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A.C.B. 0233/43 (4)

SOUTH-WEST PACIFIC

# ANTI-SUBMARINE REPORT

SEPTEMBER, 1943

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SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

September, 1943

ANTI-SUBMARINE  
WARFARE DIVISION,  
NAVY OFFICE,  
MELBOURNE.

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ANTI-SUBMARINE REPORT

September, 1943

ANTI-SUBMARINE  
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SECTION ICOUNTER MEASURES1. REVIEW FOR AUGUST

Japanese submarines during August confined their activities almost entirely to the Solomons although a number of "supply runs" were made to the Lae-Salamaua area. Towards the end of the month, vague intelligence suggested that one or possibly two U-Boats were operating off the East coast of Australia.

Indications that Japanese submarines were moving north from the Solomons towards the end of July were borne out by the sharp decrease in enemy activity during August. Some successes had been scored against Allied warships in July, and an account of the torpedoing of H.M.A.S. "HOBART" appears in Section III.

It is probable that four submarines were destroyed during July, and not two as stated in the August report, but details of the attacks are still not available. No sinkings have been reported during August.

2. SNOWFLAKES

In the August Report it was stated that fire with snowflakes is to be opened immediately on sighting a U-Boat. This instruction applies only to merchant ships.

The decision as to whether or not escort vessels should fire snowflakes during operations "RASPBERRY" or "ZOMBIE" must rest with the S.O. Escort, who should inform the ships of the escort of his intentions before dark. He should take into consideration the size of the convoy, number of escorts and weather conditions when deciding whether the use of snowflakes by the escort would assist the operation or not.

Escort vessels should not hesitate to fire snowflakes to illuminate a submarine at very close range if this would assist ramming or gunfire.

The following factors should, however, be borne in mind:-

(a) The illumination will only be effective up to a range of a few hundred yards, especially on moonlight nights.

(b) The escort vessel herself will be illuminated.

(c) The snowflake is apt to dazzle own ship's personnel who should be instructed not to look directly at it.

The supply of snowflakes to merchant ships is proceeding. It is essential that the Masters of these ships should be conversant with the instructions laid down in Mersigs Vol. I Article 74. At convoy conferences, therefore, the S.O. Escort or Port A/S Officer, should make sure that the Masters do, in fact, understand these instructions.

C.S.W.P.S.F's 2009172 July refers.

The following extract from recent Admiralty report is interesting in view of the introduction of snowflakes in the South West Pacific Area.

"Much controversy has centred around the value or otherwise of snowflakes. The three previously undetected U-Boats exposed in the light of the burning "BRITISH DOMINION" shortly before midnight on January 10 seemed to prove that it is the execution rather than the principle that is at fault. The convoy did not use snowflakes."

### 3. OPERATIONS "RASPBERRY" AND "ARTICHOKE"

Convoy escorts have recently practised operations "RASPBERRY" and "ARTICHOKE" and their "Reports of Proceedings" indicate that valuable lessons were learnt.

On one occasion when operation "RASPBERRY" was exercised, four escorts were able to illuminate the area although they fired only two starshell each. Ships are apparently taking a keen interest in the new operations and exercises of the type which have been carried out will greatly enhance the efficiency of escort groups. Escorts may carry out the operations at any time, but the convoy should be given previous warning of the evolution.

### 4. CO-OPERATION WITH R.A.A.F.

The following are extracts from a Naval Board letter to the Commanding Officer of an A.M.S. commenting on points raised after a recent convoy.

"It is not considered necessary or desirable to brief escorting aircraft with the screening positions occupied by the ships of the escorts as this information cannot be accurately known to the Naval Officer-in-Charge (ships detached for hunting etc.) and inaccurate information would be more confusing than none at all. Furthermore, it is thought that a more general use of the identity letters "MC" (meaning "Middle of Convoy") would obviate the necessity for escorting aircraft being aware of the name of each escorting vessel and of its position. Naval Board's message 222H was accordingly originated to draw attention to this.

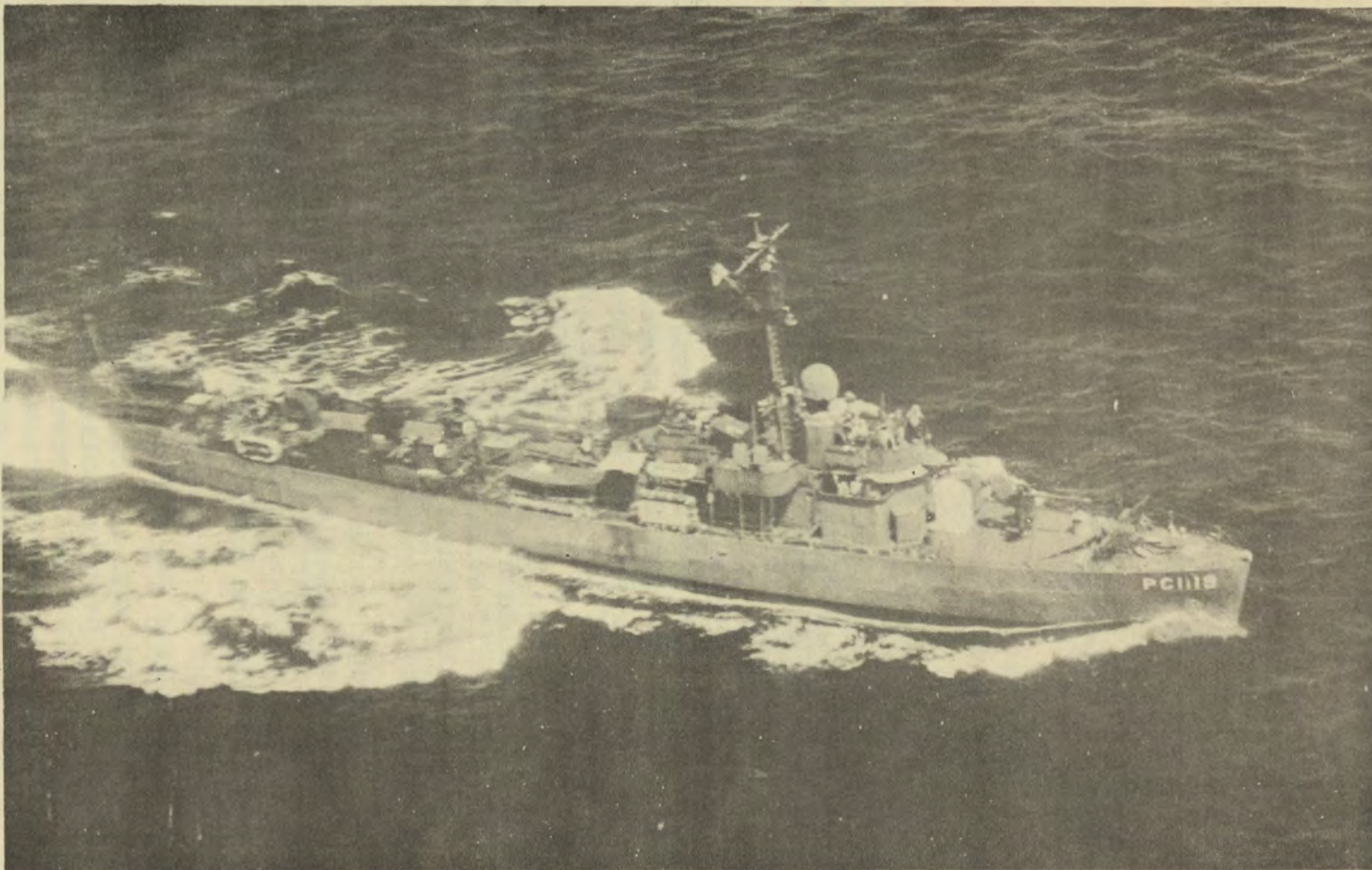
"The establishment of a common R/T wave for use between aircraft and ships has been constantly under review but it is not possible to implement any such scheme until new equipment becomes available towards the end of the year. Meanwhile, communications via the Convoy Reconnaissance Wave Guard are becoming increasingly efficient and should be quite satisfactory.

"It is not possible to allocate identity letters to all corvettes on this station and at the same time retain their self-evident form. Nor is it considered necessary for corvettes to possess identity letters, as positions should normally be expressed relative to the centre of the convoy, as indicated above. Should it ever be necessary to use a ship's identity letters, however, there is no objection to the use of the ship's name spelt out in full, providing security considerations allow. It must be remembered that identity letters are self-evident and therefore disclose the ship's presence to the enemy when used by W/T. (Note on Page 50 of B.R. 777 Naval Aircraft Code No. 2 refers).

"From your remarks on recognition it would appear that some aircraft are using the single star recognition cartridge instead of the two star recognition cartridge. Aircraft have since been instructed by R.A.A.F. Command to "make initial identification to the convoy escort by firing the appropriate two star cartridge" both by day and by night.

"Your remarks on the difficulties associated with visual signalling between ships and aircraft together with remarks received from other sources have been consolidated into a directive which will be issued shortly to ships and aircraft. It is hoped that by a more complete understanding of the difficulties experienced both in the aircraft and in the ship, combined with exercises and practice, a better standard will be achieved."

# U.S.N. ESCORT



An aerial photograph of a U.S. Navy "P.C." These escorts are similar in many respects to A.M.S.

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5. USE OF ILLUMINANTS BY AIRCRAFT

The following instruction has been promulgated by R.A.A.F. Command.

"Aeroplanes engaged in operations to seaward by night are not to fire illuminating cartridges or drop flares or any other such pyrotechnics within five miles of friendly convoys unless specifically requested to do so by the S.O. Escort or unless the escort itself begins illuminating an area with star shell or Snowflakes. In this case, the aeroplane should assist the escorts by dropping flares 3 or 4 miles outside the circle or sector of illuminants being fired by the escorts.

"If, however, an enemy submarine is definitely identified within five miles of a convoy, use may be made of illuminants, flares etc. to assist the aeroplane in carrying out an attack.

"The above instruction does not apply to the white and/or yellow Verrey cartridges which are to be fired over the position of any submarine detected by an aeroplane."

6. CONVOY ESCORT GAME

The Convoy escort game described below has been designed to exercise Commanding Officers of Escort Vessels and their teams in dealing with attacks on convoys. It has been played successfully in England and is recommended as an interesting and valuable means in improving efficiency and team work of convoy escorts.

The game can be played either in a ship or ashore, being organised on a day when several ships are in harbour.

Personnel required

<u>Control</u>	<u>Each Ships' Team</u>
Umpire	Commanding Officer
2 Plotting Officers	Plotting Officer
Time Keeper	Signalman (Yeoman or Ldg. Sig.)
Recorder	Telegraphist (R/T Operator)
2 Messengers	Time Keeper
	Messenger

The umpire is in charge of the organisation and progress of the game. Preparation is necessary in providing personnel and equipment and good organisation is essential.

#### The Game

The control plot should be situated in a convenient place such as the Ward Room or Captain's Cabin of a ship with separate nearby cabins for each of the ships' teams. Control personnel plot the movements of the convoy and their escorts and any hostile or friendly craft which may be introduced by the umpire. Individual ships' plotting officers keep their own ship and the convoy plotted.

Broadcasting arrangements are rigged to represent R/T. The microphone should be easily accessible to both umpire and ships' R/T Operators and R/T discipline should be enforced.

If the convoy is attacked the umpire broadcasts occurrences which would be observed by all escorts (e.g. rockets, snowflakes, burning ships, etc.). In the case of incidents affecting individual ships (e.g. Asdic or Radar contacts, the sighting of U-Boats etc.) the ship concerned is informed by chit.

The S.O. Escorts directs the movement of the escorts as he would at sea, individual ships reporting attacks, sightings etc. to him and keeping the umpire informed by chit of any action they are taking.

It is particularly important that ships should inform the umpire of all alterations of course and speed otherwise the control plot will be incorrect.

The umpire originates all contacts and sightings. A ship obtaining asdic contact will be given 15 minutes in which to hunt after which information will be passed as to the result (e.g. U-Boat destroyed, lost contact, non-sub etc.).

#### Preliminary to starting the game.

The umpire calls ships' teams into the control room explains the game and gives the following information.

- (a) Size of convoy
- (b) Course and speed of convoy
- (c) Position of Escorts
- (d) R/T call signs of escorts and Commodore
- (e) Convoy time at commencement of game
- (f) Friendly and enemy forces which may be encountered.
- (g) Policy regarding snowflakes for the night
- (h) Whether Escorts are operating Asdics
- (j) Any other information required

(a), (b), (c) and (d) could be drawn on a blackboard beforehand.

Ships' teams then return to their cabins make certain their plots are in order and stand-by. Once the game is started there must be no collaboration between ships apart from signalling.

#### To start the game

The umpire broadcasts: "Standby to start watches - 5, 4, 3, 2, 1 start! Watches were started at (2100)".

To avoid delay the umpire should have decided on the preliminary moves of an attacking U-Boat before the game starts. Having started the watches he can then place a U-Boat in position to fire torpedoes or in a position where it will be detected by A/S or Radar. Thus, he might start the ball rolling by broadcasting "Hullo Escorts this is Umpire. Two white rockets from convoy. Heavy underwater explosion. Time of Origin 2102."

The S.O. Escort should then take action e.g. order Operation "RASPBERRY" by R/T. Escorts proceed according to his orders, informing the umpire of alterations of course and speed and of any other action taken. The U-Boat is plotted as trying to escape either on the surface or submerged.

#### Time keeping

A wooden or cardboard clock dial can easily be made and is useful for keeping a check on convoy time. Watches may be stopped by the umpire whenever necessary (say every 10 minutes) to allow plots to keep up to date and to correct any mistakes.

While the watches are stopped convoy time will stand still.

#### Communications

R/T signals are to be written out for the R/T operator who passes them over the common microphone.

W/T - Enemy reports, etc., are to be written out, with the degree of security and indication of priority shown, and handed to the umpire.

V/S signals may be written and passed by message between ships, provided they are in V/S touch. One copy of each signal is to be passed to the umpire.

#### Termination of the Game

The game is terminated by the umpire when he considers that

no further value can be obtained from it.

The movements of escorts, convoy, and enemy forces are then to be marked clearly on the control plot, (e.g. with coloured thread) and ships' teams can gather round to discuss the tactics employed.

#### Equipment required

The following equipment is required, although a certain amount of improvisation is possible.

#### By Control

Large plot approximately 5' x 4'  
2 Pairs Dividers  
Protractors  
Parallel Ruler  
Ruler  
Pencils, Rubbers etc.  
Broadcasting arrangements for R/T  
2 Stop Watches  
Wooden Clock Dial  
Black Board  
Typed Chits  
S.W.P. Convoy Instructions  
Fleet Signal Book or A.V.S.B.

#### By each Ship

Plotting Sheet  
Instruments  
Signal Pad  
Stop Watch  
S.W.P. Convoy Instructions  
Fleet Signal Book or A.V.S.B.

#### SECTION II

### ENEMY ACTIVITY

#### 1. JAPANESE SUBMARINE ACTIVITY - MAP FOR AUGUST

See Appendix I at back of this report.

#### 2. ANALYSIS OF ENEMY SUBMARINE ATTACKS 1943

Month	No. of Attacks	No. of ships sunk	Tonnage	No. of ships damaged	Tonnage
JANUARY	4	1	2,047	2	17,398
FEBRUARY	2	2	11,988	-	-
MARCH	1	-	-	-	-
APRIL	6	5	24,996	-	-
MAY	8	2	5,359	1	5,832
JUNE	4	1	5,551	1	3,000
JULY	None Reported	-	-	-	-
AUGUST	None Reported	-	-	-	-

## 3. ANALYSIS OF CONVOYS - JULY, AUGUST

AREA	No. of Ships		Tonnage	
	July	August	July	August
Thursday Is. - Darwin	10	13	19,931	27,020
Barrier Reef - Brisbane	93	84	435,308	351,270
Brisbane - Sydney	71	71	298,922	271,324
Newcastle - Melbourne	156	140	585,618	516,462
Coral Sea	174	192	922,301	820,928
Arafura Sea	8	4	17,392	5,669
TOTAL	512	504	2,279,472	1,992,729

## SECTION III

NARRATIVES1. H.M.A.S. "HOBART" TORPEDOED

While operating with Task Force 74 off the New Hebrides on July 20, H.M.A.S. "HOBART" was torpedoed aft on the port side by what is believed to have been a Japanese submarine.

H.M.A. Ships "AUSTRALIA" and "HOBART" were screened by three U.S. destroyers, and were proceeding towards Second Channel, Espiritu Santo, at 23 knots. The Task Force was carrying out British zigzag No. 38, and was steering 115°.

Course and speed of the ships were requisite to carry out orders to arrive at Second Channel about 0630L on the following morning. The destroyers were fitted with U.S. Asdic equipment and "HOBART" had British gear type 132, but no ship was operating Asdics due to the high speed.

An alteration of course 20° to starboard was due at 1845, but a few seconds before this time, "HOBART" was torpedoed on the port side. The sun had set about an hour previously, and the night was dark but clear and starry.

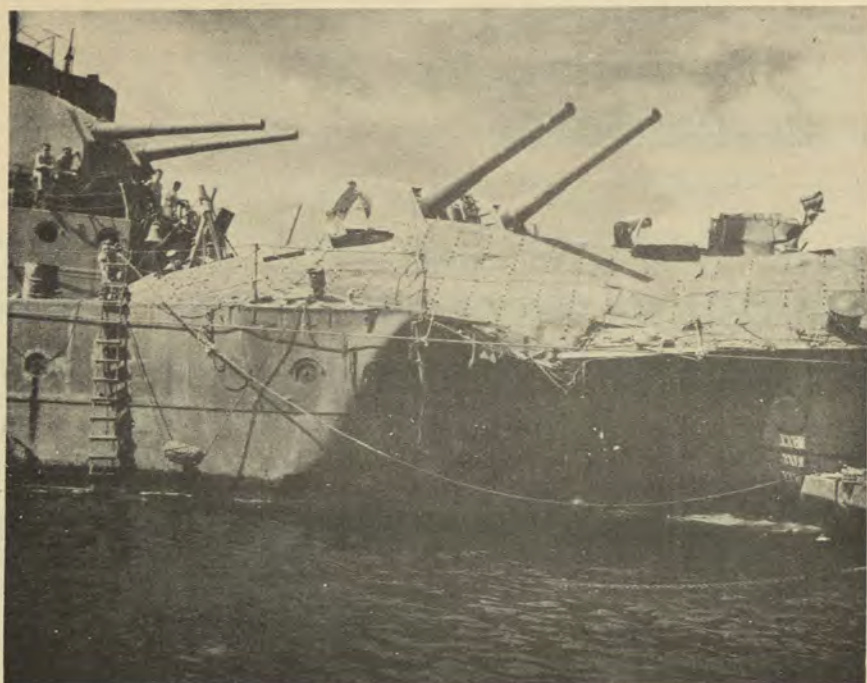
There were two separate "shocks", the first being a dull but heavy thud and the other the actual explosion. The force of the impact of the torpedo is strikingly borne out by the testimony of one rating.

"There was an explosion. I went up in the air. There must have been two explosions because when I was coming down I saw another rating pass me going up."

Some members of the crew stated that there were two flashes, one with each shock, and one flash, which was described as "bluish", may have been electrical.

A mass of water, smoke and debris was flung into the air, lights in the ship went out, and the cruiser listed about three degrees to port. "HOBART" turned to port and stopped. The steering gear had broken down, and the cruiser was steered by main engines when she began to move ahead again. Speed made good was about 8.5 knots and "HOBART" arrived at Second Channel about 0200L July 22, escorted by "NICHOLAS", "RADFORD" and "SAUFLEY". "AUSTRALIA" had proceeded to Espiritu Santo screened by "O'BANNON."

## DAMAGE TO "HOBART"



These photographs, taken at Espiritu Santo, show damage done to H.M.A.S. "HOBART" when she was torpedoed on July 20.

"HOBART'S" casualties were - four officers and three ratings killed, three officers and three ratings missing believed killed, one U.S.N. officer missing believed killed, three officers and one rating seriously injured and five officers and seven ratings slightly injured.

In spite of the fact that there was a noticeable time-lag between the initial thud and the explosion, there is no evidence of the torpedo having exploded inside the ship. It seems certain that the torpedo was near the surface when it hit, and the lifting of the quarterdeck is attributed to this.

All ships were fitted with efficient Radar, but no echoes were reported either before or after the attack. The submarine was not sighted.

"HOBART" may have been hit by the extreme left torpedo of a salvo. It is possible that the Task Force was sighted from a distance against the afterglow of sunset, and it is probable that the submarine underestimated the speed of the ships and that the remainder of the salvo missed astern.

## 2. DESTROYER - SUBMARINE "ACTION"

A Japanese Navy correspondent at a "Northern Base" broadcast this "account" of Japanese anti-submarine attack.

"This is a story from a Japanese destroyer swift in attack on an enemy submarine. On a certain moonlight night the crew of our destroyer, which was on patrol duty in northern seas, heard afar the thunder of firing guns. In order to ascertain what it was all about the destroyer sped towards the direction from where the report of gunfire came.

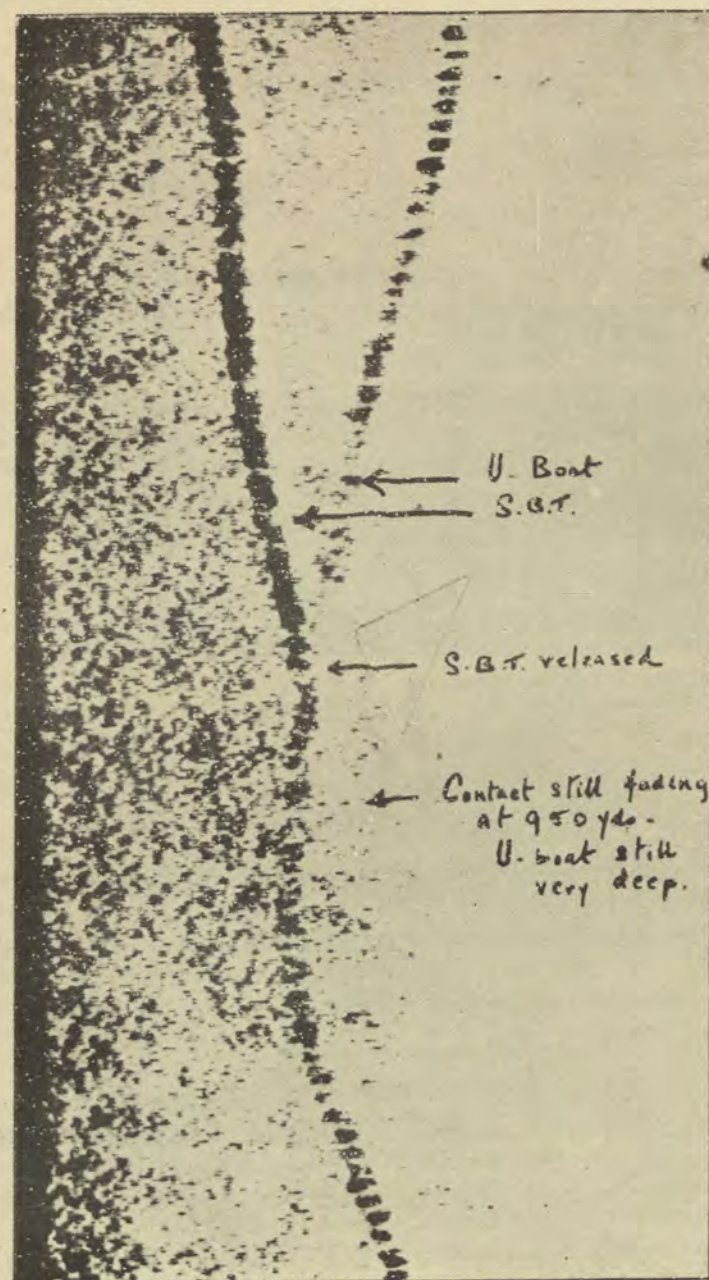
"Presently I saw a flare over the distant horizon, which tinged the dim sky a light crimson. As our destroyer approached nearer the scene it became clear that one of our fishing boats was afire. The fishing boats had been attacked by an enemy submarine.

"As our destroyer rushed to the scene in order to rescue the fishing boat, it sighted the enemy submarine still circling its victim. Fortunately the enemy submarine did not notice us. Presumably the attention of the crew members of the submarine remained on the ill fated boat. However as we sped ahead the enemy submarine submerged.

## SUBMARINE BUBBLE TARGET

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PLATE 3



This recorder trace shows the effect of S.B.T. The "non-sub" echo from the Bubble Target has no doppler and may be louder than the echo from the submarine. The U-boat usually tries to keep the S.B.T. between itself and the attacking ship.

"Our destroyer immediately released depth charges. They were followed by an explosion. Indicating that the enemy submarine was listing, the periscope also listed gradually, finally disappearing below the water."

3. THE DESTRUCTION OF "U 559"

The following account of the sinking of a German U-Boat is a good example of co-operation between aircraft and surface vessels.

An ASV aircraft obtained contact just before dawn and four destroyers were ordered to search. H.M.S. "HERO" intercepted the aircraft's W/T report, and estimated that she was only about 20 miles from the reported position, speeded to the area and began a square search. At 1220 she sighted the four destroyers approaching from the south west.

At 1234, 7½ hours after the original ASV "blip", an aircraft sighted the periscope of a U-Boat whose outline was clearly visible below the surface. Three Torpex depth charges set to 25 feet were dropped in a stick 20 seconds after the U-Boat had completely submerged in a position 50 feet ahead of the diving swirl. The aircraft fired 2 white Verrey's lights before the attack and these were sighted by "PAKENHAM" who was nearly 14000 yards away.

The destroyers approached at 31 knots, reducing to 15 knots when they reached the estimated nearest-on position. At 1246, "DULVERTON" made asdic contact with the U-Boat. The weather was fair, wind force 1-2 from the north west and asdic conditions were good. "PETARD" made the first attack at 1257 and then "DULVERTON" dropped a 10 charge pattern. After "PETARD'S" first attack oil was seen and the noise of escaping air was heard.

When "PETARD" was going in for her second attack a heavy explosion was heard, apparently under the ship. This was also heard by other ships, but no disturbance of water was seen although the asdic operator reported a hissing noise. A non-sub contact was then held, the U-Boat not being detected again until 1336 - 39 minutes after the original attack.

While "PETARD" and "DULVERTON" were making their attacks the two spare destroyers conducted a box search round the hunting units. When the attacking ships lost contact "PAKENHAM", on the western leg of her square search, re-detected the U-Boat.

"PAKENHAM" made two attacks, dropping 16 depth charges, and then "HERO" made an attack, but no results were seen. Between 1532 and 1638 four more attacks were made, 29 charges being dropped without evidence of damage to the U-Boat. Three more attacks were made, 26 charges being dropped and then "PAKENHAM", who had only 8 depth charges left, became directing ship.

She held contact for the remainder of the night, while six more attacks were made, 48 charges being dropped. At 2240 the U-Boat surfaced.

"HURWORTH" immediately illuminated it with her searchlight and both "HURWORTH" and "PETARD" opened fire with Oerlikon and Pom Pom, causing a number of casualties. "PETARD" was unable to depress "B" gun on a forward bearing and the ship turned away long enough to give the gun's crew time to fire one round. The shell, a 4-inch H.E., hit the base of the conning tower and burst after passing through. "PETARD" then went alongside the U-Boat which was down by the bows and a number of officers and men boarded her. Three officers and 11 ratings of the U-Boat's crew were taken prisoners.

The hunt lasted for almost 10 hours. Exactly 150 depth charges were dropped at depths varying between 150 and 600 feet, the 600 ft. setting being obtained by "PETARD" who used soap to reduce the size of the hole in the pistols. The U-Boat covered a distance of 30 miles during the hunt, but hydrophone effect was only heard on one or two occasions.

#### Conclusions

This battle was largely won by persistence. The U-Boat, however, did succeed in deceiving her attackers by the use of some form of Submarine Bubble Target, and it is surprising that although this attempt to evade attack was almost successful, the ruse seems to have been employed only once.

The spare destroyers were used to conduct a box search around the attacking ships, three ships being used as attacking, directing, and stand-by ships. It was one of the spare ships that detected the U-Boat after the use of S.B.T.

#### 4. H.M.S. "BARHAM'S" ATTACKER SUNK

The German U-Boat "U 331", commanded by Frieher Hans-Diedrich von Tiesenhausen who sank the British battleship "BARHAM" in November, 1941, was sunk in the Mediterranean last November.

von Tiesenhausen, who was interviewed at the Admiralty after his capture, is a fine type of man who speaks English fluently and has a keen sense of humour. He was modest when told that his attack on "BARHAM" was considered to have been a very fine exploit and was quite willing to give a description of how it had been achieved.

von Tiesenhausen said that "U 331" was on patrol between Sollum and Mersa Matruh when on the afternoon of November 25th he sighted the first battle squadron consisting of H.M. Ships "QUEEN ELIZABETH", "BARHAM" and "VALIANT" escorted by nine destroyers. The squadron was about 20° on his port bow and was zig-zagging at 17 knots. When he realised the identity of the ships he determined to attack at all costs and decided to take "QUEEN ELIZABETH" (who was leading) as his target.

He penetrated the destroyer screen at periscope depth, passing between the two leading destroyers, but found himself too close to "QUEEN ELIZABETH". He therefore fired his salvo of four torpedoes at "BARHAM" who was next in line and 600 or 700 yards distant.

The firing of the salvo at periscope depth caused "U 331" lose trim and she came to the surface only 150 yards on "VALIANT'S" port bow. The battleship had put her wheel hard a'port on seeing the torpedoes strike "BARHAM" and she was just beginning to swing. The wheel was reversed but "VALIANT" could not check in time to ram, and when she opened fire with her Pom Poms all the shots went over.

von Tiesenhausen sent every man who could be spared rushing into the bows, and after what seemed to him a very long 45 seconds he got his boat under control and dived. He was then only 50 yards from "VALIANT'S" starboard side abreast her bridge. He went very deep under the battleship and an hour later depth charges were heard exploding, but they were not close enough to do any damage.

von Tiesenhausen's triumph, however, was not what it might have been. He had heard three explosions, but did not know whether he had actually sunk "BARHAM". He went to Berlin from Salamas on returning from the patrol, but found that the secret had been so well kept that the German Admiralty was as much in the dark as he was. He broadcast a description of the attack, but was denied full enjoyment of his achievement for he could only say that he had certainly hit the battleship.

Whenever he was asked for information which might be useful to the Allies von Tiesenhausen smiled and told his questioners at the Admiralty "I will tell you that after the war."

GERMAN U-BOAT ACE

Freiherr von Tiesenhausen, who was awarded the Oak Leaves when he sank H.M.S. "BARHAM", was taken prisoner when his U-boat was sunk last November.

"U 331" seems to have spent most of her time in the Mediterranean. When "BARHAM'S" loss was announced on 27th January, 1942, von Tiesenhausen was again at sea engaged on an unprofitable patrol off Tobruk. Here his U-Boat became caught in the mud, and he only escaped by firing all his torpedoes and pumping out a large quantity of oil.

During April, after having been attacked by aircraft off Crete, von Tiesenhausen began a patrol on the surface off Beirut and sank two sailing ships as they came out. The next night he entered the harbour itself and fired a torpedo at a ship alongside the pier. The torpedo struck the ship, but did not sink it and "U 331" again patrolled outside. A few days later he shelled the electricity works at Beirut.

In the middle of September the U-Boat was back at La Spezia and would have stayed there for about two months for refit had not the departure of Allied convoys from Gibraltar hastened her sailing.

On November 7, accompanied by a "do or die signal" from Hitler, "U 331" left for the Algerian coast. There von Tiesenhausen sank a big U.S. troopship which was lying off a bay east of Cape Matafou. Next day, "U 331" was hunted for about 6 hours, but escaped by using Submarine Bubble Target.

Four days later, on November 17, an aircraft attacked from 9,000 feet and straddled the U-Boat with four depth charges as von Tiesenhausen tried to crash dive. The forward hatch was burst open and jammed so that water began to pour into the forward compartment, and one battery and the diesels were damaged, but von Tiesenhausen went ahead as fast as he could.

Another aircraft attacked soon afterwards, and her depth charges wrecked all the gauges and compasses and put the steering gear out of order. von Tiesenhausen ordered all who could be spared to come up on deck in case it should be necessary to abandon ship. Some of these were blown overboard by four depth charges which another aircraft dropped a few minutes later.

The 88 mm gun had been wrecked and von Tiesenhausen gave up the struggle. The aircraft reported the surrender and began to guide H.M.S. "WILTON" to the position. At this point someone started up the diesels and a Martlet aircraft, seeing the cloud of black smoke and thinking that the U-Boat was trying to escape, dived and machine gunned her. Worse followed in the shape of a torpedo from an Albacore which sank the U-Boat immediately. A number of the crew, including von Tiesenhausen, were picked up by "WILTON" who had seen the sinking but had been unable to prevent it.



## 5. DUTCH SUBMARINE SINKS AN ITALIAN U-BOAT

On February 9 1943, the Dutch submarine "DOLFIJN" was patrolling submerged off the Cagliari swept channel about 10 miles south of Cape Spartivento. Two small anti-submarine vessels were in sight.

At 1047 hydrophone effect was reported, the bearing being practically the same as that of the two vessels. Within a minute an Italian U-Boat, its ensign clearly visible, could be seen through the periscope about two miles away.

"DOLFIJN" went hard-a-starboard and steadied on an attacking course. At 1057, just as the director angle was coming on, the U-Boat altered course and "DOLFIJN" had to turn quickly 40 degrees to port and estimate the enemy's course and speed afresh. She had time, however, to turn back to starboard and fired a salvo of four torpedoes, set to 8 and 10 feet, at a range of about 2,5000 yards. Sea and swell were 12.

A glimpse through the periscope showed tracks - probably those of the first two torpedoes - passing close ahead of the Italian U-Boat, but, as the submarine had partially lost trim on firing and there was some danger that she might break surface, the periscope was then withdrawn. Two minutes after firing there was an explosion. Trim having been regained, the periscope was raised and a great smoke spout was seen rising from abaft the U-Boat's conning tower. She sank rapidly by the stern, disappearing after her bows had been standing almost vertically out of the water.

The U-Boat was afterwards ascertained to be the "MALACHITE". She had presumably surfaced in order to enter the swept channel leading to the U-Boat base at Cagliari. The small anti-submarine vessels, which were, no doubt, waiting to escort her in had the task of picking up survivors.

When they had done this they apparently dropped about 30 depth charges at distances reckoned to be between 2 and 10 miles from "DOLFIJN".

## SECTION IV

# INTELLIGENCE

## 1. JAPANESE U-BOATS

Great attention is paid to all details which would increase the habitability of Japanese U-Boats during long cruises distant from their bases in tropical climates. These include air-purifying, distillation of water and preservation of fresh provisions.

### Fresh Air

Air purifiers in the large "cruiser" submarines are switched on after 14 hours and the U-Boat can then remain submerged for a further 62 hours. The underwater endurance of Type 3 large-sea-going submarines is 63 hours, that of Type 4 is 56 hours, and that of the medium types is 52 hours.

Oxygen inside the U-Boat while surfaced is given as 20 to 20.5 per cent. In one hour's diving oxygen decreases by between .25 and .35 per cent.

### Fresh Water

The "I" Type 7 submarine can carry 24 tons of fresh water, and, with strict economy, consumption can be cut down to .8 ton per day. The smaller types use about .5 ton.

All types can distil from 5 tons (at full speed) per day in one of the larger types, to .7 ton in the RO-33 type.

The Japanese are not too happy about drinking distilled water and research is being carried out. The Japanese have always been very particular about the purity of their drinking water, and issue water purifying tablets to troops ashore.

German U-Boats carry very little fresh water, depending on their distilling plants which are apparently capable of producing very large quantities of drinking water. British and U.S. submarines also use distilled water when on patrol.

Apparently the use of distilled water (which has had all the salts removed from it) is considered harmful by the Japanese.

Provisions

These will last three months in U-Cruisers, two months in medium submarine and 20 days in the smallest type.

Large ice boxes are provided and great attention is paid to the efficiency of refrigerating plants.

Detecting Instruments

Effective range of model 93 hydrophones is, according to Japanese reports, 25,000 to 30,000 metres with a directional error of up to 2.8°. The "H.O" model has a range up to 40,000 metres, error 2.6°. The effective range for echo-ranging gear is given as 4,000 to 6,000 metres. It is considered that these estimates are optimistic.

Wireless

The table below shows probable maximum effective ranges for transmitting and receiving, in nautical miles.

SHIP		SHORT-WAVE		LONG-WAVE	
Transmitter	Receiver	Day	Night	Day	Night
Warship	U-Boat (surface)	2,000	4,000	1,000	2,000
Warship	U-Boat (submerged)	400	?	300	?
U-Boat (surface)	Warship	2,000	4,500 - 5,000	Data for these obscure	
U-Boat (surface)	U-Boat (surface)	2,000	1,500		
U-Boat (surface)	U-Boat (submerged)	300	-		
U-Boat (surface)	Aircraft	150			

Compressed Air, Charging.

The time taken to charge all groups completely from zero is about four hours. The K.S.M. model compressor can work up to a depth of 75 metres, the Kampon model up to 100 metres.

2. JAPANESE HYDROPHONE SYSTEMS

There are indications that the Japanese have hydrophone systems for use in vessels and for laying off shore near bases or focal points.

Hydrophone systems may be operated at considerable distances from shore and hydrophone may also be used from rowing boats or other small craft.

Submarines in such localities may expect to be liable to detection up to at least ten miles from shore even when proceeding dead slow and making as little noise as possible.

3. NEW "U-KREUZER"

A prisoner from "U 203" (which was sunk in the Atlantic by a plane from H.M.S. "BITER" and by the British destroyer "PATHFINDER") stated that he had seen a new large U-Boat known as the U-Kreuzer. He said that the boat had 3 deck guns, two mounted one behind the other forward and another aft. They were of the same calibre and may have been as large as 15 cm. A chamber forward of the conning tower gave direct access to the two forward guns.

Abaft the bridge was a double barrelled A/A gun and there were four machine guns on the bridge.

The prisoner said the conning tower was larger than that of other U-Boats.

4. COMPARISON OF ALLIED AND JAP. WEAPONS

"Although it is unwise to underestimate the efficiency and numerical superiority of enemy weapons in modern warfare, there is nothing worthy of special note", declared Lieutenant Colonel Kiyoi Chi Niime, a member of army ordnance headquarters, speaking over Tokio Radio recently.

He stressed the fact that Japanese armaments are made so as to possess a "unique" peculiar quality of their own" to suit the Japanese army and navy.

Referring to radio locators and sound detectors widely employed in the current war, Niime said: "These highly developed scientific war instruments are not monopolized by the enemy alone, but are being used effectively and extensively by our army and navy."

Lieutenant Colonel Niime admitted that Japan is not in a position to boast that the quality of its auxiliary weapons is superior to that of the enemy. He also admitted that the enemy's production of the supplementary arms at present is greater than Japan's.

He asserted however that "many war instruments have a limitation in their efficiency, especially when effectively interfered with and jammed by efficient counter-acting apparatus."

#### 5. JAPANESE EXPLOSIVE FLOATING BOXES

Japanese submarine have probably released some explosive floating boxes in the vicinity of 6° 50' S 150° 20' E. and 70° 22' S 152° 31' E to 7° 48' S 152° 23' E. It is possible that these boxes have been placed in other areas. A similar contraption was exploded recently when an aircraft approached to investigate.

#### SECTION V

### MISCELLANEOUS

#### 1. SWEEPING FOR MINES BY ASDIC

References are made from time to time in British A/S reports to the location of mines by the short transmission unit in the Type 128 set.

A short transmission unit has been fitted to the 128C set in H.M.A.S. "BUNGAREE" since shortly after commissioning and the following remarks are the result of the experience of two years.

In the large majority of cases the minefields laid by "BUNGAREE" have been shallow fields (depth 8 to 14 feet below chart datum), and none deeper than 60 feet. In all cases the minefields have been laid in water less than 50 fathoms (average 20 fathoms) and in most cases the fields have been laid in the vicinity of reefs or close to the land edges with a sea bottom variable in depth.

No minefields have been laid in a stretch of deep clear water.

On the completion of a lay, the operators have been directed on to the fields, and have obtained the ripple echo effect at ranges up to 1000 yards, but when not directed or forewarned the operators have not detected the presence of a minefield, either by normal transmissions or short transmission unit.

The principle reason for this failure to locate the minefield is the proximity of reefs, and another cause is the shelving bottom. The operators are not able to differentiate between the echoes.

It is quite probable that detection by Asdic of a minefield in deep clear water would occur, but there has been no opportunity to obtain this experience. The probability of obtaining echoes would depend upon the inclination of the line of mines.

#### 2. BERLIN'S SUBMARINE CLAIMS

Berlin radio last month made the following claims for

sinkings in the first seven month of 1943.

"German submarines have sunk 486 ships, totalling 3.1 million tons, between January 1 and July 31. Over 1½ million tons were sunk in the Atlantic, 400,000 tons off the American coast, 400,000 tons off the West African coast, 370,000 tons in the Mediterranean and nearly 250,000 tons in the Indian Ocean. Other sinkings occurred off South Africa and in the White Sea. Another 497,000 tons may be considered as lost in view of the heavy damage suffered by ships.

"German naval circles, commenting on the small tonnage of shipping sunk during July, stated that submarines have been re-fitted with certain technical additions and adapted for prevailing conditions, and have resumed their operations."

### 3. RECORD U-BOAT "BAG"

May was an extremely black month for enemy submarines. At least 24 were known to have been sunk, and the rate of destruction was probably at least one a day. Merchant shipping losses, on the other hand, showed a decrease to the second lowest monthly total for 1943.

The successes were attributed by the Admiralty to the stronger protection given to North Atlantic convoys by both shore-based and carrier-borne aircraft, and to the use of escort groups as support forces in dangerous areas. But these would have been of little avail without the efficiency and team-work achieved by the escorts as a result of training and experience.

The May victories were Allied in every sense of the word. British escorts destroyed four U-Boats, H.M. Submarine "TUNA" sank one and British aircraft accounted for 12 more. United States and R.A.A.F. aircraft sank three submarines each, a Czech aircraft destroyed another, and Brazilian planes assisted U.S. destroyers to sink "U 128".

By the end of the month U-Boats had lost much of their tenacity and daring, and the reason for this is not difficult to understand. A pack of about eight U-Boats attacked an Atlantic convoy during the first few days of May, and a fierce battle was waged throughout May 5 and 6, when, according to the official Admiralty report "it is possible that some 40 U-Boats were engaged."

The escorts' defence was broken, and eleven ships in the convoy were lost, but the enemy was vigorously attacked and retired beaten and badly mauled. The escorts had frustrated about 24 attempts to break through, and had destroyed six U-Boats.

Several other convoys were threatened in the first half of the month but no serious loss was suffered and the toll of U-Boats mounted steadily. After May 17 no ship was lost north of 45° N.

"To sum up", the Admiralty states, "it is probable that historians will note May, 1943 as remarkable in the Battle of the Atlantic in that aircraft and escorts defeated, at least temporarily, the pack attacks of U-Boats. This was achieved as much by superior leadership and tactics, quick initial action and well co-ordinated attack and defence as by concentration of forces at the decisive points and weapon superiority."

### 4. SMALL SHIP WITH BIG NAME

"DAISCHI TASUCHIKA MARU", a special wood and steel ship, has successfully completed her maiden voyage with a full cargo from Osaka to Shibaura, Tokio announced recently. The 300 ton ship is the first combined wood and steel type to be built in Japan by the Osaka Wood and Steel Shipbuilding Company.

### 5. TOKIO ADMITS LOSSES

Tokio Radio recently admitted that the Japanese forces have suffered greater losses than at any time in the past. "Twenty warships have been sunk and 30 damaged, 40 transports sunk or damaged, and 700 planes have been lost. Japanese observers, however, "noted that Americans are suffering four times as many losses as the Japanese".

### 6. MIDGET SUBMARINE OFFICER HONOURED

"The memory of the late Lieutenant Katsuke Iwase, a

member of the second Special Submarine Flotilla which daringly attacked Diego Suarez and Madagascar, will be honoured eternally when a bust of the late Lieutenant is unveiled shortly at Kuribakashi Park in Takamatou, the birthplace of the naval hero."  
- Tokio Radio.

#### 7. SOLOMONS - JAP. SUBMARINE'S STORY

A Japanese Navy correspondent speaking over Tokio Radio from a base in the South Pacific described how a Japanese submarine, which had returned to port, sank two enemy transports. The submarine was also credited with the discovery of a large enemy convoy heading towards Rendova Island.

The correspondent reports that "after 11 days of cruising near San Christobel Island the lookout reported six transports of 6,000 tons each escorted by 2 destroyers.

"The submarine proceeded to the attack immediately, scoring a direct hit on the leading transport. While the ship was still sinking the next in line went down bow first after having been hit by the second torpedo.

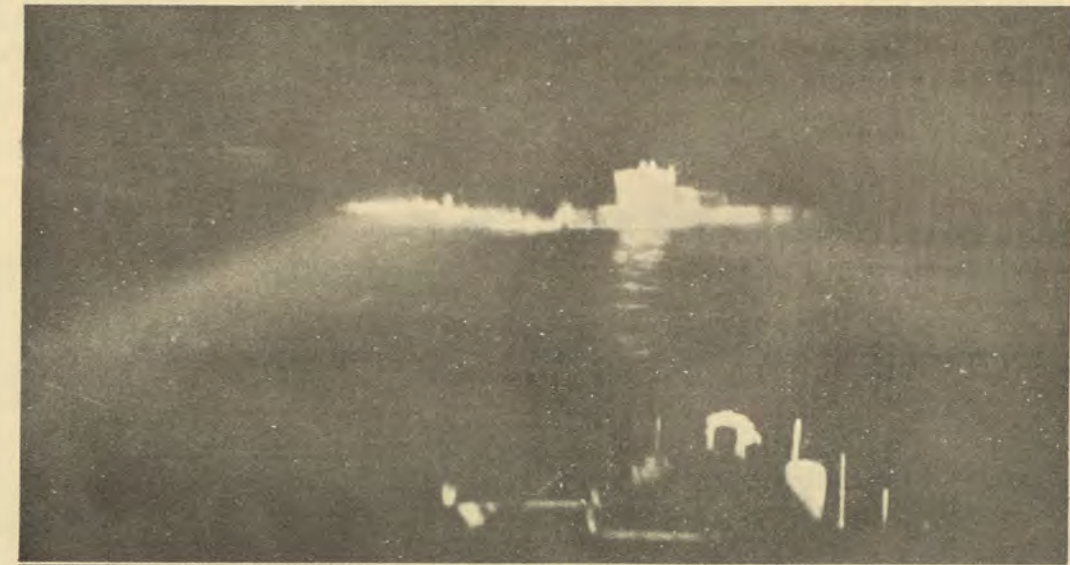
"A few days later the submarine sighted a large convoy going in the direction of Rendova. Information was passed on to the nearest Japanese base and early morning Japanese naval bombers launched a blitzkrieg on the enemy, sinking one cruiser, damaging another one and sinking or damaging 6 destroyers and 6 transports. Thus the enemy's efforts to reinforce Rendova completely failed."

#### 8. "BLIMP" SHOT DOWN BY U-BOAT

Berlin Radio broadcast the following account of the loss of an A/S "Blimp".

Concerning the previously reported sinking of the U.S. "BLIMP" type airship, further details received by Transocean from informed quarters reveal that the airship was employed in coastal and anti-submarine defence off the south coast of North America.

### ITALIAN U-BOAT SUNK



The Italian submarine "UARSCIEK" was sunk in the Mediterranean by H.M.S. "PETARD" and H.H.M.S. "QUEEN OLGA". The top photograph shows the U-boat illuminated by the attackers' searchlight. "PETARD" took "UARSCIEK" in tow (below) but the U-boat sank seven hours later.

"The airship, after dropping all its bombs, which failed to hit the target, brought its machine guns to bear on the German submarine. Shortly after machine gun fire had been opened the airship was hit by a shell fired by the submarine and crashed into the sea completely wrecked. The submarine, which was undamaged, continued its journey."

#### 9. AIRCRAFT VERSUS U-BOAT AS THE NAZIS SEE IT

The following article written by the Engineer Officer of Adalbert Schnee's U-Boat, appeared in the "Berliner Lokal-Anzeiger."

"It is difficult for U-Boats in the Mediterranean because the narrow coastal stretch is easily protected by aircraft. Aircraft are our most dangerous enemies. They appear unexpectedly during the day or in bad weather and woe to him who does not keep a sharp look-out; the bombs are dropped on him as he dives!

"It is a clear, starry night. Aircraft alarm! The bells ring. All hands below. Before the conning-tower hatch is quite closed, the diving tanks are flooded and the slim boat dashes to the depths at high speed. The indicators on my manometer move quickly - 20, 25, 30....metres. No bombs are dropped! Surface! Hard up both hydroplanes! Blow tanks!

The boat has already surfaced once more. The Captain and the bridge watch scramble out of the conning-tower hatch. A few moments, to get accustomed to the darkness. There is nothing to be seen of the enemy. Peaceful and quiet all round. Propellers turn once more as we trudge on in search of the enemy.

An hour later the look-out reports: "Aircraft, low, in umpteen degrees! Under the cover of darkness it has come quite close. Alarm! Once more the bells sound in all compartments, signal lamps flicker. The order goes from man to man. Like lightning the valves are screwed tight. In a hand's turn the engines are stopped. The electric motors switches are put over. I watch all this on my instruments. Now the boat is ready to dive. I call through into the conning tower: "Clear"!

"Flood"! The air is forced out of the diving tanks. The forepart of the ship is already submerged. There are shouts

in the conning-tower! The Officer of the watch, who entered the boat last, cannot get the hatch to close! He slams it with all the force he can muster. It does not close. The conning-tower is just submerging. The water gushes into the open hatch; it enters the boat in a stream about a metre wide. If the boat is not to be lost, the control room hatch must be closed. The Captain closes it from below. Seconds of weightiest decision. There are now two men in the conning-tower, the Officer of the Watch and the helmsman, and it is full of water; above us is an aircraft threatening the entire boat with destruction with its bombs. We must rescue our men!

"Blow tanks with highest pressure." The boat steadies. It breaks surface much too slowly with the conning tower full of water. Every nerve is taut. At last the conning-tower has broken surface. I order the valves to be opened and the conning tower to be drained. The Captain pushes against the control-room hatch with all the force at his command. At last it gives. The first question: "How are our two men?" The Captain calls their names out. They both reply and a load falls from us. They only stood breast-high in the water, their heads in the air bubble which had formed at the top.

"Suddenly someone calls "aircraft aft." Another aircraft. Damnation, it must be a U-Boat trap. There is more in this than meets the eye. Now we must get away. "Alarm!" In the meantime the conning tower hatch has been put in order again, and the damage caused by the water has been repaired. Everything took place too quickly for all the water which had entered to be pumped out. We dive steeply down to a safe depth.

"Half-an-hour later. We proceed submerged at high speed, in order to get away from the scene of the battle. Then the W/T operator at the listening apparatus reports the sound of propellers of swift craft. There are two units which approach swiftly. In the uncanny quiet below the surface, sound carries better than in the air. Soon we can hear with the unaided ear the "tschup, tschup, tschup ....." of the propellers.

"There are two destroyers. Heavens! Now things are getting serious. The suspicion as to why the first aircraft only dropped flares is confirmed. It was only to mark the position of our boat for the destroyers. An anti-submarine formation has been directed to the position by the first aircraft.

"We at once go over to listening speed. Everything not essential has been switched off. The men are crouching at their fighting stations, their emergency breathing apparatus on their chests. Order are passed in whispers. An unequal battle commences.

"We below - trusting in our good boat and our luck - the other above. They get a bearing on us, close in, and from the intersection of the bearings, ascertain our position. When they have ascertained our position one of them passes over us and drops her depth charges. Each time 10 to 15 of them and each of them as some hundred of kilograms of explosive! The deafening roar of the depth charges breaks the silence at intervals. The boat vibrates and springs.

"I am connected with all compartments by means of voice pipes. The damage reported is not severe, it can be repaired on board. Water has entered the control room. It has reached a level high above the floor plates. Pumping is impossible at present. The noise of the pumping would betray our position. "Kuddeldaddeldu"★, a sturdy Hamburg boy, whom nothing can disturb, calmly pours the water out of the control room into the periscope shaft, which even now is already full, with the help of a "Pütz".≠ He is beaming.

"Hour after hour the hunt continues. They run into attack over and over again. Our listener reports the running in of the destroyers and when they stop. Now they pass over us again; now and again one can hear the bubbling of the dropping depth charges. Not a few faces are pale. Shortly afterwards the explosions break the silence. We are thrown up from our places, paint cracks and glass splinters, but our boat holds.

"Hours later we surface. How wonderful it is to see the sunshine once more and to take deep breaths of fresh air. We are filled with a feeling of deep gratitude towards the men who build such boats. We have scarcely been on the surface for an hour before the Telegraphist comes to me excitedly with a W/T message to the effect that our Captain has become a father during this hard night. Who is able to understand this? For us it was a miracle!"

## 10. ADVANTAGES OF ESCORT CARRIERS

It has been found that very close co-operation can be maintained between Swordfish aircraft and surface craft, and carrier borne aircraft have already proved successful U-Boat hunters.

★ Probably a nickname.

≠ It is not known what a "Pütz" is.

Very good R/T communication on H/F with Swordfish aircraft up to 80 miles allows complete control by the carrier, using fighter direction organisation, and enables her, acting on information provided by the running commentary, to reinforce the aircraft and guide surface craft. The carrier Captain and the Escort Group Commander can also work closely together, using R/T when necessary.

Reports from H.M.S. "BITER" (Escort Carrier) show that the mean speed of Swordfish aircraft in depth charge attacks was 130 knots. This speed is higher than has been recommended, but has been due to the aircraft having either to attack at once if the U-Boat dives or having to close in quickly if the U-Boat decides to fight it out on the surface.

## 11. MERCHANT AIRCRAFT CARRIERS

The first merchant aircraft carrier sailed in an Atlantic convoy during May. She was the "EMPIRE MACALPINE" a grain ship of 8210 tons. Four Swordfish were carried, the "MAC" ship having a flight deck over her holds.

## 12. ASDICS IN MERCHANT SHIPS

Certain merchant ships which normally sail independently are being fitted with Asdics for self protection. These vessels, of the fast cargo-liner type, average between 7,000 and 10,000 tons and have speeds of 15 to 18 knots. Most of those being fitted are new construction vessels, but some existing ships of this type are being equipped when refitting.

Eight ships had been fitted up to the end of May and two more ships were being fitted concurrently with damage repair. The new construction programme embraces over 80 vessels.

The set installed is Type 136 and is primarily designed for the hydrophone effect method of detection, though provision is made for echo ranging. The set has a destroyer type dome and directing gear, but the dome when housed does not project below the keel.

SECTION VIMATERIEL1. DOUBLE MOUSETRAP

The Mark 22 A/S Projector is a "double-deck" Mousetrap in which each unit (one for the port side and one for the starboard side) includes eight rails, four on the lower level and four on the upper level. A complete installation includes two such units, making a total of 16 rails, eight lower and eight upper.

The rails are all elevated to the same angle, (48 degrees above the horizontal), when ready for action. When not required for operation, the rails may all be collapsed flat on deck, so as not to interfere with the operation of other weapons.

The barrage from the Mark 22 Projector is designed to furnish the same width of pattern as that of the Mark 20 Projector (approximately 80 yards) and, in addition, the pattern possesses spread fore-and-aft along the vessel's projected course.

The 16 projectiles are fired in two separate groups, usually a stick of eight from the upper rails first, followed by a second stick of eight from the lower rails, the two sticks being separated by the proper distance according to the relative speed or range rate indication during the approach. The spread between sticks is accomplished by using the ship's ahead motion during the time interval between the first and second sticks. This longitudinal spread along the vessel's projected course is designed to give range cover.

2. U.S.N. PUBLICATIONS

The following publications are available to U.S. ships, and will shortly be supplied to R.A.N. Port A/S Officers.

"Suggested Guide for the upkeep of Sound Equipment"

"Notes on Servicing Radio and Sound Equipment 1942 Edition"

"Tentative Instructions for the A/S Projector Mark 20 and Mark 22."

Ships requiring copies or additional copies of these publications should request from Cominch (Readiness Section).

3. BRITISH ASDIC SET TYPE 144

A new type Asdic set has been designed and is already proving highly satisfactory in R.N. ships. This set, known as Type 144, is being installed in certain R.A.N. A/S vessels.

Previous Asdic sets have been provided with a range recorder which gives the range of echoes and also the time to fire, but with these sets the course to steer had to be judged by eye, and this entailed considerable practice and judgment by A/S personnel.

The new bearing recorder, however, provides the operator with a record of the bearing of each echo obtained, and the slope of the trace gives an indication of the rate of change of bearing. With the 144 set facilities are provided for indicating the bearing on which to fire ahead thrown weapons (Hedgehog or Mousetrap), and also to assist in estimating the course to steer for normal depth charge attacks.

Semi-automatic training provides for sweeping in 5° gyro-stabilised steps and all the operator has to do is to train the oscillator from the end of one sweep to the beginning of the next. He need not concentrate on his bearing indicator and is, therefore, free to look at the range recorder and to see an echo immediately it is recorded. This combination of aural and visual detection will improve reliability of initial detection.

The range recorder is provided with a line of light cursor, and its operation (which means keeping it lined up for range and slope with the echo trace) automatically adjusts the transmission interval and the paper speed of the bearing recorder. When attacking, an electrical contact is automatically made at the correct time to fire, this contact being used to operate a buzzer or to fire the Hedgehog or depth charge pattern directly.

A stylus on the bearing recorder follows the oscillator bearing and when the operator presses the "echo key" (which he does as soon as he hears an echo) the bearing of that echo is recorded. The right and left cut-ons become apparent from the echoes recorded, and the operation of the bearing recorder consists in keeping two line of light cursors adjusted to the correct bearing and slope of these cut-ons.



When the full crew of three has closed up, one operates the range recorder, one the bearing recorder, while the third (probably the H.S.D.), seated between them, presses the echo push. The semi-automatic training, which is changed to  $2\frac{1}{2}^{\circ}$  gyro-stabilised steps while maintaining contact, is arranged so that the echo push operator can keep on the right or left "cut-on" without concentrating on the bearing. Contact is maintained with one edge of the target simply by pressing the echo push every time the correct echo is heard and the operator is free to look at the range recorder for assistance in deciding on the correct echo. It is only necessary to use the training knob when training from one "cut-on", or edge of the target, to the other.

When correctly lined up, the bearing recorder shows the bearing of the centre of the target and also the correct bearing on which the ahead-thrown weapon should be fired. This latter bearing is also the course to steer during ahead-thrown attacks and is automatically transmitted to the Captain's "bearing indicator", situated near the conning position, and thence to the "helmsman's indicator" in front of the helmsman and to the Hedgehog itself.

During an ahead thrown attack, the Commanding Officer has merely to instruct the helmsman to "steer by Asdic". The former is thus relieved of close concentration upon asdic instruments and reports and is free to attend to the general fighting and safety of his ship.

#### The Advantages of the Type 144 Asdic Set

Automatic training gives accurate gyro step angles and enables the operator to watch the range recorder as well as listen. It therefore provides greater certainty of initial detection.

With automatic training, "cut-on" bearings - and therefore centre bearings - are obtained more quickly and more easily.

The bearing recorder provides a "memory" of the bearings. There is, therefore, less chance of losing contact. The mean of several bearings can be found and the bearing rate obtained with greater precision.

The bearing recorder gives the bearing on which to aim ahead-thrown attacks.

The bearing recorder assists in obtaining the correct course to steer for attacks with depth charges dropped from the stern.

An improved range recorder gives greater accuracy in obtaining the range and time to fire for both ahead-thrown attacks and depth charge attacks.

The asdic information is obtained and the course to steer transmitted to the helmsman with the minimum of delay.

The automatic volume control amplifier (which is also being incorporated in existing sets) provides general improvements in detection, including better recording of echoes on the range recorder.

The Captain is free to attend to the general fighting of his ship.

#### 4. DEPTH CHARGES

In the first six months of 1943 R.A.N. ships dropped 290 depth charges on possible or probable enemy submarine contacts. A further 95 charges were dropped during exercises and depth charge drills. Of the 385 charges dropped, nine failed to explode. Three failures were due to insufficient depth of water.

#### 5. NEW A/S ESCORTS

Provisional details of the new U.S.N. Patrol Frigates (P.F's) and R.A.N. Frigates are given below.

<u>U.S.N.</u>		<u>R.A.N.</u>	
304'	Length	301'	
37' 6"	Beam	36' 8"	
11' 6" fwd. 14' 11" aft.	Draught	8' 6" fwd. 12' 6" aft.	
20.5 kts.	Speed (Max.)	19.5 kts.	
4540 miles at 20.5 kts.)	Endurance	{ 6,600 miles at 15 kts. 8,250 miles at 10 kts.	
7240 miles at 15 kts.)			
9200 miles at 12.5 kts.)			
3 - 3"/50 cal. D.P.	Armament	2 - 4" QF Mk. XIX	
2 - Twin 40 mm		2 - Twin 20 mm	
4 - 20 mm		2 - 20 mm	
8 D.C. Projectors		4 - Vickers .303	
		4 D.C. Throwers	
		Hedgehog	
Light Load - 1224 tons	Displacement	1450 tons (standard)	
Full Load - 2277 tons			

6. C.A.F.O.'s ON A/S SUBJECTS 1943

C.A.F.O.	Subject	Brief Description	Work By
276	E/S Sets Type 761/P	Circuit Diagram	-
342	C.A.F.O. 127/43	Amendment	-
363	Radar	Employment	-
403	A/S Paper Rolls	Damage to containers	-
576	A/S Branch	Reorganisation in R.N.	-
934	Depth Charge	Amendment to Drill	S.S.
948	Recorder A/S 3	Spare for Sets Type 127, 128	B.S.
949	134A Set	Modification of Clamping Plate	B.S.
1005	134A Set	Spare H.T. Connectors	B.S.
1002	Ramming	Reports of damage	S.S.
1039	134A/C Sets	Removal of Oscillator Unit and strut	B.S.
1095	A.V.C. Equipment	Fitting to types 127A/D, 128A/C/D/T and 132.	B.S.

S.S. - Ship's Staff, B.S. - Base Staff

The following should also be noted where they apply.

208, 266, 274, 275, 327, 366, 401, 917, 933, 937, 938, 950, 974, 979, 993, 994, 1006, 1007, 1041, 1082, 1083, 1096, 1098, 1102, 1162, 1163, 1215, 1216, 1217, 1218, 1219, 1324.

Ships should have received all C.A.F.O.'s 1943 up to an including C.A.F.O. 1341/43.



Year	Value
1880	100
1881	105
1882	110
1883	115
1884	120
1885	125
1886	130
1887	135
1888	140
1889	145
1890	150
1891	155
1892	160
1893	165
1894	170
1895	175
1896	180
1897	185
1898	190
1899	195
1900	200



