.C.B., C.B.E., D.S.O., Commander-in-Chief, Mediterranean.

Like the *Dundas*, H.M.S. *Grafton* was built by Messrs. J. S. White & Co. Ltd., Cowes, Isle of Wight. The turbines and main machinery, however, were manufactured by the Parsons Marine Steam Turbine Co. Ltd., Wallsend-on-Tyne. In dimensions and equipment this ship corresponds with her sister ships of the Blackwood class.

Ship's company goes by Britannia

Bristol Britannia aircraft have been used by the Royal Navy for

the first time to recommission a warship overseas.

Early in January, ninety officers and men, half of the new ship's company of the destroyer *Comus*, left London Airport in a closely co-ordinated movement for Entebbe, Uganda, where they transferred to Dakotas of the East African Airways to go on to Mombassa to join their new ship.

The other half of the ship's company of the *Comus* left London Airport later in a second flight. H.M.S. *Comus* arrived in Mombassa to recommission because of the disruption of normal air trooping to the Far East caused by the Suez crisis.

The old ship's company of H.M.S. *Comus* returned to the United Kingdom in the same aircraft.

Frigate helps grounded tankers

Twice in less than twenty-four hours, H.M.S. *Loch Killisport* (Commander G. C. Hathway, R.N.), frigate, towed to safety loaded tankers which had gone aground in bad weather on shoals off the Saudi Arabian coast.

The first was the United States

ship *Olympic Games*, with a cargo of crude oil, which got into difficulties during a passage from Pao to Ras Tanura.

She was located six hours after the *Loch Killisport* sailed to her assistance from Bahrain and was refloated twelve hours later after a sick seaman had been transferred for medical attendance and Naval divers had carried out an inspection of her hull.

Shipwrecked men's ordeal in north

Five shipwrecked men reached Darwin on January 21 after a nine-day walk through the wild country of Arnhem Land (North Australia).

The men left Darwin early in December in the 42 ft. yawl *Calypso*. After a month's crocodile shooting they decided to sail to Queensland.

Their yawl was wrecked on the coast and the men walked to Cape Don lighthouse, 50 miles away.

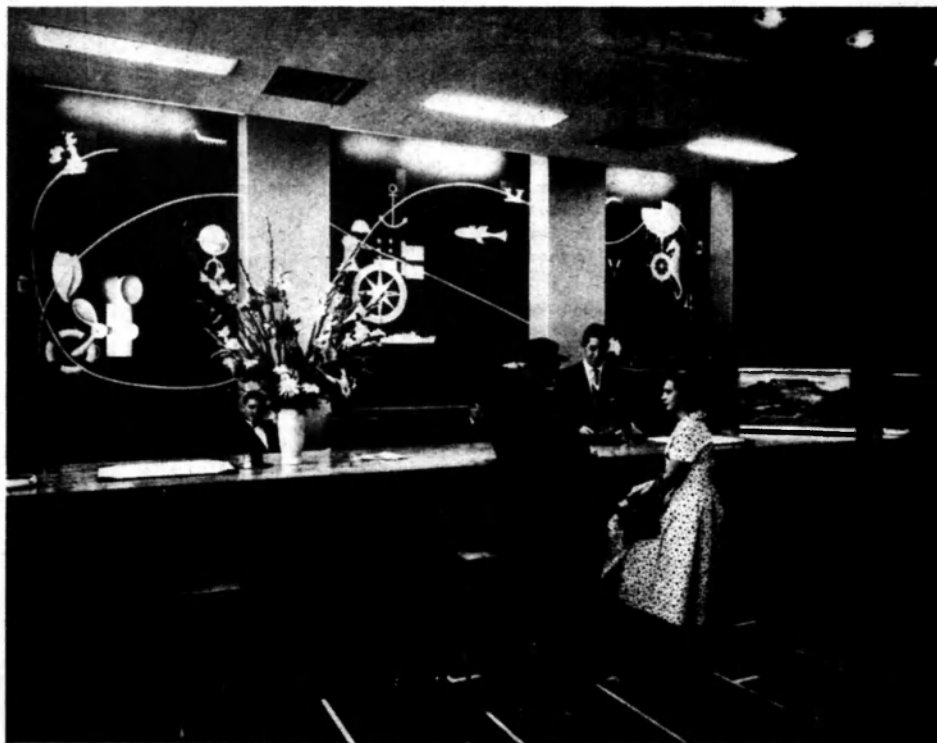
They could only manage about five miles a day and were tormented by mosquitoes and sandflies.

The naval tug H.M.A.S. *Emu* brought them from Cape Don to Darwin.



MELBOURNE BITTER VICTORIA BITTER
FOSTER'S LASER ABBOTS LASER

CARLTON & UNITED BREWERIES LIMITED



A view of the new Shaw Savill travel booking centre in Castlereagh Street, Sydney.

NEW OFFICES FOR SHAW SAVILL

SHAW Savill & Albion Co. Limited has opened an attractive travel-booking centre at 8a Castlereagh St., Sydney.

The company recently bought the premises, an eight-storey office building, altered and redecorated it.

Following current design trends the whole of the interior of the booking hall on the ground floor has been made a "showcase" by glazing the front wall to the underside of the awning.

Prominently displayed is a scale model of Shaw Savill's passenger liner *Dominion Monarch*.

Polished Australian coachwood,

Queensland maple and travertine, combined with large expanses of plate glass and an interesting colour scheme, have been employed to create an effect of spaciousness.

The main wall, behind the counter, features a large mural by Mr. Jeffrey Smart, in which symbols of the company and marine motifs are used in a decorative composition.

Sound-insulated ceilings and floors, air conditioning and high-lumen lighting are other features.

The first and second floors have been re-constructed and air-conditioned to provide managerial and staff offices.

The appearance of the exterior

of the building has been considerably altered by the removal of a heavy projecting cornice and by the new fenestration and facing up to the second floor.

Anodised aluminium has been used for the fascia and soffit of the street awning and the first floor windows. House flags of the Shaw Savill Line and the Aberdeen and Commonwealth Line, flying from flagpoles, will provide a nautical flavour.

The construction work has been carried out by A. W. Edwards Pty. Ltd., to the design and under the supervision of Messrs. Fowell, Mansfield & Maclurcan, architects.

America's Middle East Policy "to prevent subversion"

PRESIDENT Eisenhower's new Middle East plan aimed at helping to prevent Communist subversion, the U.S. Secretary of State, Mr. John Foster Dulles, told Congress in secret evidence which authorities made public on January 17.

He said subversion, not armed aggression, was the real danger to the Middle East countries.

Mr. Eisenhower has asked Congress for permission to spend 400 million dollars in the next two years on economic aid to the Middle East.

He also seeks authority to use U.S. armed forces, if necessary, to deter Communist military aggression there.

Mr. Dulles said that a decision on the use of U.S. forces in the Middle East should be left to the President's judgment.

He added: "I think there can be absolute conviction that the President would lean over backwards not to interpret the facts as justifying the use of armed force unless there was a real danger to the United States."

NORTHERN LIGHTS

A thousand observers — scientists and weather experts, as well as about 200 amateurs, including railway guards, doctors and lawyers — will search the sky over Britain in the International Geophysical Year, beginning on July 1.

Supervised by Mr. James Paton, a Scottish scientist, more of the amateurs will be looking for the "Northern Lights."

OIL SEARCH IN U.K.

The search for possible additional oil sources continues in Britain.

Some 60,000 tons of petroleum is already produced from oilfields in Nottinghamshire and Leicestershire.



Sound-insulated ceilings and floors, air conditioning, high lumen lighting and large expanses of plate glass are features of the newly-opened Shaw Savill travel-booking centre in Castlereagh St., Sydney. (Story, opposite page.)

March, 1957.

THE NAVY

SUEZ CANAL SALVAGE

By a Special Correspondent

IN a resume of the work of the British and French vessels, the Admiralty has stated of the 22 ships sunk by the Egyptians in Port Said harbour, some were completely submerged, some had only masts and superstructures above water and others were sunk in shallow water.

Six of these wrecks were clear

of the main channel but the remainder caused obstructions to navigation to varying extents.

At one place the channel was completely blocked except for use by very small vessels.

A salvage unit had accompanied allied assault forces and on November 6, the day of the cease-fire, the surveying ship, H.M.S. Dal-

rymple, entered Port Said and began a survey of the harbour and the wrecks.

The following day two salvage vessels, H.M.S. Kingarth and R.F.A. Sea Salvor, entered harbour and started work on opening a channel for ships of 25 feet draught along the west side of the harbour.

Meanwhile the Admiralty began to mobilise all available salvage craft and by mid-December the number of salvage vessels had risen to 14 British, three French and the two large German lifting craft, *Energie* and *Ausdauer*, which had been chartered by the Admiralty and towed from Hamburg.

Eleven more salvage vessels were in the Mediterranean on their way, and eight were held at Aden and Djibouti in readiness to move up to Suez.

Altogether some 40 salvage ships were employed or held in readiness.

On November 24 the western channel through Port Said was opened to ships of 25 feet draught and this was increased on November 30 to a depth of 36 feet.

The way was then clear for the Anglo-French salvage fleet to proceed with the clearance of the rest of the canal.

Since this was not possible, work was continued at Port Said and by December 15 an eastern channel past the main block had been cleared, also with a depth of 36 feet.

All salvage work was suspended on December 20 until after the Anglo-French withdrawal on December 22 when the number of salvage vessels was reduced to eleven, with certain support ships, and placed under United Nations control, their crews wearing plain

clothes and the ships flying the United Nations flag.

The two German ships were released to work with the United Nations further down the Canal.

Between November 7 and January 23 the Anglo-French salvage force removed 13 wrecks totalling 17,000 tons, including the largest wreck, the *Paul Solente*, a modern suction dredger of 4,000 tons displacement.

This ship, owned by the Suez Canal Company, was scuttled by the Egyptians in the centre of the shipping channel abreast the Port Said High Light and slightly above the Casino Palace Hotel after explosive charges had blown holes in her hull.

The successful salvage of the ship, 368 feet long with a beam measurement of 54 feet and a loaded displacement of 7,993 tons, was one of the most difficult tasks undertaken by the British ships.

She was raised by the Royal Fleet Auxiliary ocean salvage vessel *Sea Salvor*, which began work on the wreck soon after British forces occupied Port Said in November; the chartered salvage vessel *Salveda*; the Admiralty lifting craft L.C. 10 and 11; and the Royal Fleet Auxiliary coastal salvage vessel *Succour*.

After lifting, she was towed by the Naval Dockyard tug *Careful* for beaching in a part of the Avant Port where she will form no obstruction.

In charge of the work was Mr. Victor Campbell, Admiralty Salvage Officer. Who is normally based at the Rosyth Dockyard salvage depot. He worked under the overall direction of Captain W. R. Fell, O.B.E., D.S.C., R.N. (Retired), the Principal Salvage Officer of the U.K. salvage force, and Mr. Peter Flett, Senior Salvage Officer in the Mediterranean.

Bringing the *Paul Solente* to the surface involved the sealing of



Lieutenant-Commander V. G. Jerram (second from left), commander of the Damage Control School, H.M.A.S. "Penguin," Balmoral (Sydney), uses a perspex model to explain to officers and ratings how a ship would behave if torpedoed or shelled.

openings in the hull by divers, the erection of coffer dams, pumping and the use of compressed air. The peculiar constructional details of the ship, making her compartments difficult to enter, added to the complexities of the task.

In a tribute to the salvage officers and crews of the salvage ships the Admiralty has stated: "The clearance of Port Said has been effected with remarkable speed and

efficiency and has been a unique operation in the history of the Royal Navy.

"Salvage officers and crews of the ships have worked with the greatest skill and enthusiasm under difficult conditions, often throughout the night. After the Anglo-French withdrawal they were unable to go ashore and had only limited amenities in their small ships."



Members of the ship's company of the U.S.S. "Tulare" come ashore in Sydney for three days' leave. The "Tulare" was one of three U.S. Navy ships which visited Sydney recently.

March, 1957.

"FORCES ARE WORKING" TO DIMINISH THE NAVY'S IMPORTANCE

Strong forces were at work to undermine and diminish the importance of the Navy, Captain Lord Teynham, R.N., (Retired) told a luncheon gathering of the N.S.W. Division of the Navy League of Australia in Sydney last month.

LORD TEYNHAM, who was visiting Australia, said the Navy was going through a new transitional stage just as great as it did from sail to steam. This was little understood either by the politicians or by the layman.

"With the advent of the nuclear weapon, tactics have of course changed and dispersal has become essential, but what about strategy?" he said.

"I think it is true to say that there is a large body of Naval opinion who are inclining towards the 'broken back' theory.

"The 'broken back' theory is based on the state England or any other European country might find itself after intense nuclear warfare which might well take place in a comparatively short time owing to inability of the contending parties to continue.

"It is then that the Russian

carriers and an immense number of submarines who would be at sea before war began would fall upon our trade routes and finally strangle us into submission.

"It is still the job of the Navy to protect our trade routes. Air power cannot do it alone. In the event of total war, shore-based aircraft would quickly become useless owing to the destruction of their air strips and repair facilities.

"Major Unit"

"I feel sure the aircraft carrier will remain a major unit of the fleet for much longer than many people suppose. I was glad to see from the Press recently that it is the intention of our new Minister of Defence drastically to reduce the number of aircraft in Fighter Command.

"This should have been done many months ago and the money

devoted to more modern methods of defence. It is likely that fighter aircraft required for local war and under certain conditions will probably be aboard the aircraft carriers.

"I have little doubt that one day we shall see a merging of the Air Force with the Navy. Apart from fighter aircraft, with the increase in efficiency of the long-range guided missile we may well see virtually the disappearance of the bomber.

"We are also witnessing the demise of the cruiser in its present form and the development of the guided missile ship with a displacement of probably about 10,000 tons. It will be a very formidable ship indeed.

"Before long, we shall no doubt have atomic propulsion for cruisers and submarines which will give them an immense range of operation.

"It is of the utmost importance that the Navy should do all it can to educate the people about the new Navy and explain why it is still necessary. Even governments must sometimes be educated."

BIG G.M. CONTRACT

The U.S. Navy has announced that the Bureau of Aeronautics has awarded a contract for approximately \$16,000,000 to the Temco Aircraft Corporation, Dallas, Texas, for the development of a new guided missile weapon system. Details of the system are still classified.

Keep a Good Lookout

FOR THE NEXT ISSUE OF
The Navy



ROYAL RESCUE

Close of a Dynasty, by Vice-Admiral Sir Francis Pridham; published by Alan Wingate (U.K.).

As the Gunnery Officer of the battleship *Marlborough*, Sir Francis Pridham was present on November 21, 1918, when the Grand Fleet under Sir David Beatty received the German High Seas Fleet off the Firth of Forth.

Two days later the Commander-in-Chief addressed the officers and men of the *Revenge*, Flag-ship of the First Battle Squadron, in whose charge the German ships were sent on to Scapa Flow for internment. In spite of the strictest order that no notes were to be taken of what was said, Pridham somehow obtained the text of the speech and quotes it verbatim.

Sir David referred to the Germans in terms of the most bitter and scathing contempt. "They were not honourable foes or chivalrous enemies, and should not be treated as such . . ." and so on.

It was certainly a bloodthirsty oration in the hour of triumph; obviously unsuitable for the ears of the public.

In the spring of 1919, having been recommissioned for service in the Mediterranean, the *Marlborough* was sent to the Sea of Marmora to rescue all those that remained of the Russian Imperial Family.

This is the real *raison d'être* for the book, for as the senior Lieutenant-Commander the author became responsible "as A.D.C. cum major-domo" for the accommodation and well-being of the Empress Feodoravna of Russia, mother of the Emperor and sister of our

Queen Alexandra; the Grand Duchess Xenia; and a whole host of Grand Dukes, Duchesses, Princes and Princesses together with their children, governesses and servants.

These unfortunate people, to the number of over 80, with no less than 200 tons of baggage, were embarked at Yalta, in the Crimea, for transport to Constantinople and Malta.

It was no easy matter in the already crowded battleship.

Apart from this Admiral Pridham deals with the Russian Revolution and all its horror, including the brutal assassination of the Emperor and Empress and their five children at Ekaterinburg in July, 1918, at the orders of Sverdlov, the "Red Czar."

He also has much to say of the course of the Civil War in Russia, the vacillating policy of the British Government and our eventually half-hearted "intervention" in the Crimea, where, in May and June 1919, the *Marlborough*, one of the four British battleships in the Black Sea, fired more ammunition in support of General Denikin's White Army than her whole expenditure during four years of war service with the Grand Fleet in the North Sea.

But British intervention came too late to serve any useful purpose. Denikin resigned in favour of General Wrangel in April 1920, and in the following November, Wrangel evacuated the Crimea.

The Civil War was over with the Bolsheviks in full control of Russia.

The book, which has maps and is illustrated with photographs,

THE GUNS OF NAVARONE

by Alistair MacLean

This new book by the author of *H.M.S. Ulysse* is the story of Captain Mallory, a skilled saboteur and trained mountaineer to whom fell the task of leading the small party detailed to scale the vast, impossible precipice of Navarone and to blow up the guns there. . . . 17/6 (post 1/-)

GRAF SPEE

by Michael Powell

Michael Powell has written not an historical document but the story he was inspired to write when directing the film, *The Battle of the River Plate*. All the information in this book has been written as accurately as possible. . . . 22/6 (post 1/-)

U-BOAT KILLER

by Capt. Donald MacIntyre

The story of four years of fighting convoys through the U-boat wolf-pack blockade in the Atlantic. Captain MacIntyre, who was known as "Bulldog Drummond of the Atlantic," retired from the Navy last year having three D.S.O.s and a D.S.C. to his credit. . . . 20/- (post 1/-)

COCKLESHELL HEROES

by C. E. Lucas Phillips

Entirely authentic in all its details, this inspiring book has been devoted to the daring and spectacular raid by a tiny force of canoes on German cargo ships in Bordeaux. The men who escaped after the raid tell of the fortitude and loyalty of those who fell into enemy hands. . . . 20/- (post 1/2)

ARK ROYAL

by Kenneth Poolman

Also the author of *The Kelly*, Kenneth Poolman now brings through the eyes of its crew the moving story of the battle ship *Ark Royal*, from the time she was launched in 1937 till November, 1941, when she was eventually sunk by torpedo when she was within sight of Gibraltar. Illustrated. . . . 22/6 (post 1/-)

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by Erskine Caldwell

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provides an interesting sidelight on one unfamiliar aspect of the work of the Navy in the two years after the First World War.

"TAFTRAIL."

LOST AT SEA

Posted Missing, by Alan Villiers; published by Hodder and Stoughton (U.K.).

Alan Villiers needs no recommendation as an author of the sea and in this new book of his the authentic touch is as evident as ever.

He has been investigating the stories of some of the ships which in recent years have been posted as missing at Lloyd's, and the result makes this new book of his one of the most interesting he has written.

Of themselves, in their bare essentials, these mysteries of the sea are enough to whet anyone's curiosity; in the hands of Mr. Villiers they come vividly to life with the authentic roar of the sea.

He has evidently spared no pains

to discover the ultimate truth so far as it will ever be known, and in doing so he has brought the touch of authenticity to each story as he tells it.

There is sadness with the mystery, for the loss of any ship is sad.

Posted Missing is enthralling; as moving a tale of the sea as any that Mr. Villiers has yet written.

His expert style clothes the many episodes which he relates with the touch of the master, making of them all small gems of maritime writing. M.S.

THE ARAB LEGION

Bedouin Command, the Arab Legion 1953-56, by Lieutenant-Colonel Peter Young, D.S.O., M.C. and two bars; published by William Kimber (U.K.).

Sitting astride the fence which separates the Baghdad powers from the latest vassals of Russia, the kingdom of Jordan is now in a key position in world affairs.

The author commanded the 9th Regiment of the Arab Legion from March 1953 until March 1956—the month in which all British officers in positions of command left the Arab Legion.

His book is a personal tale of the regiment and its part in incidents both international and internal during that period.

The author sets a brisk pace throughout but dallies here and there to paint a picture of life and affairs in Jordan.

As a result, the reader gets a sound idea of the country and its people which is strengthened both by Major General Glubb's preface and by the short but informative note on the tribes which finishes the book.

This is a very readable, authoritative and attractively printed book with maps and excellent photographs.

It also contains a good deal of impish humour. J.H.



MARITIME NEWS OF THE WORLD

From our Correspondents in
LONDON and NEW YORK

By
AIR MAIL

World merchant fleet at record size

According to Lloyd's Register of Shipping the world merchant fleet at the end of 1956 was the largest in history.

The new record is due primarily to the biggest annual gain in new tonnage recorded in any twelve month period except for the World War II years and the building boom of 1920-21.

The 1956 increase in world merchant tonnage amounted to 4,632,000 gross tons, placing the total size of the world merchant fleet at over the 105 million ton mark.

This huge fleet is composed of 29,375 dry cargo ships aggregating 76,989,000 tons and 3,677 oil tankers of 28,211,000 tons.

Huge tanker to be built in U.S.A.

The world's biggest tanker, of 106,500 deadweight tons, is to be built in America, according to reports from London.

Its tanks will hold 34.5 million gallons of fuel—more than all Britain's users now get in a week.

It will have the unprecedented draught of 49 feet when loaded—too deep for it to use either the Suez or Panama Canals.

The tanker has been ordered by the Greek shipping magnate, Mr. Stavros Niarchos.

It will cost about 25 million dollars (£11,150,000).

The tanker will be 940 feet long, with a beam of 134 feet.

Its twin screw, 43,000-horsepower engines will give it a speed of more than 18 knots.

The London "Daily Mail" says that the tanker's 49 feet draught is deeper than that of either of the liners *Queen Mary* or *Queen Elizabeth*.

Vast crack in ocean floor

A Columbia University (U.S.A.) scientist has stated that there is a continuous 45,000-mile undersea crack in the earth's surface, about 25 miles wide and more than two miles deep.

The scientist, Dr. Maurice Ewing, is director of the university's Lamont Geological Observatory and a leading authority on ocean floors.

Most marine earthquakes occurred along this crack, which was caused by tremendous pressure that pulled the ocean floor apart.

Dr. Ewing said the discovery grew out of a chance observation by one of the university's map-makers, Miss Marie Tharp.

"She noticed that the deepest rifts in mid-Atlantic formed the locality of an oceanic earthquake belt," he said.

"We became convinced that the undersea rift mountains and valleys formed a world-wide system.

"The main line extends through the North and South Atlantic Oceans, around the tip of Africa into the Indian Ocean, then branches through the Arabian Sea, connecting with the famous African rift valleys, long studied by geologists.

"The other branch passes between Antarctica and New Zealand, running toward the Macquarie Islands into the Pacific Ocean, where it again branches near Easter Island.

New electronic fish detector

The Radio Corporation of America has given details of a device which finds fish electronically.

The 26 lb. fish-finder is designed to ferret out anything from sardines to whales, in depths up to 500 feet.

It uses an indicator scope and a transmitter-receiver unit to give the fisherman a continuous picture of fish activity under his boat's keel.

It does this with short, focused, ultrasound impulses transmitted downward through the water.

Fish which interrupt the sound

waves are projected as "blips" on the indicator scope.

Drop in Australia's fishing catch

Production of fish, crustaceans and molluscs in 1955-56 totalled 102 million lb. (landed weight), valued at £A9.5 million, the Australian Dept. of Primary Industry has announced. This was a decrease of 8.1 per cent. in weight compared with the previous year.

Adverse weather conditions and a decrease in the number of fish trawlers operating from Sydney are thought to be major factors causing the lower catch.

Total production in edible weight was about 43.8 m. lb.

Consumption per head is estimated at 9.7 lb., including imports.

A total of 32.5 m. lb., worth £A9.5 million, was imported mainly from Japan, the U.K. and Norway.

Exports amounted to approxi-

mately 3.4 million lb., valued at £A2 million, of which £A1.9 were derived from crayfish exports, in addition to exports of whale products, £A1.7, and pearl shell and other shell, £A1.6 million.

The number of fishing vessels was 10,570, an increase of 344 over 1954-55. The number of licensed fishermen rose from 19,880 to 20,815. This figure includes, however, amateur fishermen and it is certain that the number of professional fishermen is considerably smaller.

Brighter outlook on oil stocks

Britain's oil and petrol supplies, severely cut by the Suez blockage, improved last month.

Lord Mills, Minister of Power, in a statement in the House of Lords on February 20, announced that the position had improved in recent weeks.

He said the Government was assuming that a further period of rationing would be necessary for petrol, but it intended to remove controls as soon as practicable.

Supplies of fuel oil indicated that restrictions could be limited to their present level throughout April. Restrictions on gas-diesel oil are to be reduced so that cuts will be 10 per cent. for industry and 25 per cent. for non-industrial central heating from April 1.

The restriction of 10 per cent. on agricultural and fishing supplies is to be abolished.

U.K. still leads in merchant tonnage

The U.K. merchant fleet (19,546,000 tons) is still the largest operative fleet in the world.

In the year ended last July it expanded by 189,000 tons.

If the expansion of fleets in the rest of the British Commonwealth is included, the total Commonwealth fleet grew during the year

by 325,000 tons to 23,556,000 tons.

Britain's tanker fleet also exceeds any other country's.

The U.K. tanker fleets expanded by 88,000 tons to 5,349,000 gross tons in 1956.

Matson ships have roll stabilisers

The new Matson liners *Mariposa* and *Monterey*, now on the Australian run, are the first American vessels to be equipped with Sperry Gyrofans, electronically-controlled stabilizers, which reduce sea roll.

They are also the first to be equipped with hydraulically-operated hatch covers. These hatches open and close at the touch of a button, enabling one man to do in a few moments a job which with conventional hatch covers requires a crew.

Big salvage job by Japanese

More than 250 Japanese warships sunk off New Britain and New Guinea will be salvaged by the Nanyo Boeki Kaisha Salvage Company.

Press reports from Tokyo quote a company spokesman as saying that a group of salvage operators would start in April.

The spokesman said that Japan received permission last October to salvage the ships.

He estimated that more than 860,000 tons of ships were sunk off New Britain and New Guinea during the war, and that a salvage crew of 122 could recover about 100,000 tons of scrap within five years.



THE NAVY

Eye-witness account

OPERATION "MUSKETEER"

By Newell Hall

Naval Correspondent of the London "Daily Telegraph"

ON my desk lies a copy of the *Ocean News*. Don't be misled by the high-sounding title, for this is the magazine of the Training Carrier *Ocean*. It is a modest effort of typewritten reports and doggerel verse, all having a bearing on the part played by the ship and all in her during Operation "Musketeer" at Port Said.

Perhaps the *Ocean News*, being turned out for the information and amusement of everyone on board while the events were happening, is properly a semi-official organ and thus comes within the category of classified publications. I will take a chance. . . .

To my mind this little magazine is an historic document. The cheerfulness, matter-of-fact courage and devotion to duty reflected in its pages give an illuminating "inside" glimpse of the Royal Navy's men at work during a particularly critical postwar period. How critical is suggested by Rear Admiral (now Vice-Admiral) G. B. Sayer, C.B., D.S.C., Flag Officer Training Squadron (the *Ocean* is his flagship), in a foreword.

"I cannot recall a period in recent history," he writes, "when right and wrong were so difficult to identify through the smoke screens of propaganda and international intrigue."

On this occasion Admiral Sayer was flying his flag in the carrier as Flag Officer, Helicopters. As such he directed a most important phase of the seaborne assault.

So much has been written and said about the preliminary Anglo-French air attacks, the naval bombardment, the landings and build-

up, the subsequent salvage work in the Canal and what happened in Port Said after "Musketeer" that I here propose only to describe, as far as possible, what I myself saw during a three weeks' visit to the Port Said area.

I was on board the *Ocean* during the assault and landings, and when the carrier returned to Malta, transferred to H.M.S. *Forth*, which was in Port Said Harbour. There she was acting as a headquarters and communication ship.

First, I must pay a tribute to the officers and men in the 100-odd ships, large and small, involved in the Operation. Their task was difficult and frustrating, mainly because of over-riding and ill-defined international political considerations. Always they felt that the job was really worthwhile, but often many thought that Britain's case was being allowed to go by default. Notwithstanding daunting factors that were none of their making, the bearing of officers and men was exemplary throughout. Morale was high. Frequently one admired the restraint they showed under the most provoking circumstances. This was true of the Army, too. Duties, often dangerous, were discharged with quiet efficiency and cheerfulness.

The Navy of to-day, in so far as its personnel is concerned, is all right.

I joined the *Ocean* just before she sailed from Malta. The ship was crowded with forces of all three fighting services; in addition to an augmented ship's company, there were embarked part of 45 Commando, 215 Wing of the

R.A.F. and the Army-R.A.F. recently formed Joint Experimental Helicopter Unit consisting of six Sycamores and six big Whirlwind aircraft.

Incidentally, this was the Unit's first public appearance and its first real operational test in a carefully planned campaign incorporating the new technique of seaborne assault. We were a mixed company but a united one, especially when off duty in the wardroom!

The *Ocean* and *Theseus* are not only training units. They are useful carriers-of-all-work. Among their roles in "Musketeer" were those of helicopter carriers and, later, hospital ships. Actually the combined Anglo-French force included five carriers. Three of them, the *Eagle*, *Albion* and *Bulwark*, we never saw, for they were operating as a separate support and assault group "somewhere in the Eastern Mediterranean." In close company with us was the *Theseus* only. While we were steaming towards the area in the convoy of supply and troopships from Malta, a second convoy was shaping a course from Cyprus. This one consisted of all the assault craft and minesweepers.

The timing of our meeting was excellent. In the dark hours of 6th November we dropped anchor some miles off Port Said in channels previously swept. At first light I saw a big array of ships ranged in columns in the two buoyed channels. To port, off the eastern area of Port Said, were the French warships. Prominent among them was the battleship *Jean Bart*.

The brief bombardment went

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entirely according to plan. From the *Ocean*, which was lying about eight miles out, I saw the destroyers steaming past us in line to take up firing positions close inshore. Among them I observed the "Daring" ship *Duchess* speeding ahead with her 4.5 inch guns ready for action. Immediately before the shooting began a signal was sent to all bombarding ships that no guns larger than 6-inch were to be fired. This, of course, eliminated the main armament of the cruisers.

The orders were explicit: fire was to be concentrated on the beach and strictly military objectives. The utmost care was to be taken not to damage the town itself or to endanger more than was absolutely necessary the population of the port. Despite any reports to the contrary, the Navy "leaned over backwards" to avoid wanton damage. The accuracy of the fire could be judged when we went ashore the following day. The town itself suffered little damage. A drenching fire was directed towards the beach and there huts containing military equipment were destroyed. Some

damage was also caused in parts of the adjacent Arab "town" where there was opposition.

At 0645 the first assault craft touched down, and as soon as the beach-head was secured we began to fly 45 Commando ashore as initial reinforcements. For the next few hours I watched from the *Ocean's* bridge naval history being made, as the helicopters on our flight deck rose at three or four minute intervals and made off shorewards. Each Whirlwind was loaded with ten cheerful commandos carrying full fighting equipment; each aircraft was so loaded, in fact, that one man had to sit in the open doorway with his legs over the side. Within about 70 minutes every commando on board had left the *Ocean* and parachuted on the objective. The subsequent "Well done" signal from our Commanding Officer, Captain I. W. T. Beloe, D.S.C., R.N., was indeed well earned.

Later, Captain E. F. Pizey, D.S.O., R.N., who commanded the *Theseus*, described in a letter to the Admiralty the helicopters' performance as a "wonderful job." So it was.

They had made a rapid build-up possible. Undoubtedly they showed us something of the shape of things in the new pattern of seaborne assault. From that day's doings it was evident that the light helicopter carrier is here to stay. In certain circumstances, particularly in landings where the opposition is negligible, a vital role is assured for this type of aircraft and its floating base.

Once their original mission was over the helicopters began to bring back casualties on their return trips. These casualties were mercifully light, and by the end of the day some 35 were on board. On 6th November our J.E.H.U. flew no fewer than 193 sorties. With their remarkable manoeuvrability the helicopters enabled our two carriers to be used as forward casualty clearance stations and to act as hospital ships. The helicopters worked with a speed and precision not to be expected of boat transport. So efficient was their "shuttle service" between ship and shore that one wounded commando was back on board and receiving medical attention 20 minutes after leaving the ship!

The *Ocean's* contribution to the landings was completed before noon.

At sunset we steamed into the Outer Harbour and secured among other warships. It was an entry I shall not forget.

One of the original Suez Canal pilots, a retired R.N. Commander, was on the bridge. The sun was setting over the desert and I remember noticing a clump of distant palms silhouetted against the red glow. The redness came not only from the sun, however. In the port, fires were still burning. The town was overshadowed by a great, trailing plume of black smoke rising from a blazing oil tank some miles inland. I learned later that this had been fired by attacking aircraft. It was reported

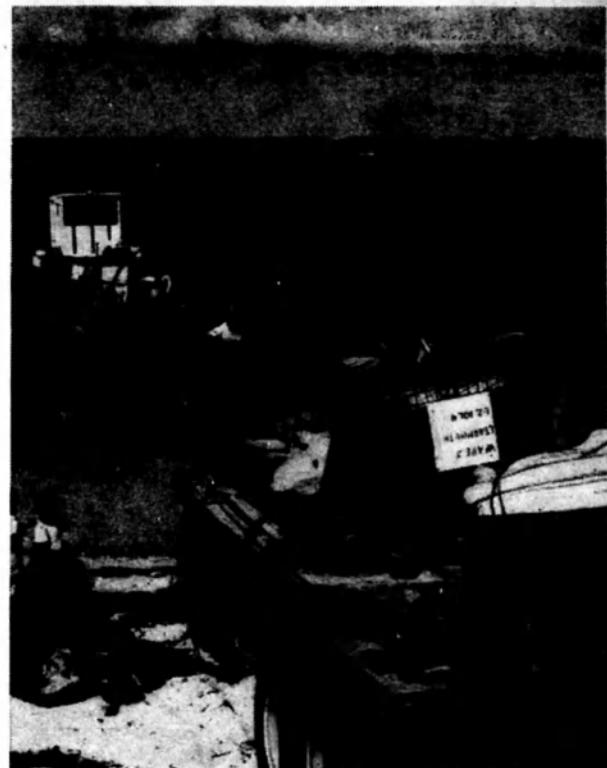
to have been hit when they engaged Egyptian tanks alongside.

As we secured, the ships were illuminated, for darkness falls quickly in these parts. Among the assembly I noticed the big French hospital ship *La Marsellaise*, with white hull and superstructure and with red crosses on her sides. Lying between two transports she dominated the crowded harbour.

After transferring to the headquarters ship *Forth* the next day, and watching the *Ocean* sail out of the Harbour to return to Malta, I went ashore. Though the "cease fire" had officially become effective an uneasy peace brooded over Port Said. The town seemed to be little damaged. Near the beach, however, some buildings bore scars of the bombardment. There were holed walls, and in the part of the town near the beach, a deal of broken glass and other rubble. Some of this damage had been caused when the troops encountered snipers after the landing. Armed guards patrolled the streets and stood at crossings, and dust rose in clouds in the hot sunshine as army transport recently put a shore passed to and fro. In some of the vehicles sat an officer with drawn revolver and a soldier with a Sten gun. No chances were taken.

I recall one incident typical of the uneasy atmosphere in those first hours ashore. The Casino Palace Hotel, an imposing building at the north end of the town and a few yards from the quay, was being used as a field hospital for Egyptian casualties, and here Army and Royal Marine doctors and their staff were at work. I was chatting with army doctors on the damaged balcony when shots were heard. They seemed to come from somewhere under our feet.

"That," said a doctor, "was a sniper in one of the cellars. Last



OIL SEARCH ON HISTORIC DIRK HARTOG ISLAND.
Dirk Hartog Island, 600 miles north of Perth, is the latest area in the search for oil in Australia. This picture shows supplies being unloaded at the island from a landing craft.

night we locked him in and he has just told us that he is still there."

Meanwhile, in the Harbour the Anglo-French salvage team was hard at work. Within hours a temporary channel had been cleared through the wrecks to allow the passage of tank landing craft and other small vessels carrying food and supplies for the population. Quickly a survey was completed by echo-sounding equipment and cables dragged between salvage vessels.

On 23rd November a second channel into the Canal was

opened, a channel at least 24 feet deep. Within this channel another was soon available, this being 36 feet deep and at least 240 feet wide—deep enough to admit ships of 15,000 to 20,000 tons. All this was done before the U.N. authorities took over.

I saw the salvage ships, the vast majority of which were British, at work day after day from dawn to dusk, and at night by the aid of their deck lights.

It was a splendid effort. The salvage crews achieved results which will long remain a record.

—From the London "Navy."

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THE JAPANESE FLEET

From a Special Correspondent in London

TO cast back over 30 years and I recall ships scrapped under the Washington Treaty may seem rather jejune in these days of guided missile carriers and atomic submarines, except that the battleship, although obsolete, still retains its appeal to most of us.

We like to know as much as possible about the fleets of our former enemies, especially the Japanese; and because very little was ever published about their huge capital ships destined for service in 1927 a perennial question has been "Do you think we shall ever know what the Kaga and Amagi would have looked like?"

So far inquiries at the Navy

Office have been fruitless — all records were destroyed by fire and bomb—but recently the Mitsubishi Shipbuilding Co., through the courtesy of Mr. Shizuo Fukui, former Constructor Lieutenant, I.J.N., have sent me their official record of warship construction containing sketch plans and data of these ships, from which the accompanying drawings have been prepared.

But before going on to describe them it may be of interest to recall the circumstances which brought about their short span of life—the origin and results of the Washington Treaty.

In 1916, before the Battle of Jutland and been fought, the American Senate—whose conception of the Freedom of the Seas differed considerably from our own — brought in a huge ship-building programme which included 10 battleships and six battlecruisers and encouraged the glowing vista of an incomparably stronger navy than ever before which was ultimately to give the U.S.A. the largest war fleet in the world.

The "Indiana" class battleships were to be of 43,200 tons, steaming at 23 kts. and carrying 12 16-in. guns, while the six "Lexingtons" of 43,500 tons mounted eight 16-in. and were designed for 33.25 kts. — both types vastly superior to our "Warspites" and "Reveniges" and a couple of thousand tons bigger than the Hood.

On the other side of the Pacific the Japanese Diet replied to this outburst of Big Stick politics by adopting the "Eight-eight" programme in 1916-17 which was to provide for eight battleships and

eight battlecruisers, not to exceed eight years in age, and the last to be commenced in 1923-24. But, as the two "Fusos" and two "Hyuga" battleships and four "Kongo" battlecruisers would have passed the age limit by 1924, a supplementary scheme providing for four battleships and four battlecruisers to be completed by 1927-28 was to fulfil the objective.

Of the first eight, two battleships, the Nagato and Mutsu, were to carry eight 16-in. guns and the Kaga and Tosa 10 — both inferior to the Americans in armament; but the "Amagi" group of battlecruisers were to have ten 16-in., although slower than the "Lexingtons."

To follow them came a further group of four ships of the "Kii" class with the same armament and to complete the programme a fifth group of monsters mounting 18 in. guns.

So much for Japanese rivalry. But in addition, we were also on the list of America's potential enemies, and Admiral Plunkett was not alone in the Big-Navy Washington group who spoke of war with Britain as a definite future possibility.

And so in 1921, when 16 mammoth ships were on the stocks in America, and Japan had started work on eight and authorised eight more, Parliament voted four battlecruisers as a first instalment of what was to be a big replacement programme. These were to carry nine 16-in. guns, and to be followed by two groups of battleships mounting nine 18-in.—which would quite outclass anything America was building or could build.

When particulars of the latest British and Japanese designs became known in the States there was a nasty shock for the big-navy interests who had acclaimed the golden age of American sea-power. They had to face the unpalatable fact that their new fleet, far from being predominant in force, was to be reduced to secondary rank after they had spent a prodigious amount of money.

Moreover, public opinion was now questioning the necessity for this great fleet, both on economic and political grounds. Naturally, the diehards wanted to lay down further groups of ships superior in tonnage and armament to the British and Japanese designs, but this could not be done.

Those building had been planned with an eye on the dimensions of the Panama Canal locks, which their breadth just allowed them to pass through. The necessary addition of a few feet would have made this impossible and, deprived of their greatest strategical asset to pass from Atlantic to Pacific, they would have had to double Cape Horn.

There was also another factor which weighed against this naval race. The declared American intention was to fortify Cavite in the Philippines and the island of Guam as bases for a full concentration of naval strength in the Far East.

This was regarded as a direct menace by the Japanese who did not propose to remain quiescent after the sacrifices made in 1904-5 to oust the Russians. There were to be no counterparts to Port Arthur and Vladivostok for American ships.

So while the Press denounced the exorbitant cost of the new ships and demanded to know why they were necessary and must inevitably lead to war, Washington was repeatedly advised through diplomatic and intelligence chan-

nels that Japan would regard the fortification of Cavite and Guam as a *casus belli*.

Thus, two courses lay open; either to complete the building programme and develop the naval bases which would provoke a war, or end this ship rivalry by agreement with Britain and Japan.

By 1921 opposition to the creation of the new fleet had become so marked that its construction was no longer feasible — as was subsequently admitted by Mr. Hughes, the Secretary of State who stated in effect "Naval Treaty or no Naval Treaty, we could not have built all the battleships contained in the programme."

And so the Washington Conference was held and resulted in the Treaty which, *inter alia*, led to the discarding of the "Indianas" and "Lexingtons" (two of the latter being completed as carriers) and the fourth ship Washington of the "Colorado" class; our four battlecruisers recently commenced and the subsequent battleships; and the Japanese ships from the Kaga onwards.

The Nagato and Mutsu are well known. They were modelled upon the Queen Elizabeth with two pairs of 16-in. guns fore and aft, 16 5.5-in. on the upper and main decks, and two upright funnels with the foremost close to the huge heptopodal foremast.

In service this structure caused considerable backdraught so that funnel exhaust interfered with the variety of fittings and instruments carried on its seven platforms. A cowl did little to relieve the trouble and later the funnel had to be trunked backwards well clear of the mast. Finally when reboilered in 1935-36 a single funnel was installed amidships, around which were grouped platforms for 25-mm. guns and searchlights.

Of the discarded ships the Kaga and Tosa were high-speed battleships laid down in 1920 and

launched a year later, which marked a tremendous rise in displacement to 39,000 tons.

Their dimensions were 715 ft. p.p. x 100 ft. x 30 ft. 9 in. with turbines of 91,000 i.h.p. to give 26.5 kts., and the outstanding structural feature of the design was an unbroken weather deck rising from a freeboard of 16½ ft. aft to 24½ ft. at the bows. This gave a hull of great girder strength with considerable saving of weight in the after half of the ship where high freeboard was not considered essential; but when the ships came to tuck their sterns down at full speed it meant that the quarter-deck would be easily washed under.

The main armament of 10 16-in. guns was disposed as in the U.S. Texas with 20 5.5-in. carried on the main and upper decks in batteries, and four 3-in. A.A. on the shelter deck amidships. The four sets of twin 21-in. torpedo tubes



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are shown as white ports in the forecable and below the raised turret aft on the starboard side and well abaft Y turret to port.

Such a gun disposition was in keeping with design about that period before secondary guns became dual purpose and spaced along the upper deck, and the A.A. armament was of no great import. So armed the two ships would have been the most powerful vessels afloat and their scrapping caused great heart-burning in Japan.

There was a huge "Nagato" mast and the uptakes from 12 small tube Kampon boilers were grouped into one large funnel raked aft for clearance—the first instance of any battleship built during the present century having a raked funnel. One can imagine what a sight they would have looked when it came to be trunked aft as would certainly have been necessary.

No details as to protection are available except that the side plating was inclined for the first time as in the *Hood*, but it would not have been less than in the *Nagato* with 14-in. amidships on the belt with 8-in. 14-in. ends, 16-in. turrets and decks totalling 7 in. Launch photos show a shallow bulge below the water line.

The *Kaga* was converted into a carrier, and in 1924 the hull of the *Tosa* was used as a target for torpedoes, mines, and large calibre shells before being sunk off the Bunga Straits. She provided much important material results for the great *Yamato* and *Musashi*.

Four battlecruisers, *Amagi*, *Akagi*, *Atago* and *Takao*, laid down in 1921, were designed to outmatch the *Hood* and *Saratoga*—and by a considerable margin. They ran to 770 ft. (p.p.) x 101 ft. x 31 ft. (some 40 ft. shorter and 4 ft. narrower than the *Hood*) for 42,100 tons normal displacement and carried 10 16-in. guns in

five turrets of which Q and X were mounted on the superstructure deck which housed 16 5.5-in. with four 4.7-in. A.A. on the forward shelter deck.

Here again we get the same flush deck rising forward with apparently the same freeboard as in the *Tosa*, although there appears to be a slight sheer right aft although not to the same extent as could be seen in the "Hood" and "Renown" class.

With 131,200 i.h.p. in front of the four screws, the designed speed was 30 kts. which, if my calculations are correct, would have made them wet forward.

No details of their protection have become available but, although both shorter and narrower than the *Hood*, the heavier guns and extra turret plus some armour along the battery as was customary in Japanese designs, would have resulted in a general scaling down of both horizontal and vertical thicknesses compared with the British ship.

The third group consisted of four battleships of the "KII" class which were very similar to the "Atagos" but with somewhat better protection and $\frac{1}{2}$ knot slower. Preparatory work on construction had commenced when the Treaty was signed and they would have been the first examples of the "fast battleship" which the Powers started to build when the Treaty period terminated—our "King George V" class, the U.S. "Washingtons," French "Dunkerque" and "Richelieu" classes, German "Scharnhorsts" and Italian "Littorio" class with speeds matching the former battlecruisers.

The fourth group of four battleships had been ordered in 1921 when all work on them was cancelled. The design had been completed in 1921 and they were to have been ready in 1927. Intended to outrange the "Massachusetts," and the battleships we

intended should follow the four battlecruisers of the 1921 programme, they were just enlarged editions of the "KIIIs" without the very original features which would have marked the British design.

Dimensions were 850 ft. p.p. x 101 ft. x 32 ft., giving a displacement of 47,500 tons. The four turrets each carried a pair of 18-in. guns (our ships would have mounted nine such) with an upper deck battery of 16 5.5 in. and four 4.7 in. A.A. As in the earlier ships there was a broadside of four 24 in. torpedo tubes—the weapon being that which served Japan so well in the last war. With 150,000 i.h.p. 30 knots was estimated, with much the same reduced freeboard.*

The outstanding feature in the design was the colossal funnel, raked as in the previous classes, indicating that all the boiler rooms would have to be grouped amidships. Assuming that the same type of Kampon boiler would have been installed, some 22 could have formed the generating plant compared with 12 of the later model for the same h.p. in the *Yamato*.

At this date we had discarded the secondary battery for upper deck turrets which would have appeared in the 1921 battlecruisers, with the machinery forward of the boilers so that the funnels were well clear of the control tower. Our 18 in. guns would have been in triple turrets and with a higher command and probably better protection.

Looking at these designs in their original profile, it is interesting to visualise the modifications they would have undergone by 1941 in the matter of funnels, secondary batteries, and A.A. armament—and what remarkable looking ships they would have become.

—From the London "Navy."
* For comparison, the "Tiger's" freeboard was 34½ ft. forward, 31½ ft. amidships and 19½ ft. aft.

For Sea Cadets

Saving Life at Sea

By B. Poirot-Delpech

"PREPARE your lifeboats," radioed the captain of the *Ile-de-France*.

"Prepare your own lifeboats," the captain of the *Andrea Doria* radioed back, "half of mine are useless."

This exchange of messages illustrates one of the most dangerous weaknesses of present international security regulations on the high seas. This summer witnessed a repetition of the sort of thing that has been happening for a century whenever an accident occurs at sea. Having taken a list, the Italian steamer was able to launch only half the lifeboats it was required to carry by current regulations. The only ones that could be brought into service were those on the listing side.

Even so, the *Andrea Doria* was lucky: the crew succeeded in disengaging the boats from the stanchions, to which they were stuck by paint, and lowering them into the water. In the history of maritime disasters, there are any number of examples of pulleys that refuse to work or of boats that are shattered as soon as they are put into the water.

Getting into the lifeboats is no less problematical. When the weather is very bad, the passengers are in danger of being crushed between the hulls, like insects crushed between one's fingernails; and often, even when the sea is calm, they are injured when jumping from the sinking ship. In fact, about twenty survivors of the *Andrea Doria* suffered fractures in this way.

Wooden lifeboats have another disadvantage. A certain amount of



One of the craft of the Volunteer Coastal Patrol cruising in Pittwater, Broken Bay (N.S.W.). The patrol comprises 35 vessels and 150 men and operates at week-ends.

seamanship is required to manoeuvre them. If the circumstances of the escape are such that a boat lacks an experienced sailor, there are bound to be errors, and the passengers are likely to grow panicky.

Although planes keep a respectful distance, they are no less threatened by the dangers of the sea than are surface vessels. They cannot, like ships, carry heavy safety devices, but need light and immediately usable equipment. After long research, a solution was found in the form of the rubber life raft.

It was not so much the development of commercial aviation but rather the requirements of combat

—plus improvement in vulcanization—that led to the creation of the new device. For strategic as well as humanitarian reasons, the British and American air forces were highly concerned with the safety of their pilots. It is harder to replace a navigator than a plane!

By 1943, the formula was worked out. The crews of bombers that would otherwise have sunk into watery graves came through safe and sound in their rubber dinghies. Hundreds of fighters were thereby saved from certain death. Without having to bother about navigating, they were able to wait, sheltered from the water and the cold, until their bright yellow ves-

sel was spotted. Supplied with sufficient food, they discovered that, all things considered, the sea was not so cruel after all. Man had finally hit upon a weapon against shipwreck.

It still remained to be proved, however, that such adventures could go on for several weeks without danger and that the sea could offer subsistence if supplies on board ran out. Such proof was offered in 1952 by Dr. Alain Bombard, who drifted alone across the Atlantic on a raft. Even before Bombard's experiment it was known that salt water could quench human thirst, however imperfectly. American aviators who had been lost in the Pacific had been able to hold out for two weeks by absorbing sea water. But the conviction that salt water drove human beings mad and caused death within a few days was so strong that nobody dared make a diet of it. Bombard, however, tried it for two weeks and lived for two months on nothing but what he could get from the sea. The experiment was biologically conclusive.

Psychological

It was even more conclusive psychologically. It proved that a man could survive at sea in a pneumatic boat for sixty-eight days. In short, the lone navigator had demonstrated that the sea is not lacking in food resources and that, however hostile it may be, it does not kill if one has no fear of it.

Fear! It is of fear that most shipwrecked persons probably die—and not only they. There is no lack of cases to confirm this.

Two years ago, an English railroad employee was locked by accident into a refrigerator car, on which were tacked signs saying that there was danger of death in remaining there for more than a few minutes. Assuming that the end had come, the prisoner took a

piece of chalk from his pocket and described his death throes on the walls of the car. Twenty-four hours later, he was found dead. He had written that he was losing the use of his limbs progressively.

To the amazement of the other employees, it was proved that the refrigerating apparatus had not functioned for a single moment! The unfortunate man had not died as a result of the temperature, but had been the victim of his imagination.

Fighting fear

However absurd this case may be, it is not unique. Many survivors of war and accidents know the damage that can be caused by terror when it inflates the fear of a man who is in danger.

The perfecting of the pneumatic boat and the systematic fight against fear are high points in the history of rescue at sea. Unfortunately, however, adoption of the new equipment has been slowed up by international administrative difficulties. It will take a world conference to modify the old London agreement requiring merchant ships to carry lifeboats suspended by block-and-tackle and it will be a long time before their charming silhouettes will disappear.

Most navies however, have begun to make progress. Experts the world over have been exchanging information and opinions as to what lifeboats should contain: broadcasting sets with a range of at least 700 miles, water-distilling apparatus, more and more concentrated rations, fishing equipment and signal devices.

As for the morale of future shipwreck victims, intensive efforts are being made to find new means of helping them to keep up their courage. Naval schools in all the great maritime countries have been giving special attention to the question, and are now frankly

tackling the problems of survival at sea after having avoided them superstitiously. Ship's doctors, hostesses and fishermen are being instructed in effective techniques—and in many cases spend a certain amount of time in pneumatic boats. Personnel who may have to deal with shipwrecked passengers are being systematically "vaccinated" against terror and are instructed in how to "immunize" others by contagion in case of accident.

Experts are now so certain that satisfactory equipment exists, and that fear is the chief danger, that they are giving their major attention to the perfecting of psychological weapons against despair. There has even been talk of including an extra radio and small musical instruments with the safety equipment. Books printed on plastic might also be on the list of "indispensable" items, along with fresh water and food. Some suggest the Bible, others works of fiction.

Several psychologists have recommended *Three Men in a Boat*. Obviously, there's a strong chance that some victims will have read it. But it is certainly the kind of book that can be read twice without losing the freshness of its humour — always an excellent remedy for doubts and terrors.

—From "World Veteran."

SEA CADET RIFLE COMPETITION

Southend Sea Cadet Unit of Southend-on-Sea, England, with a score of 783 out of a possible 800, were the winners of the first International Sea Cadet small bore rifle competition sponsored by the Navy League of Canada.

Royal Canadian Sea Cadet units Daerwood, of Selkirk, Manitoba, and New Waterford, of New Waterford, Nova Scotia, were second and third, with South Africa's St. Andrew's Unit, from Bloemfontein, only one point behind.

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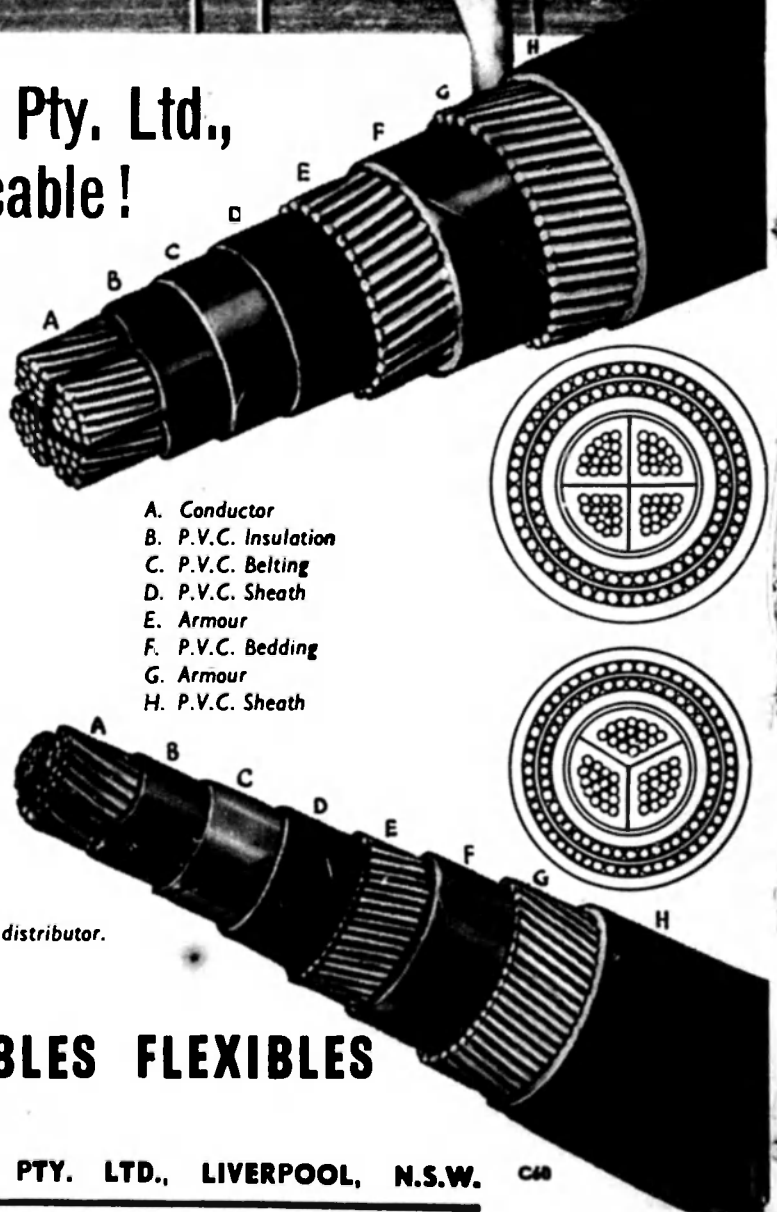
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