N-8422 MAY 43

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C.B. 04050/43 (5)

MONTHLY ANTI-SUBMARINE REPORT

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C.B. 04050/43 (5)

MONTHLY ANTI-SUBMARINE REPORT

May, 1943

ANTI-SUBMARINE WARFARE DIVISION
OF THE NAVAL STAFF.

15th June, 1943.

INDEX

LIST OF ILLUSTRATIONS

No. of Plate.

SECTION 1

THE U-BOAT OFFENSIVE

(a) REVIEW FOR MAY

May was a very black month for the U-Boats. Sinkings of U-Boats probably averaged one a day, while losses of merchant shipping were on a much reduced scale.

At the beginning of the month, it was estimated that about 120 U-Boats were at sea in the Atlantic, of which nearly 70 were north of latitude 45° N. By the end of the month the figures had fallen to 85 and 22 respectively, no small proportion of this reduction being due to sinkings of U-Boats.

The decline in efficiency and morale noticed in April was accentuated in May and, though it may be only temporary, it is at least a striking tribute to the weight of the offensive measures concerted so effectively by support groups and V.L.R. aircraft.

The U-Boats began the month with a very heavy attack on Convoy O.N.S.5, which was badly scattered north-east of Newfoundland. After 10 ships had been sunk in a night and a day, the escorts and support group reformed the convoy and turned to the offensive with admirable results. At least five U-Boats were sunk and in no succeeding convoy operation did the enemy display the same determination.

Several other convoys were threatened in the first half of the month but no serious losses were suffered and the toll of U-Boats mounted steadily. After the 17th May, no ship was lost north of 45° N. Land-based aircraft played a notable part in the offensive, while the appearance of carrier-borne aircraft in areas outside those covered by V.L.R. Liberators, may have been the last straw, which decided the Germans to make a withdrawal, if only a temporary one, from the North Atlantic convoy routes.

Apart from the concentration in the North Atlantic, the enemy maintained small diversionary forces in more distant waters. Four or five U-Boats operated off Freetown with only moderate success and a slightly larger number reached the Capetown area about the middle of the month, some of them proceeding as far as the southern end of the Mozambique Channel. Single U-Boats operated off the north-east of Brazil, in the Caribbean and off the Bahamas.

If the present tendency to exert only a reduced effort in the North Atlantic is maintained, it is probable that the more distant areas, such as West and South Africa, the Caribbean and, in particular, Brazil will receive increased attention from the 740-ton and new 1,000-ton U-Cruiser types, while the 500-ton U-Boats will concentrate in the area south and west of the Azores outside the range of V.L.R. aircraft.

(b) ESTIMATE OF U-BOATS OPERATING IN THE ATLANTIC AND INDIAN OCEANS IN MAY

Areas as shown in Plate 3.	North-Western Approaches		Arctic.		South-Western Approaches		Western Atlantic.		Azores.		Freetown.		South Atlantic.		Indian Ocean.	
	German.	Italian.	German.	Italian.	German.	Italian.	German.	Italian.	German.	Italian.	German.	Italian.	German.	Italian.	German.	Italian.
3rd–9th May . .	60	—	6	—	28	—	5	—	15	—	8	—	8	1	1	—
10th–16th May	60	—	7	—	40	—	5	—	8	1	5	—	8	1	2	—
17th–23rd May	55	—	5	—	30	—	5	—	6	3	8	1	6	—	2	—
24th–30th May	35	—	6	—	30	—	15	—	3	2	5	2	6	1	3	—

(c) MERCHANT SHIPPING LOSSES

The Mercantile tonnage lost by U-Boat attack during May, as recorded to date, amounts to 245,000 gross tons. This is the second lowest monthly total since the beginning of 1943.

The month opened none too well, and attacks by U-Boat packs on convoys resulted in fairly heavy losses of Merchant Ships, but the attacking U-Boats were also severely mauled and suffered a record number of casualties. The rough handling they received in the first three weeks of the month appears to be reflected in the falling-off of attacks and small tonnage losses between the 21st and the 31st of the month. The quiet period has continued into the first ten days of June.

The following table shows the losses due to U-Boats during the past twelve months classified according to areas :—

Month.	Atlantic.				Mediterranean.		Indian Ocean.		Far East and Pacific.		Elsewhere (inc. N. Sea and Barents Sea).		TOTAL.	
	North.		South.											
	No.	G.T.	No.	G.T.	No.	G.T.	No.	G.T.	No.	G.T.	No.	G.T.	No.	G.T.
1942—														
June ..	115	589	1	7	6	10	15	69	3	14	—	—	140	689
July ..	68	339	1	7	2	2	5	22	5	27	10	62	91	459
August ..	93	498	6	18	3	20	1	5	2	(Under 500)	—	—	105	541
September	80	391	4	37	3	1	6	30	—	—	3	20	96	479
October	61	395	25	179	—	—	3	15	2	14	—	—	91	603
November	77	469	16	93	5	45	16	91	1	7	1	7	116	712
December	44	235	7	38	4	34	6	30	—	—	—	—	61	337
1943—														
January	27	173	2	9	3	12	—	—	2	9	—	—	34	203
February	41	268	7	37	5	21	—	—	4	19	1	7	58	352
March ..	74	428	15	101	10	46	4	26	—	—	2	12	105	613
April ..	38	232	2	2	15	10	5	35	6	32	—	—	53	324
May .. (Provisional)	30	145	7	42	1	6	4	19	5	33	—	—	47	245

(Tonnage is given in thousand gross tons.)

The bulk of the tonnage losses, as usual, were in the North and South Atlantic with some activity in the Indian Ocean—mainly off East Coast of Africa ; Japanese U-Boats were again in evidence in the Pacific where they accounted for some 33,000 gross tons, or about the same tonnage as in last month.

The following table shows the losses caused during the month by U-Boat, divided into three periods of approximately ten days. As will be seen the heaviest losses occurred in first ten days and then gradually decreased :—

Period.	British.		Foreign.		Total.	
	No.	Gr. Tons.	No.	Gr. Tons.	No.	Gr. Tons.
1st–10th May	13	67,370	10	50,094	23	117,464
11th–20th May	10	46,593	9	48,941	19	95,534
21st–31st May	1	5,231	4	26,367	5	31,598
	24	119,194	23	125,402	47	244,596

The tonnage sunk included eight tankers of 55,000 gross tons.

The foreign tonnage lost comprised ships of the following nations :—

United States	7 ships of 45,189 gross tons.
Norway	7 ships of 33,470 gross tons.
Greece	3 ships of 14,310 gross tons.
Netherlands	2 ships of 11,371 gross tons.
Panama	2 ships of 17,446 gross tons.
Cuba	1 ship of 1,983 gross tons.
Sweden	1 ship of 1,633 gross tons.

The following table gives the losses in Convoy caused by U-Boats compared with the total tonnage sunk by U-Boats during the last six months :—

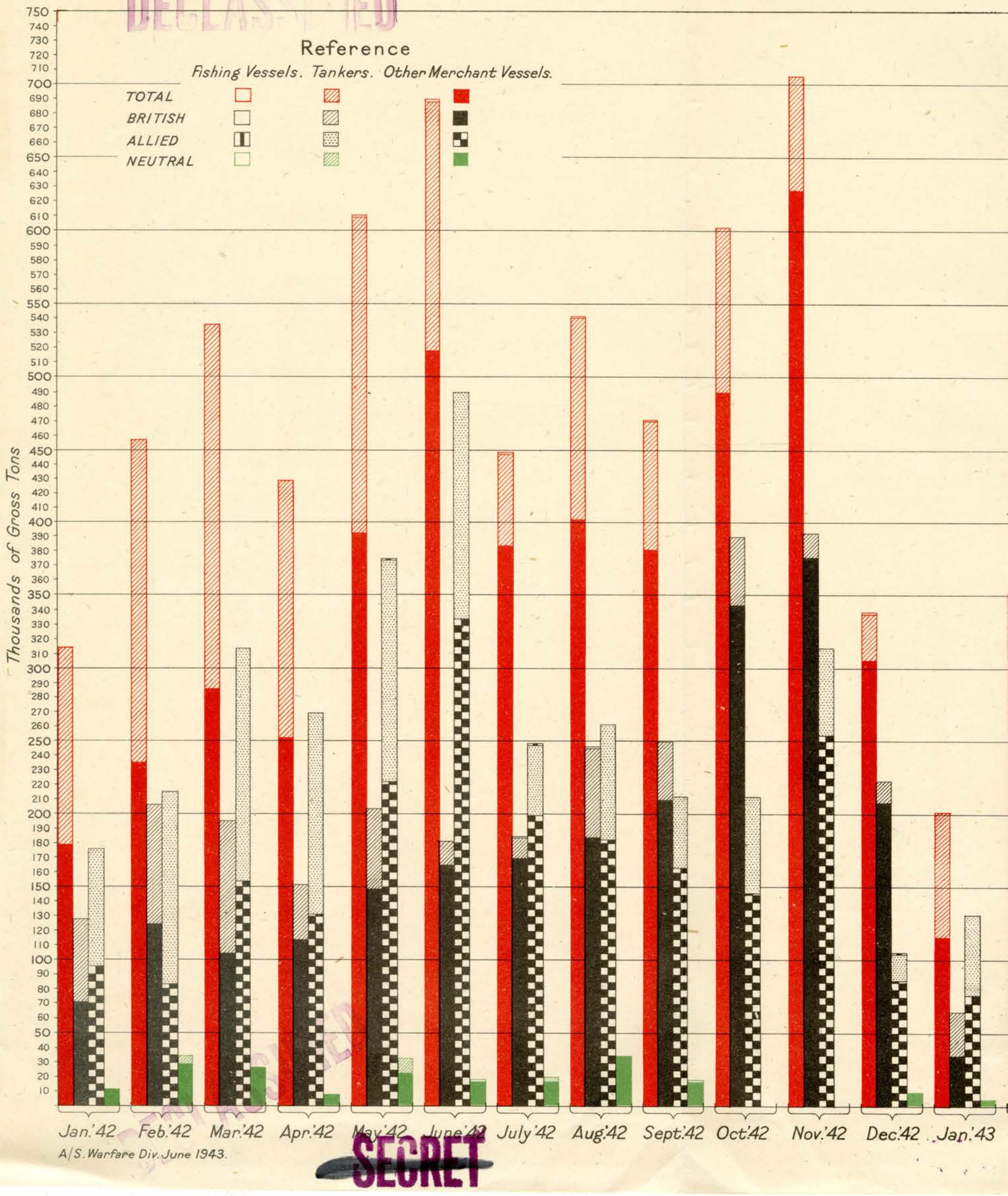
Month.	Total Sunk by U-Boat.		Sunk in escorted Convoys by U-Boat*.		Remainder.		Proportion of tonnage sunk which was in Convoy.
	No.	Tons.	No.	Tons.	No.	Tons.	Per Cent.
December ..	61	337	19	118	42	219	35
January ..	34	203	15	107	19	96	53
February ..	58	352	34	212	24	140	60
March ..	105	613	70	416	35	197	68
April	53	324	25	150	28	174	46
May .. .. (Provisional)	47	245	24	119	23	126	49

(The tonnage figures are in thousand gross tons.)

* Including trade and operational convoys and escorted groups.

MONTHLY LOSSES OF BRITISH, ALLIED & NEUTRAL

JAN. 1942 – MAY



A/S. Warfare Div. June 1943.

Plate 1.

ALLIED & NEUTRAL SHIPPING BY U-BOAT ACTION 1942-1943

JAN. 1942 – MAY 1943

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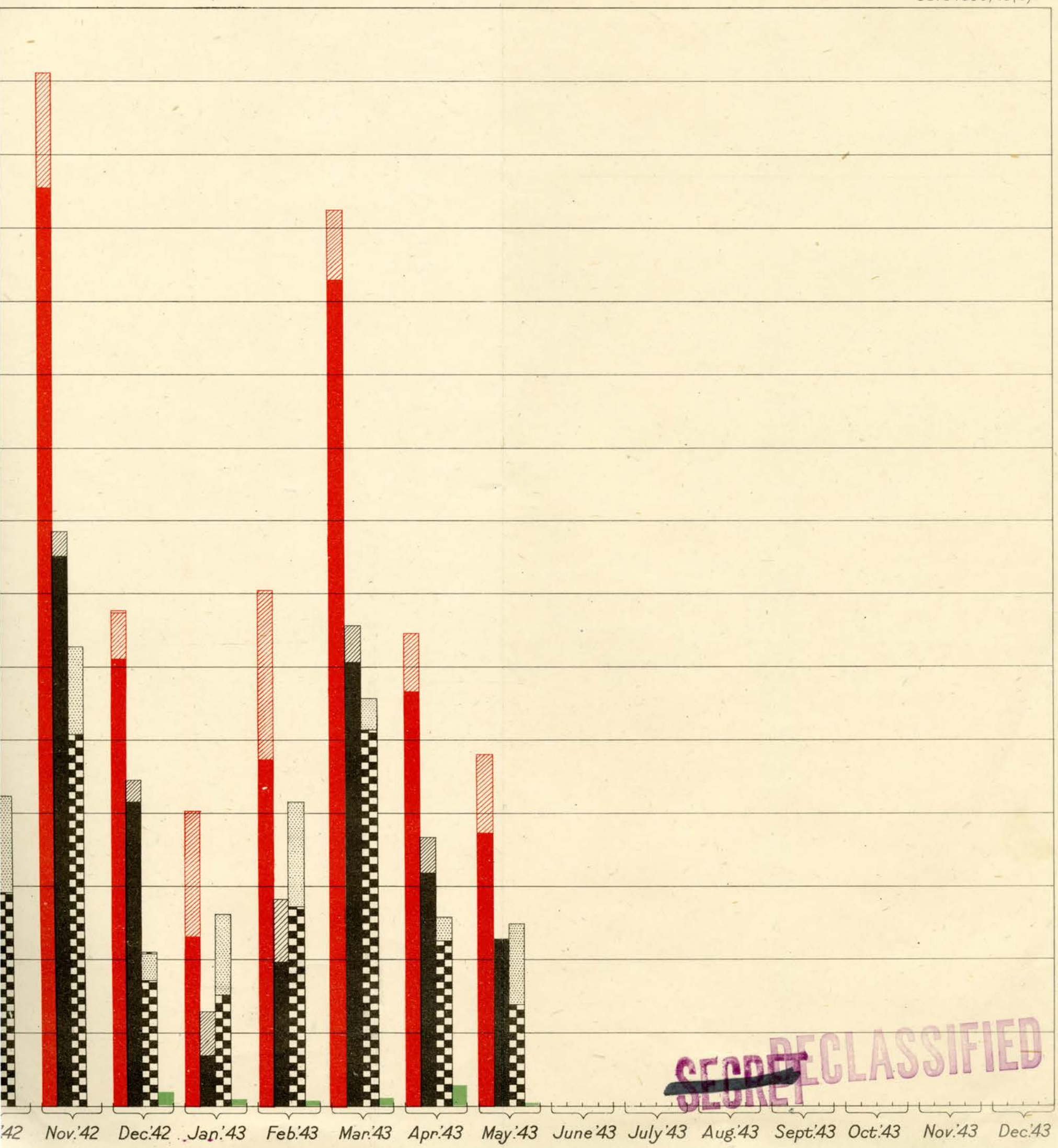
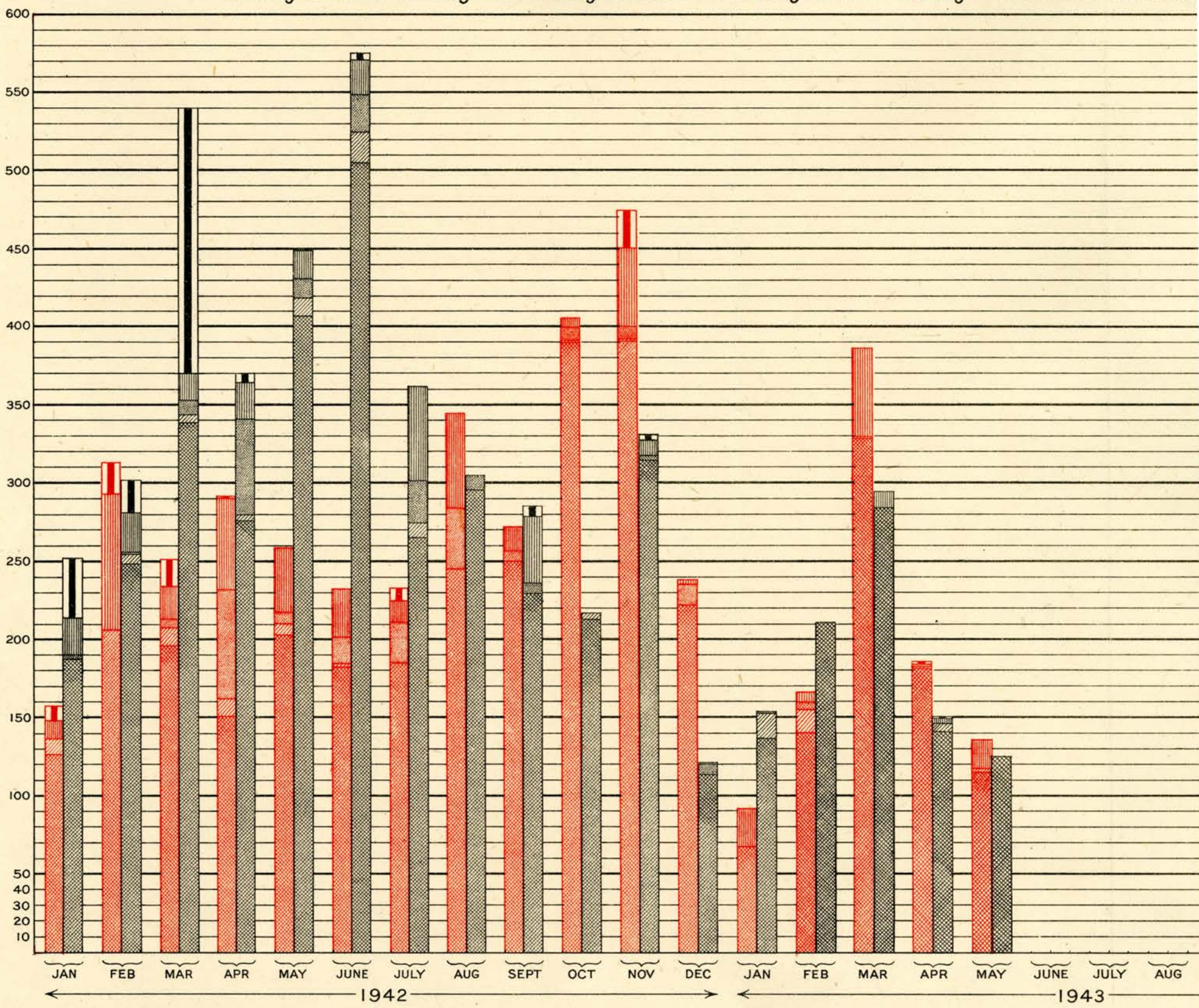


PLATE 2.

BRITISH (RED) AND FOREIGN (BLACK) MERCHANT SHIPPING LOSSES BY DIFFERENT FORMS OF

Note:- Includes vessels of all tonnages (but excludes Commissioned Ships.)

By Submarine *By Mine* *By Surface Craft* *By Aircraft* *By other causes or cause unkr*



A.S.W. DIVISION, JUNE 1943.

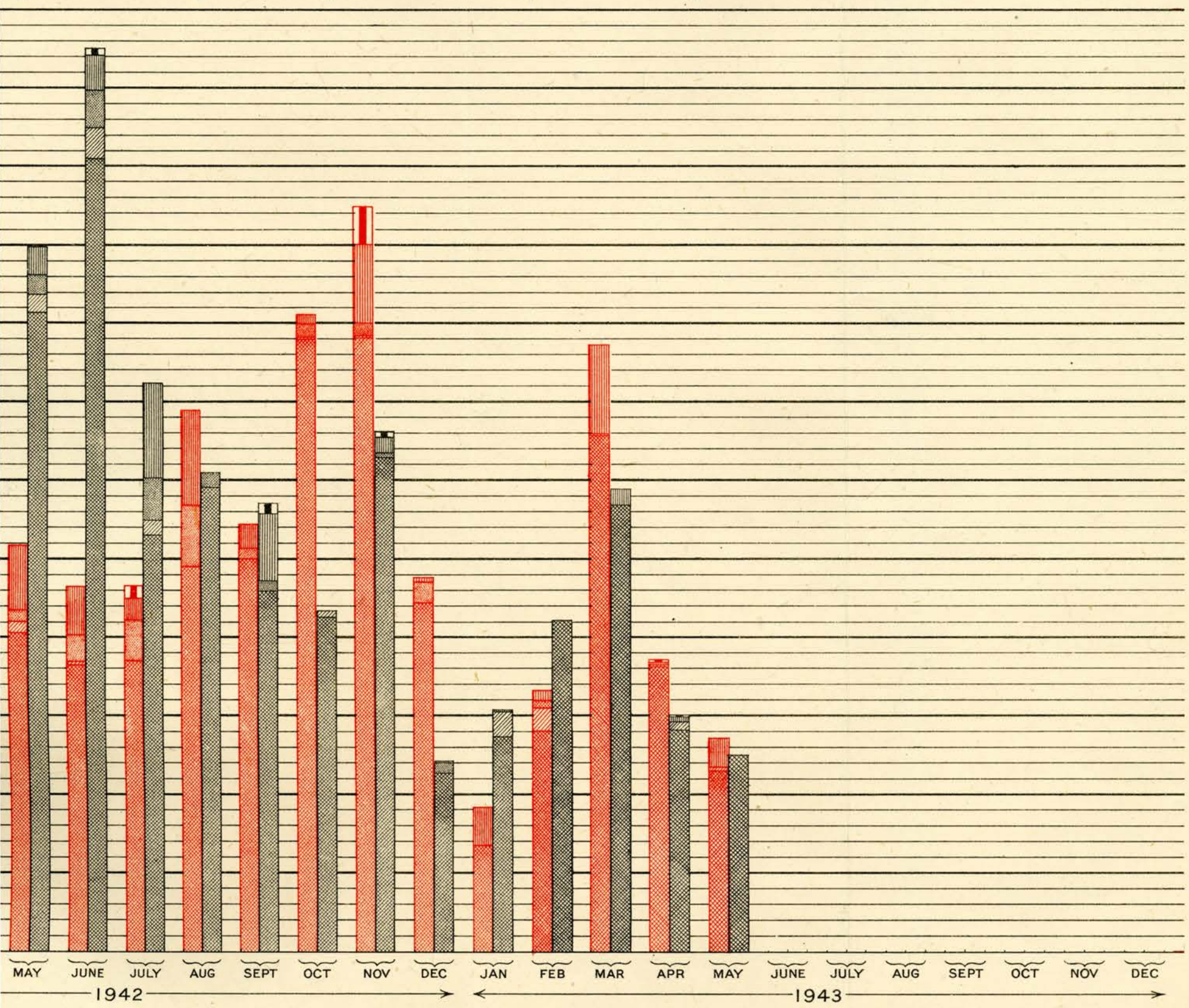
PLATE 2.

C.B.04050/43(5)

ND FOREIGN (BLACK) MERCHANT SHIPPING LOSSES BY DIFFERENT FORMS OF ENEMY ACTION.

Note:- Includes vessels of all tonnages (but excludes Commissioned Ships.)

By Submarine *By Mine* *By Surface Craft* *By Aircraft* *By other causes or cause unknown*



A further analysis of the numbers and tonnage sunk by U-Boat in May gives the following result :—

	No.	Thousands of Gr. Tons.	Percentage.	
			No.	Gr. Tons.
In Convoy	24	119	51	49
Stragglers	5	31	11	13
Dispersed	1	5	2	2
Independent	17	90	36	36
	47	245	100	100

During the month 12 ocean convoys of 354 ships arrived in the United Kingdom without loss and three such convoys, originally of 124 ships, lost six ships before arrival.

In the same period 13 outward ocean convoys of 533 ships reached their destinations without loss and three such convoys, originally of 144 ships, lost 15 ships before arrival; of these 15 ships lost 13 were sunk out of one convoy, two being stragglers.

In the Western Atlantic and Caribbean 165 convoys of 1,758 ships reached their destinations without loss and one convoy, originally of 16 ships, lost one ship before arrival.

The following table shows tonnage losses by U-Boat compared with tonnage losses by Aircraft and other enemy causes during the last six months :—

Month.	Total Losses All Causes.	By U-Boat.		By Aircraft.		By Other Causes.	
		Losses.	Percentage.	Losses.	Percentage.	Losses.	Percentage.
December ..	361	337	93	4	1	20	6
January ..	244	203	83	26	11	15	6
February ..	377	352	93	7	2	18	5
March ..	680	613	90	66	10	1	—
April	337	324	96	3	1	10	3
May .. .. (Provisional)	266	245	92	20	8	1	—

It will be seen that 92 per cent. of the losses due to enemy causes were due to U-Boat attack and practically the whole of the balance was due to attacks by enemy aircraft.

The number of attacks by U-Boats on single ships and convoys or groups were almost exactly the same as last month. Of the 29 attacks on single ships 23 resulted in the ships being sunk, three escaped damage and three escaped undamaged, giving percentages of 80, 10 and 10 respectively. Of the 19 attacks on convoys or groups, in which 502 ships were subjected to risk of attack, 23 ships were sunk, five escaped with damage and 474 suffered no damage, being percentages of 5, 1 and 94 respectively. The percentage of ships sunk in convoy was half the percentage average for the eight months September, 1942, to April, 1943, and again reflects the improvement due to the introduction of Support Groups and additional air cover at end of March.

Air attacks show an increase over last month. Of the six attacks on single ships none resulted in the sinking of a ship, in two cases the ships escaped with damage and in four cases the ships escaped undamaged. Of the five attacks on convoys, in which 95 ships were subjected to risk of attack, two ships were sunk and 93 suffered no damage, the percentages of two and 98 respectively closely approximating to the averages for the period September, 1942, to April, 1943.

There were no attacks by surface craft recorded during May.

General Remarks

The Mercantile losses from all enemy causes showed a further satisfactory drop in May to 266,000 gross tons. Attacks by U-Boats on convoys in the early part of the month were fairly heavy and it looked as if the losses for the month were going to be substantial but, as a result of the severe handling meted out to the attackers, their efforts were not sustained and losses in the last ten days of the month were comparatively small.

Whilst the enemy's main U-Boat attacks on shipping continued to be in the Atlantic, sporadic attacks off east coast of Africa and in the Pacific continued to be a nuisance and caused a small but steady drain on the tonnage total.

The total of Allied and Neutral tonnage (ships of all tonnages) sunk by enemy action since the war began now amounts to a little over 18 million gross tons, and of this total about 12½ million gross tons or 69 per cent. was sunk by U-Boat.

An enemy broadcast from Berlin on the 7th June, said: "Anglo–U.S. supply shipping lost 851,000 gross register tons in May, the Germans sinking 430,000 G.R.T.; the Italians, 88,000 G.R.T.; and the Japanese 333,000 G.R.T. In addition 200,000 G.R.T. were damaged by torpedoes and bombs and are temporarily out of use." The total losses to date are given in this broadcast as 31,900,000 G.R.T. which gives a percentage exaggeration of 77 per cent. over the 18 million.

(d) MONTHLY LOSSES DUE TO U-BOAT ACTION (Plate 1)

(e) MONTHLY LOSSES DUE TO ALL CAUSES (Plate 2)

SECTION 2

COUNTER-MEASURES

(a) REVIEW FOR MAY

May has been a record month for U-Boat sinkings. Those known to have been sunk numbered at least twenty-four, and the probable rate of destruction was at least one a day. Our merchant shipping losses were, moreover, down to under 250,000 tons. This success is attributed 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.

At the beginning of May the enemy's U-Boat fleet operating in the North Atlantic was as large as ever and in the first week of the month he concentrated against Convoy O.N.S.5 one of the largest packs ever assembled. The resulting battle cost us eleven merchantmen out of the forty-two which sailed but the enemy paid a very high price. An account of the passage of the convoy will be found on page 16.

Convoy S.C.129 was subjected to attacks which may have been proportionately even more expensive to the enemy, though the battle was not on the same scale. Only two merchantmen out of a convoy of twenty-six were sunk but the enemy may have lost three U-Boats. The Ocean Escort was H.M.S. "Hesperus" (Senior Officer of Group B.2) and H.M. Ships "Whitehall," "Clematis," "Gentian," "Heather," "Campanula" and "Sweetbriar." The convoy, which sailed from Halifax on the 3rd May and was given a southerly route, was probably first sighted about 1400 on the 11th when about 250 miles to the north-westward of the Azores. The U-Boat making the report was D/F'd by "Hesperus" but a sweep failed to find her and at 1800 two ships were sunk in what may well have been a browning attack.

Several R.D.F. contacts were reported during the night but only two of them were afterwards considered to have been with U-Boats. "Whitehall" found and attacked one and "Hesperus" the other. In the latter hunt the U-Boat was brought to the surface after six attacks and, after being a target for depth-charges set to 50 feet, was seen to dive or sink. In the meantime an R.D.F. contact had been obtained with a second U-Boat which was attacked by gunfire; hits with 4·7-in. were made, two of them being at the base of the conning-tower, after which a number of men were seen to be jumping overboard. "Hesperus" subsequently dealt this U-Boat what was described as a "rather half-hearted ram."

Both these U-Boats were considered by "Hesperus" to have been probably destroyed and thereafter the night passed quietly. About noon next day, the 12th, "Hesperus" sweeping along an H/F D/F bearing, hunted and probably sank a third U-Boat, oil and floating wreckage being seen. By this time there may have been about ten U-Boats in contact but it seems that they were so discouraged by this vigorous defence of the convoy that they made only one more attack—at about 2200—which was frustrated.

The convoy, which had been routed nearly as far south as the Azores, was at this time still out of range of air cover. A Liberator of 86 Squadron was sent out on the 13th from Aldergrove but did not meet it. The aircraft did, however, carry out two attacks on U-Boats when about 1,200 miles from her base. The next day the Fifth Escort Group (H.M.S. "Biter," Senior Officer, and H.M. Ships "Opportune," "Pathfinder" and "Obdurate") joined. On the 16th "Biter's" aircraft and shore-based aircraft hunted repeatedly for a U-Boat which appeared to be shadowing the convoy, but without success. No attack, however, developed. The rest of the passage was "without incident."

Convoy O.N.S. 7 was attacked on the 17th and the one ship which she lost was the last to be sunk in a transatlantic convoy during the month. A powerful air offensive was put on almost continuously from end to end of its passage and the U-Boats were so thoroughly put down that only one opportunity for attack was given to a surface escort. In this attack, which followed the torpedoing of S.S. "Aymeric" at 0037 on the 17th, H.M.S. "Swale" used both hedgehog and depth-charges with promising results.

The passages of the other transatlantic convoys menaced by U-Boats was an unusually pleasant tale of U-Boats and not merchantmen being sunk. Between them the escorts of Convoys H.X. 237 (which lost three stragglers), H.X. 239, S.C. 130 and O.N. 184 are known to have sunk three U-Boats and another three were probably destroyed. Aircraft from U.S.S. "Bogue" and from H.M.S. "Archer" each sank one, and H.M.S. "Broadway" carried out a successful hedgehog attack on the third. This weapon was also responsible for two "probably sunks," the other being by depth-charges.*

The enemy made his greatest effort in the North Atlantic against the transatlantic convoys and there suffered his heaviest losses, but he was also active in other parts of the ocean. By way of contrast with the successes just recounted was the attack on Convoy T.S. 37, which consisted of nineteen ships.

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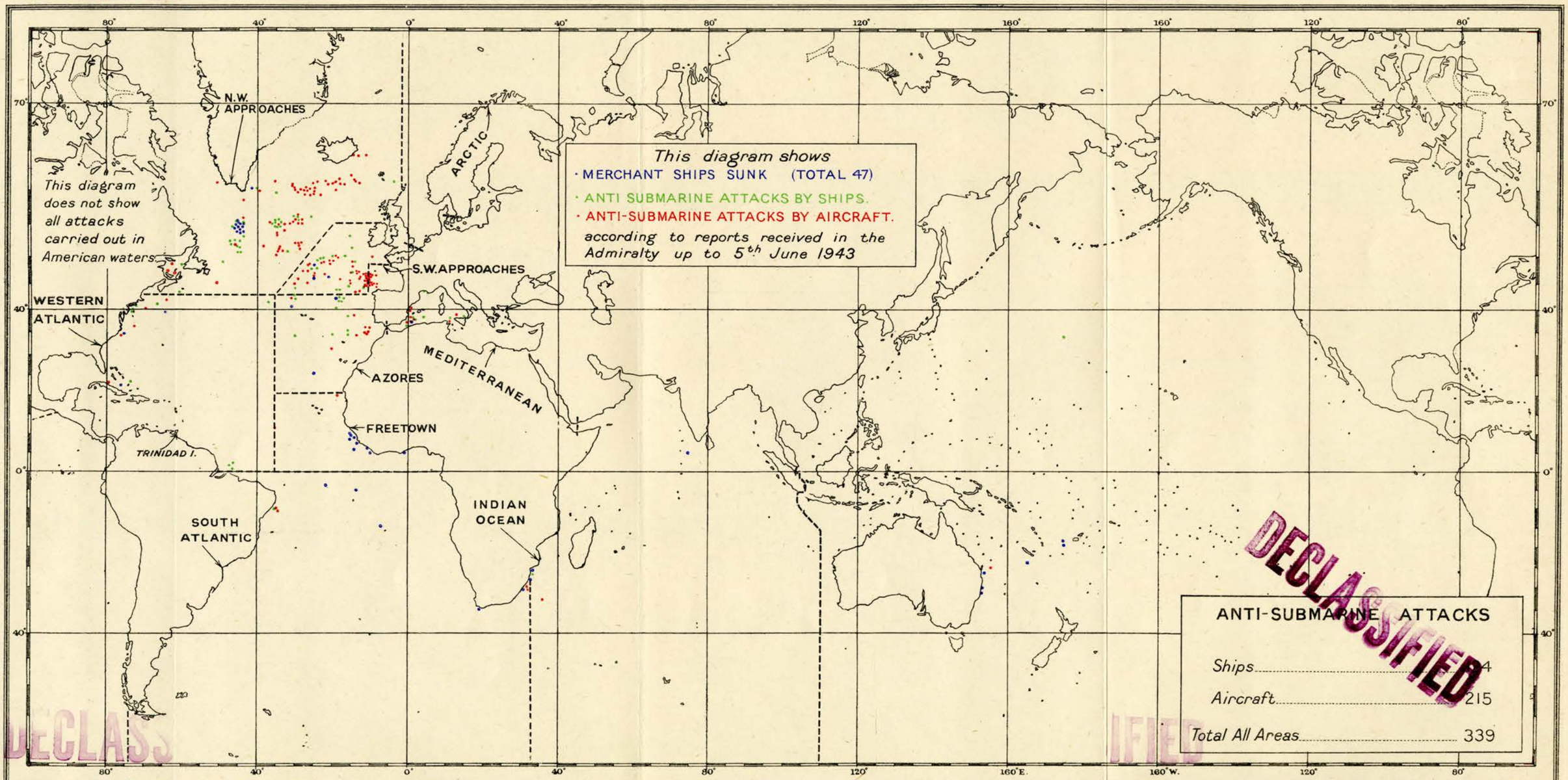
* See page 10 for an account of the effort made in protection of these convoys by shore-based aircraft.

PLATE 3.
DIAGRAM OF "U"-BOAT WARFARE.
MAY 1943.

C.B. 04050/43(5)



A.S.W./D.N.C. June 1943

It was beset when within seventy miles of Freetown on two consecutive nights at the beginning of the month and lost seven ships. With the forces in this area working " all out and then a bit more " under trying climatic conditions, it is still only possible to provide rather weak escorts and the losses in this area must be charged against the comparatively safe passages of the vital transatlantic convoys.

A feature of the past two or three months has been the use of anti-submarine support groups, either with or without escort carriers. They have shown that they are capable of gaining the initiative over concentrated U-Boat packs and have definitely taken their place in the tactics of convoy defence. Experience is showing that a support group attached to a convoy should retain its separate entity and, to defeat a pack attack, should not normally be stationed as a reinforcement of the close escort. It appears probable that ships of a support group are best employed in putting down shadowers, following up aircraft attacks and carrying out searches on H/F D/F information ; by night they should be stationed at such a distance outside the close escort that they can deter U-Boats which are gaining bearing on the bows and intercept those which are closing in to attack.

Support Groups formed of Home Fleet destroyers gave invaluable service when this organisation was first instituted this year. These ships have now had to return to fleet duties and Support Groups are formed of sloops, frigates and destroyers as they come forward to join the Western Approaches Command. The Royal Canadian Navy is providing support groups to operate from the western side of the Atlantic.

To sum up, it is probable that historians will note that May, 1943, was remarkable in the Battle of the Atlantic in that escorts and aircraft 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 by weapon superiority.

(b) DIAGRAM OF U-BOAT WARFARE (Plate 3)

(c) FIRST EXPERIENCES WITH ESCORT CARRIERS

It is now possible to give some account of the experiences of the escort carriers. Very good R/T communication on H/F with Swordfish aircraft up to eighty miles allows complete control by the carrier, using fighter direction organisation, and enables her, acting on the information provided by the running commentary, to reinforce the aircraft and guide the surface escorts. The closer the control of the aircraft the greater the traffic on H/F, R/T and a T.B.R. R/T, additional to the convoy wave is required. Escorts detached to hunt can either shift to this wave or have information relayed to them on the convoy R/T wave by the carrier.

It has been found that very close co-operation can be maintained between hunting Swordfish and hunting surface craft and that the carrier captain and the escort group commander, using R/T when out of sight, can also work closely together.

Reports from " Biter " show that the mean speed of Swordfish aircraft in depth-charge attacks was 130 knots—a higher speed than has been recommended. This was due to the aircraft either having to attack at once, if the U-Boat dived, or having to close in quickly if the U-Boat decided to fight it out on the surface.

(d) MERCHANT AIRCRAFT CARRIERS

The first merchant aircraft carrier sailed with Convoy O.N.S. 9. She is the " Empire Macalpine," a grain ship of 8,210 tons, and has a flight deck over her holds. Four Swordfish are carried.

(e) THE DESTRUCTION OF " U 202 " BY SHIPS OF THE SECOND SUPPORT GROUP ON THE 1st/2nd JUNE, 1943*

At 0925, 1st June, 1943, the Second Support Group, comprising H.M. Ships " Starling," " Wild Goose," " Cygnet," " Woodpecker " and " Kite," was on passage to support Convoy H.X. 241. There was a wind force 2 from the north-east and the sea was calm. The visibility was seven to eight miles.

At 0926 D/F bearings of a long naval enigma message were obtained by " Starling " and " Wild Goose " ; the transmission was estimated to be within 30 miles. The speed of the force was increased to 18 knots and course was altered to the estimated bearing of the U-Boat. Ships were spread five miles apart.

At 1013 in position 56° 12′ N., 39° 52′ W., " Starling " obtained an asdic contact which was classified at once as " submarine." A swirl was sighted in the water but, on the run-in for the first attack, " Starling " lost contact at 650 yards and therefore set her first pattern deep.

During the next hour and a half " Starling " made five attacks, three of which were individual attacks and the other two barrage attacks. Details of these are as follows :—

Time.	Ship.	Range of Losing Contact.	Time to Fire Obtained by	Number of Charges.	Settings.
1018	" Starling "	650 yards	Recorder..	10	350 and 550 ft.
1050	" Starling," " Wild Goose " and " Kite "	750 yards	Recorder..	66	500 and 550 ft.
1102	" Starling "	600 yards	Recorder..	10	350 and 550 ft.
1124	" Starling," " Wild Goose " and " Kite "	900 yards	Recorder..	66	500 and 550 ft.
1138	" Starling "	200 yards	Recorder..	10	100 and 225 ft.

* This account of the operation has been included in this issue of the Report in view of its exceptional interest. All times are Zone + 2.

During the run-in for the attack at 1138 the U-Boat was heard to be blowing its tanks and was expected to surface. At 400 yards range fast hydrophone effect became plainly audible. Contact, was lost at 200 yards and the U-Boat did not surface. Prisoners taken subsequently have stated that at one stage during the hunt they were coming to periscope depth but were driven deep again by charges exploding directly overhead. This may well have been the occasion. After this attack the U-Boat went deep and stayed there for the rest of the hunt, altering course and zig-zagging at speeds varying between 1½ and 3 knots. A total of 19 submarine bubble targets were released, some singly and some in rapid succession. " Starling " was not deceived by these and remained in firm contact, keeping station on the U-Boat in a position between 1,000 and 1,800 yards on its quarter.

Between 1436 and 1844 a series of attacks was made by " Woodpecker " and " Wild Goose."

Details of these attacks are as follows :—

Time.	Ship.	Range of Losing Contact.	Time to Fire Obtained by	Number of Charges.	Settings (feet).
1436	" Woodpecker "	750 yards	Directing ship ..	10	500 and 550 ft.
1446	" Woodpecker "	800 yards	Directing ship ..	10	500 and 550 ft.
1453	" Woodpecker "	800 yards	Recorder ..	10	500 and 550 ft.
1519	" Wild Goose "	650 yards	Recorder and plot	10	Set to " Safe " (6 explosions heard).
1550	" Woodpecker "	800 yards	—	10	500 and 700 ft.
1628	" Wild Goose "	550 yards	Plot and directing ship.	10	Set to " Safe " (8 explosions heard).
1735	" Woodpecker "	800 yards	Directing ship ..	10	500 and 700 ft.
1820	" Woodpecker "	800 yards	Directing ship ..	10	500 and 700 ft.
1844	" Wild Goose "	700 yards	Directing ship ..	10	Set to " Safe " (5 explosions heard).

" Wild Goose " has stated that her attacks did not damage the U-Boat as none were accurate; that the first missed astern and that in all cases " safe " settings gave greater depths than were intended—between 700 and 900 ft. " Woodpecker " considered that her third attack was an accurate one and states that oil bubbles were observed some considerable time after the depth-charge disturbances had subsided, a fact which has not been confirmed by " Starling." In all except two of these attacks " Starling " endeavoured to con the attacking ship over the U-Boat but the majority of the attacks were considered by " Starling " to have been inaccurate in plan.

During all this time " Starling " had only once lost contact. This happened at 1648 when a large alteration of course by the U-Boat coincided with a temporary breakdown in " Starling's " recorder. Contact was regained ten minutes later.

The position at 1900 was that twelve individual attacks and two barrage attacks, comprising a total of 252 depth-charges, had been made on the U-Boat, none of them having apparently caused damage, that " Starling " was in firm contact in ideal asdic conditions and that the Second Support Group could remain indefinitely. The time that the U-Boat could remain submerged being obviously limited, " Starling " decided, under these circumstances, to wait until the U-Boat had exhausted either her patience, her batteries or her high pressure air, estimated as midnight. From 1900 onwards " Starling " maintained asdic contact while the other three ships held the ring on a square patrol.

During the first watch several futile efforts at evasion were made, accompanied by more S.B.T.s. At 2140 the sound of hammering was heard and ten minutes later something was released which gave a small sharp echo. This may have been nothing more than a S.B.T. which failed to go off but it was treated with suspicion and carefully avoided.

At two minutes after midnight on 2nd June the U-Boat surfaced 1,800 yards ahead of " Starling " and was chased and engaged with 4-in. and Oerlikon gunfire. This soon brought her to a standstill and, at 0007, while lying stopped and in the process of being abandoned, she passed down the port side and was straddled by charges from the port throwers set to 50 and 140 ft. Twenty-seven rounds of H.E. were fired from the 4-in. with fuzes set to " safe." Five hits were seen, of which one burst on the conning-tower, one penetrated and burst inside the conning-tower—a very big hole was seen in this position later—and two more penetrated the stern.

Two officers and 16 ratings were picked up by " Starling " and two officers and ten ratings by " Wild Goose." A large proportion of these were wounded. The U-Boat itself remained afloat until 0050 and the Senior Officer considers that it could have been captured and towed home, had the action taken place nearer port.

The whole action is shown clearly in the track chart which was forwarded and has been reproduced on a reduced scale as Plate 3A.

OBSERVATIONS ON THE HUNT

This hunt, during which continuous contact was held with the U-Boat for fourteen hours, is a complete vindication of the asdic and its capability of holding contact when operated by a well trained team under favourable conditions.

The enemy employed every known tactic while endeavouring to break " Starling's " contact and fired nineteen S.B.T., none of which succeeded in misleading the Anti-Submarine Team.

The hunt again emphasised the already recognised difficulty of attacking with depth-charges a U-Boat which has dived very deep and " Starling " was further handicapped by the inability of the other vessels to hold contact and to attack, thus placing the burden of maintaining contact throughout on her. Contact, except for one very short period, faded at ranges between 600 and 1,000 yards which showed that the U-Boat was undoubtedly very deep. When considering these figures and applying the rule that the minimum range of echo contact will normally be between three and six times the depth of the target, it should be noted that, speaking generally, the factor of 3 should be applied when the target is shallow (say at 200 ft.) and the factor of 6 when the target is deep (say at 600 ft.). These rules, cannot however, be applied with any accuracy and when contact is lost at a range of 800 yards all that can be stated is that the target is probably at a depth between 400 and 600 ft., but may be as deep as 800 ft.

Until more confirmation is received, full credence cannot be given to statements made by prisoners of war as to the great depths to which they have dived. Experience has shown that such statements made under these trying conditions may be greatly exaggerated.

No results are available from echo-sounding gear to confirm the actual depth of " U 202."

It should be noted that " U 202 " was probably of similar construction to H.M. Submarine " Graph," being built at approximately the same time and under the same conditions of mass production and prefabrication. " Graph " could dive to 800 ft. in an emergency but examination of her hull has shown that this depth is dangerously near the collapsing point for strength. Furthermore, her pumps were only designed to work to a pressure head of 400 ft. of water.

The following notes on the recognition of S.B.T. when they are fired are the result of experience during this hunt :—

On release the echo is very much better than that of the U-Boat and in fact drowns the latter for a couple of minutes.

Suspicion is aroused by a sudden change in echo pitch to " echo same," suggesting a change of U-Boat's course if the echo had previously been " high " or " low."

If the ship is in such a position that the U-Boat echo should be giving " echo high " or " echo low," a wide sweep on either side of the S.B.T. will show the U-Boat gradually emerging from it until she shows separately on the recorder trace.

The U-Boat will generally be a fainter echo than the S.B.T.

If the ship is following the U-Boat and stops engines or goes slow, the S.B.T. will close its range on the recorder trace, by comparison with the U-Boat echo.

(f) TRACK CHART (Plate 3A)

(g) RECORDER TRACES (Plates 3B and 3C)

(h) CLOSE-RANGE WEAPONS

The problem of the best weapon with which to deal with a U-Boat that is encountered on the surface at close range has been under consideration for some time.

Various weapons have been tried out and as a result the following are considered to be the most promising :—

6-pdrs. mounted on the bridge instead of Oerlikons.	A certain number of 6-pdrs. are now being mounted in suitable positions in various escort vessels.
A 35-lb. hollow shaped charge mounted on a single spigot mortar which can be freely trained and elevated.	It is hoped to clear the fuze for this bomb in the next few weeks. Two pilot models of the spigot mortar have been constructed for trials.
A special form of projectile fired from the ordinary 4-in. or 4·7-in. gun—so designed that it will not richochet but continue its trajectory under water.	This is only in the research stage and presents many difficulties both as regards ballistics and underwater velocity.
21-in. torpedoes, fired in the normal manner but set to run cold with a quick recovery to set depth and limited range of about 2,000 yards.	It may be possible to reverse the mounting of one or more of the torpedo tubes of a set so as to have a torpedo available for firing on either beam.

Other projects are under development for point blank range.

The United States Navy are developing an unrotating projectile containing 25 lb. of T.N.T. and contact fuze for use from 5 in. gun, with maximum range 1,000 yards.

(j) THE ANTI-SUBMARINE AIR EFFORT ON THE WEST COAST OF AFRICA

The squadrons operating on the West Coast of Africa have to work under extremely difficult conditions. At certain times in the year they have to endure some of the worst flying weather to be found anywhere in the world. In the rainy season, which lasts from June to October, there are tornadoes or line squalls in which aircraft perform many eccentric manœuvres over which the pilot has little, if any, control. Flying into such a storm, he may suddenly find his aircraft climbing

at the rate of 2,000 or 3,000 ft. a minute with the engine throttles closed and the next minute find himself practically falling out of the sky with his engines at full throttle. Conditions at the centre of a tornado are violent enough to break up an aircraft, especially if there is any weak point in it.

In the dry season conditions are good except during the three months from December to March when the Harmattan is blowing. This wind, blowing from the east, brings with it desert sand which permeates aircraft, thereby adding to the normally heavy work of the maintenance staffs and generally shortening the life of engines. When flying in this wind, a pilot may find that visibility is reduced to only 2,000 yards and no horizon, which means instrument flying in the day-time and very accurate navigation if convoys are to be found.

To add still more to the difficulties of maintaining air cover, a number of airfields and flying-boat bases had to be built in malarial areas as no other sites were available. The inevitable result was a high percentage of sickness among R.A.F. personnel ; a Hudson squadron, operating from Jewsang, just outside Bathurst, and living under canvas, had a 120 per cent. malarial rate in the latter half of 1941. Another trouble has been the difficulty of obtaining sufficient stores and spare parts from the United Kingdom owing to lack of shipping.

Even when all these difficulties have been overcome, there have been no rewards in the shape of spectacular kills or surrenders of U-Boats. The work is mainly nothing but "hours of monotonous stooging either under a blazing sun or in torrential rainstorms."

At first it was only possible to escort shipping in the Bathurst–Freetown area but since the end of last year convoys can be given air cover by daylight from Gibraltar to Lagos, if routed inside the Canary Islands. Anti-Submarine escort at night is given when conditions are suitable and daylight commitments allow. North of Sierra Leone, there are now or will be in the near future air bases at Port Lyautey, Casablanca, Agadir, Port Etienne and Dakar and eight more along the coast between Sierra Leone and Portuguese West Africa.

Further south, it is possible, thanks to the close co-operation of the Government of the Union of South Africa, to provide air cover during daylight hours for convoys routed close into the coast from about 200 miles north of the Portuguese West African border round the Cape to the southern end of Mozambique Channel. Sixteen air bases have been or are being developed for aircraft operating in this area.

(k) COASTAL COMMAND ACTIVITIES

For the first time the number of sightings in a month has exceeded two hundred and the number of attacks has passed the hundred. In April there were 150 sightings and 77 attacks and in the previous record month, November, 1942, when operations off the North African coast were at their height, 147 and 86 respectively ; in May the attacks were within 20 per cent. of the combined total for these two months, amounting to 136. There were 217 sightings.

In the Bay area there was the greatest activity, the sightings being almost doubled at 98, and the attacks increasing from 28 to 66, as compared with April, and it would seem likely that one out of every two U-Boats crossing the Bay was attacked. It was noticeable that the operations of the Searchlight-fitted Wellingtons were far less successful during May than in April, when they were obtaining one sighting for about every six sorties. Since the first week of May the results of night operations have fallen almost to nothing and those from the day sorties have greatly increased. Presumably the U-Boats have been forced, as has previously happened, to take all their charge by day, considering day attacks the lesser of two evils, at any rate for the time being.

There have been a large number of successful attacks in this area and some of them have shown the results obtainable from "follow-ups," made possible by the increased force now operating. On the 31st May attacks by one Halifax aircraft of 58 Squadron was succeeded eighty minutes later by attacks by another aircraft of the same squadron. The action was brought to an end by two Sunderland aircraft.

The sightings and attacks which resulted from operations round convoys and those made by aircraft engaged on anti-submarine patrols in Northern waters were about equal in number to the results obtained in the Bay. No ship was sunk within 600 miles of Coastal Command bases. The greatest achievement was in the protection of Convoys H.X.237 and of Convoy S.C.129, which was following it. On the 13th four V.L.R. Liberator aircraft of 86 Squadron were sent to escort H.X.237, which was then about 800 miles south-west of their base. They did not meet it but sighted five U-Boats and attacked three of them. On the same day S.C.129, which had lost two ships on the 12th and was then about 1,200 miles from base, was receiving protection from another Liberator, which sighted two U-Boats. Both of them were attacked. Three Liberators gave cover from 1440 until midnight on the 14th ; two U-Boats were attacked and thereafter there were no more sightings.

Another great effort was made in defence of Convoy S.C.130, to which cover was given almost continuously by day and night from 0817 on the 19th until the evening of the 21st. Twenty-eight sightings and ten attacks were made in this period and not a single ship was lost.

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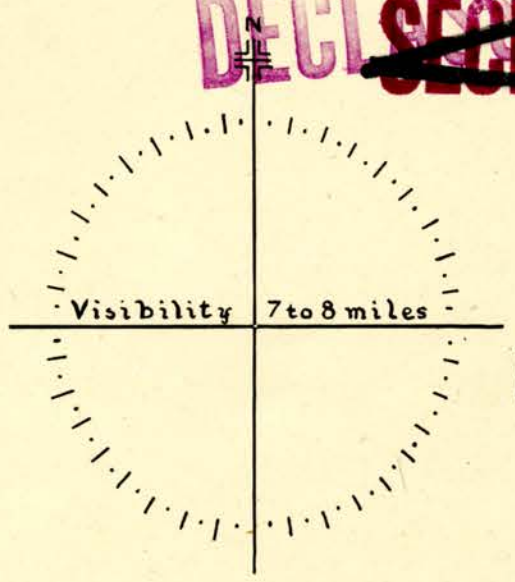


STARLING lost contact from 1648 to 1703

Attack by WOODPECKER at 1735

Attack by WILD GOOSE at 1628

Attack by WOODPECKER at 1550

Attack by WILD GOOSE at 1519

Attack by WOODPECKER at 1453

Attack by WOODPECKER at 1820

WILD GOOSE sent to join KITE in square patrol round attacking ships at 1905

Attacks by WOODPECKER at 1436 and 1446

Attack by WILD GOOSE at 1844

WOODPECKER sent to join in square patrol round STARLING at 2042

Sound of hammering from U-Boat at 2140

U-Boat released object giving small echo at 2150

U-Boat between

Scale 1 0 1 2 Miles

ANTI-SUBMARINE WARFARE DIVISION. JUNE, 1943.

PLATE 3ª

~~SECRET~~ DECLASSIFIED (CS.040/643/5)

SINKING OF U-202

by 2nd Support Group

1st and 2nd June, 1943

Barrage attack by STARLING, WILD GOOSE and KITE at 1050

Attack by STARLING at 1102

Barrage attack by STARLING, WILD GOOSE and KITE at 1124

Attack by STARLING at 1138

KITE sent to screen attacking force WOODPECKER ordered to join at 1200

STARLING obtained asdic contact at 1013

Attack by STARLING at 1018

Five miles apart

All times are Zone +2

U-Boat released 19 S.B.T. between 1013 and 0002

STARLING illuminated and opened fire 0002 to 0008

U-Boat surfaced at 0002

U-202 surrendered at 0008 Crew abandoned ship

STARLING fired port throwers at 0007½

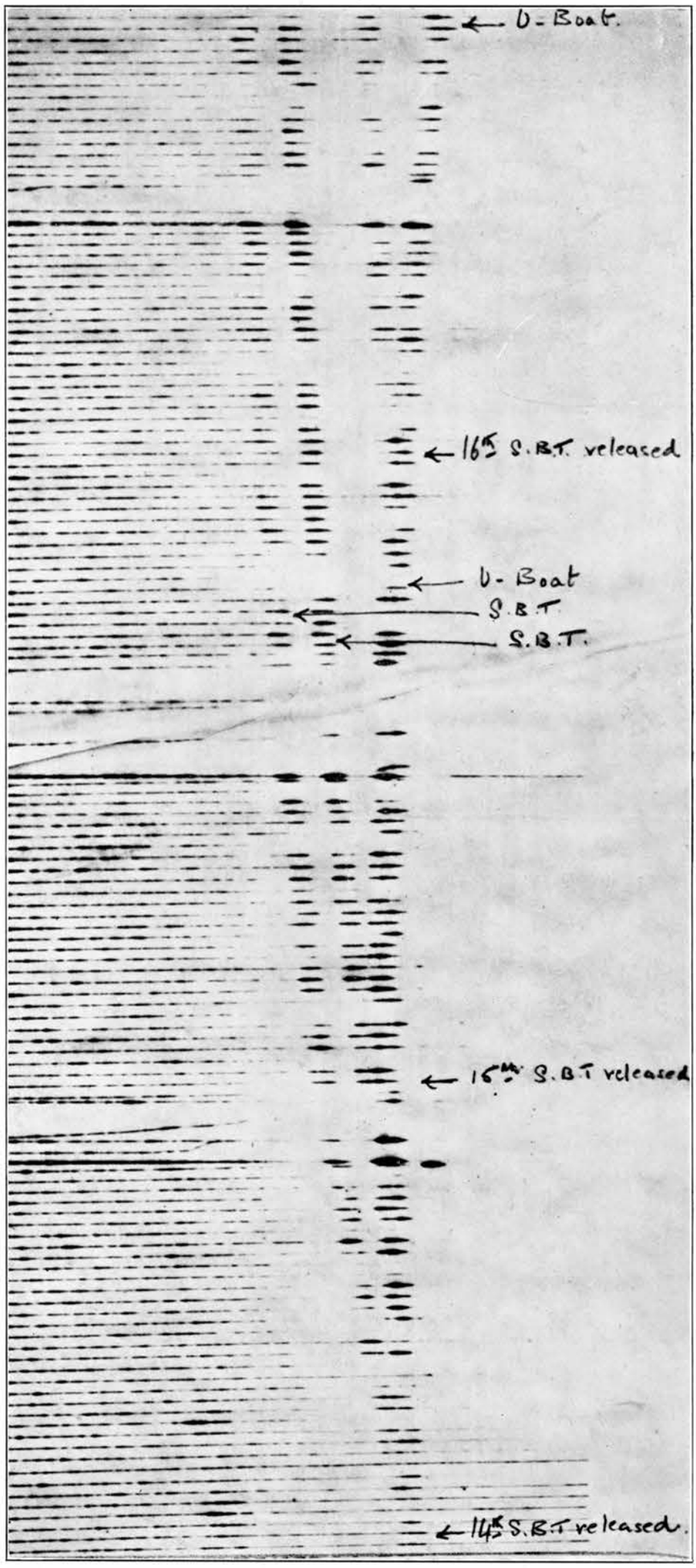
56° 12' N.

56° 08' N.

39° 53' W.

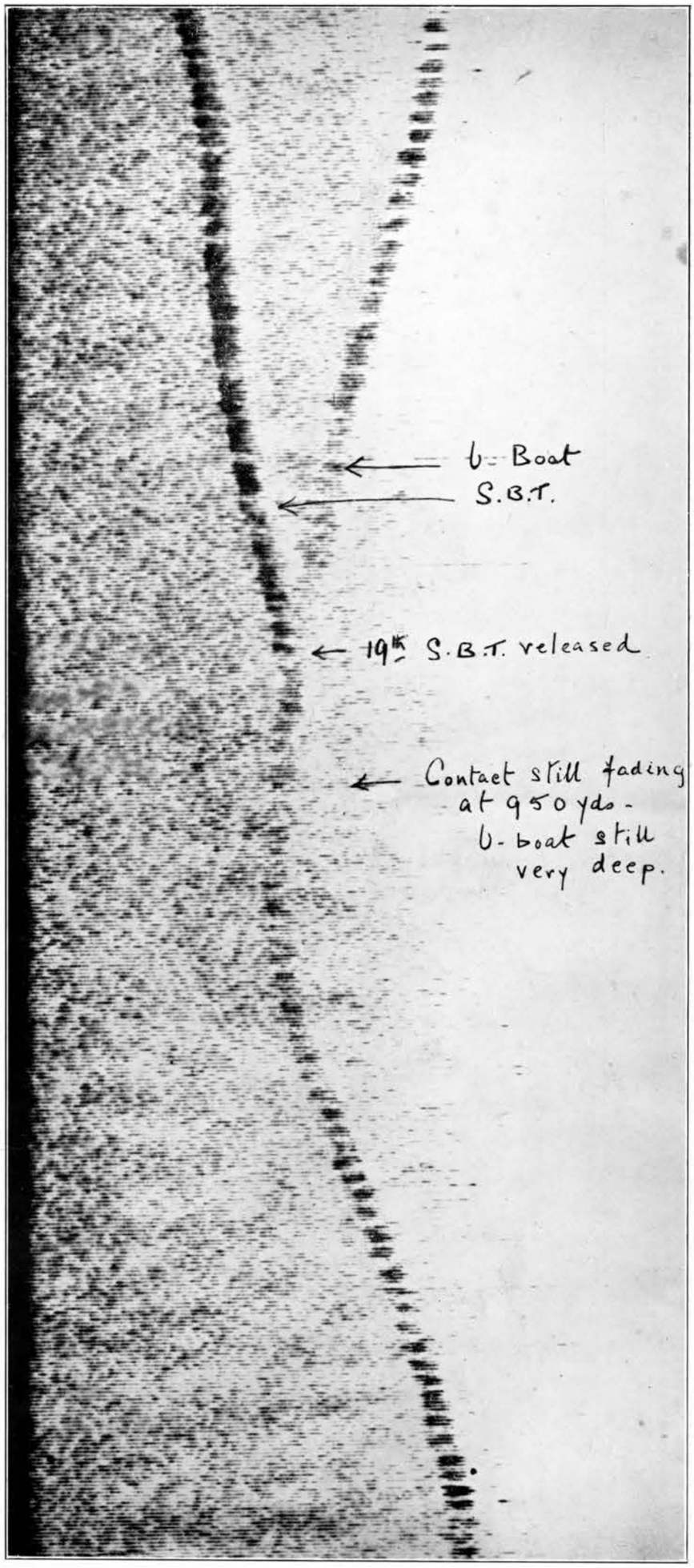
39° 52' W.

PLATE 3B



Recorder Trace.

PLATE 3C



Recorder Trace.

Shipping Protection

The following table shows the amount of shipping passing through the Coastal Command area and the air protection given to it.

Type of shipping.	*Number of sailings.*	*Number protected.*
Convoys and Naval Forces ..	57	52
Independents	62	1

This shipping protection was given by 472 sorties, divided as follows :—

Type of shipping.	*Met.*	*Escorts Failed to meet.*	*Protective sweeps.*
Convoys and Naval Forces ..	234	52	
Independents	2	0	184

Analysis of Operations

The following table analyses U-Boat sightings in terms of the different types of duty engaged in by aircraft and the average duration of the sorties in the area of operations (excluding Gibraltar) :—

	All Anti-Submarine Escorts.	Offensive Operations.			Chance, and other than Anti-Submarine Operations.	Coastal Command Total on Anti-Submarine Work (not from Gibraltar).
		Around Convoy Tracks.	Bay of Biscay.	Elsewhere (Atlantic and N. Passage).		
U-Boats :—						
Sighted	63	20	98	16	5	197
Attacked	34	18	66	10	—	128
Sorties	288	184	740	240	—	1,452
Average number of sorties per sighting.	4½	9	7½	15	—	7·3
Hours actually on patrol ..	1,111	978	4,950	1,451	—	8,490
Average duration of sorties (actually on patrol).	3¾ hours	5¼ hours	6¾ hours	6 hours	—	6 hours

U-Boats Sightings and Attacks by Squadrons and Stations

UNITED KINDGOM AND ICELAND (c)

Squadron.	Type of Aircraft.	Station.	U-Boats seen.	U-Boats attacked.
172	Searchlight Wellington ..	Chivenor	3	2
407	Searchlight Wellington ..	Chivenor	2	1
502	Halifax	St. Eval	9	6
58	Halifax	St. Eval	15	13
10 (O.T.U.) ..	Whitley	St. Eval	21	18
612	Whitley	Talbenny	7	4
10 (R.A.A.F.) ..	Sunderland	Mount Batten	13	5
461	Sunderland	Hamworthy	9	3
224	Liberator	Beaulieu	13	10
59	Liberator	Aldergrove	5	3
236	Beaufighter	Predannock	1	1
311 (Czech) ..	Wellington	Talbenny	2	1
210	Catalina	Pembroke Dock	1	1
423	Sunderland	Castle Archdale	3	3
201	Sunderland	Castle Archdale	1	1
228	Sunderland	Pembroke Dock	2	0
120	Liberator	Aldergrove and Iceland (c) ..	28	11
86	Liberator	Aldergrove	18	11
206	Fortress	Benbecula	3	2
333 (Norwegian) ..	Catalina	Woodhaven	5	0
190	Catalina	Sullom Voe	3	3
84 (U.S.N.) ..	Catalina	Iceland (c)	14	13
269	Hudson	Iceland (c)	19	15
489	Hampden	Wick	2	0
248	Beaufighters	Dyce	1	0
1404	Met. Aircraft	St. Eval	1	1
	P.R.U.	—	1	0
			202	128

FROM GIBRALTAR

Squadron.	Type of Aircraft.	Station.	U-boats seen.	U-boats attacked.
202	Catalina	—	3	2
233	Hudson	—	5	5
179	Searchlight Wellington ..	—	3	1
			11	8
Chance sightings by Transit aircraft (Two near Gibraltar, two in the Bay) ..			4	0
		Grand Total	217	136

(l) DISTRIBUTION OF ANTI-SUBMARINE EFFORT BY COASTAL COMMAND AIRCRAFT (Plate 4)

(m) ALLOCATION OF COASTAL COMMAND SQUADRONS AND ESTABLISHMENTS OF AIRCRAFT ENGAGED IN ANTI-SUBMARINE WORK (Plate 5)

SECTION 3

THE UNITED STATES NAVY

During the past nine months very much appreciated contributions to the Report have been received from the Commander-in-Chief, United States Fleet. In view of the fact that a " United States Fleet Anti-Submarine Bulletin " is now being published—the first issue is being made in June—this section of the Report dealing with the anti-submarine work of the United States Navy will not appear again. Its disappearance is an opportunity for thanking those who, often overcoming considerable difficulties of time and space, provided this very interesting matter.

SECTION 4

CONVOYS

(a) REMARKS ON ATLANTIC CONVOYS

H.X., S.C. and O.N. Convoys

H.X.237, H.X.239, S.C.129, S.C.130 and O.N.184 were all menaced by U-Boats but only S.C.129 lost ships in convoy, two being sunk. Three stragglers from H.X.237 were torpedoed on the 12th. The passage of O.N.S.5 occasioned a great battle in which ten ships were sunk in convoy, as well as two stragglers, but the action was a costly one to the enemy. On 17th May one ship was torpedoed in O.N.S.7. This was the last loss sustained by transatlantic convoys during the month.

Fast O.N. convoys were operated on a five- and six-day cycle, with slow convoys on an 11-day cycle.

Some gales were experienced but the weather was, on the whole, better than in previous months.

American Coastal Convoys

N.K.538 was attacked on the 4th and lost one ship.

Other Convoys

Apart from the sinking of one ship sailed in S.L.128, O.S. and S.L. convoys ran without loss from U-Boats, though aircraft were active in the Gibraltar area. At the beginning of the month T.S.37 was heavily attacked in the Freetown area and lost seven out of 19 ships. A ship sailed in T.S.38 was sunk on the 8th off the Liberian coast.

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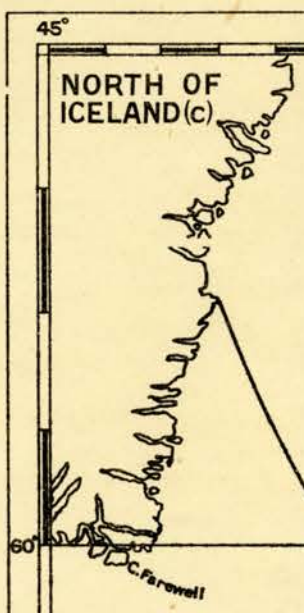
PLATE 4

DISTRIBUTION OF ANTI-SUBMARINE EFFORT BY COASTAL COM



	17 (15, 2, 0) — —	83 (29, 39, 15) 6 —	190 (0, 105, 85) 2 —	198 (0, 118, 90) 2 —	Reykjavik / Kaldardanaes / Vestmenneyjer 383 (8, 71, 304) 3 —	48
	16 (16, 0, 0) — 10,000	19 (17, 2, 0) 1 —	142 (45, 37, 60) 3 —	246 (48, 166, 32) 12 —	271 (33, 205, 33) 3 —	134 (17, 97, 20) 1 —
	6 (6, 0, 0) — 44,000	11 (11, 0, 0) 1 —	16 (16, 0, 0) 2 —	63 (39, 7, 17) 4 —	94 (84, 10, 0) — —	89 (86, 3, 0) 1 —
			8 (8, 0, 0) 1 —	15 (15, 0, 0) 3 13,000	60 (34, 0, 26) 6 14,000	235 (54, 0, 181) 3 —
					43 (10, 0, 33) — 4,000	

GRAND TOTAL

Hours 8263, (1016, 960, 6207)
Attacks 128
Torpedoings 93,000

AREA W

AREA C

KEY

The numbers in each square show the activity in that square, as indicated below.

The first line shows the number of hours flown on A/S duty
divided into hours flown on A/S escort
" " " " protective Sweeps
" " " " offensive operations

The second line shows the number of attacks on U/B's by A/C

The third line shows the tonnage of shipping torpedoed

AREA H = Hudson area
" W = Whitley, Wellington area
" C = Catalina area

45° 40° 35° 30° 25° 20° 15°

60° 55° 50° 45° 40°

A/S W. Div. June 1943.

PLATE 4

OF ANTI-SUBMARINE EFFORT BY COASTAL COMMAND AIRCRAFT

C. B. 04050/43(5)

9,15)	190(0,105,85)	198(0,118,90)	383(8,71,304)	482(10,51,421)	258(98,0,160)
—	2	2	3	6	—
—	—	—	—	—	—
37,60)	246(48,166,32)	271(33,205,33)	134(17,97,20)	75(5,43,27)	46(34,0,12)
AREA C	12	3	AREA W 1	—	—
—	—	—	—	—	—
0,0)	63(39,7,17)	94(84,10,0)	89(86,3,0)	95(71,6,18)	AREA H
—	4	—	1	—	—
—	—	—	—	—	—
0,0)	15(15,0,0)	60(34,0,26)	235(54,0,181)	2802(127,0,2675)	2040(8,0,2032)
—	3	6	3	43	24
t	13,000	14,000	—	—	—
y					
rt					
e Sweeps					
perations			43(10,0,33)		
A/C			—	10(10,0,0)	
			4,000	—	
				—	

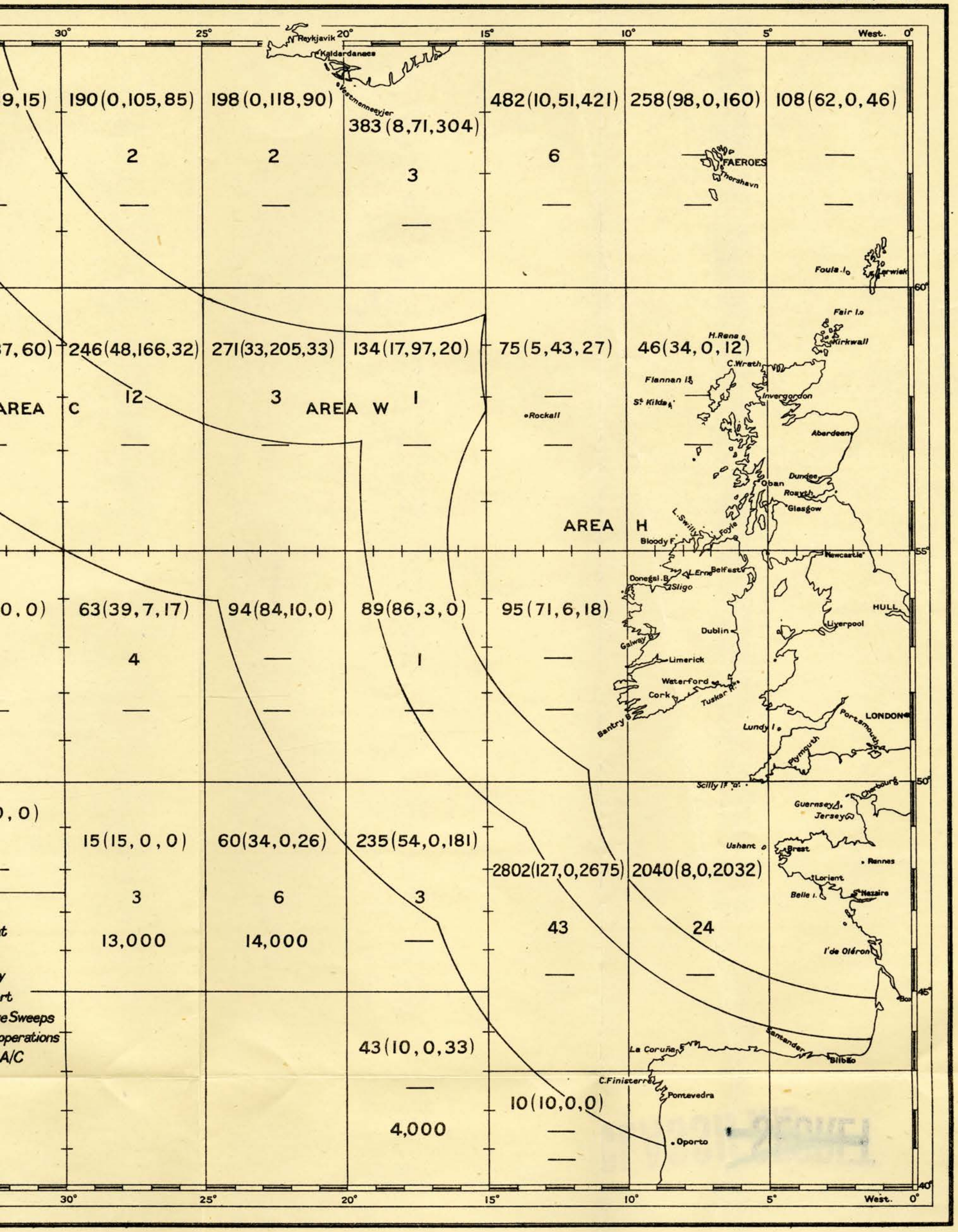


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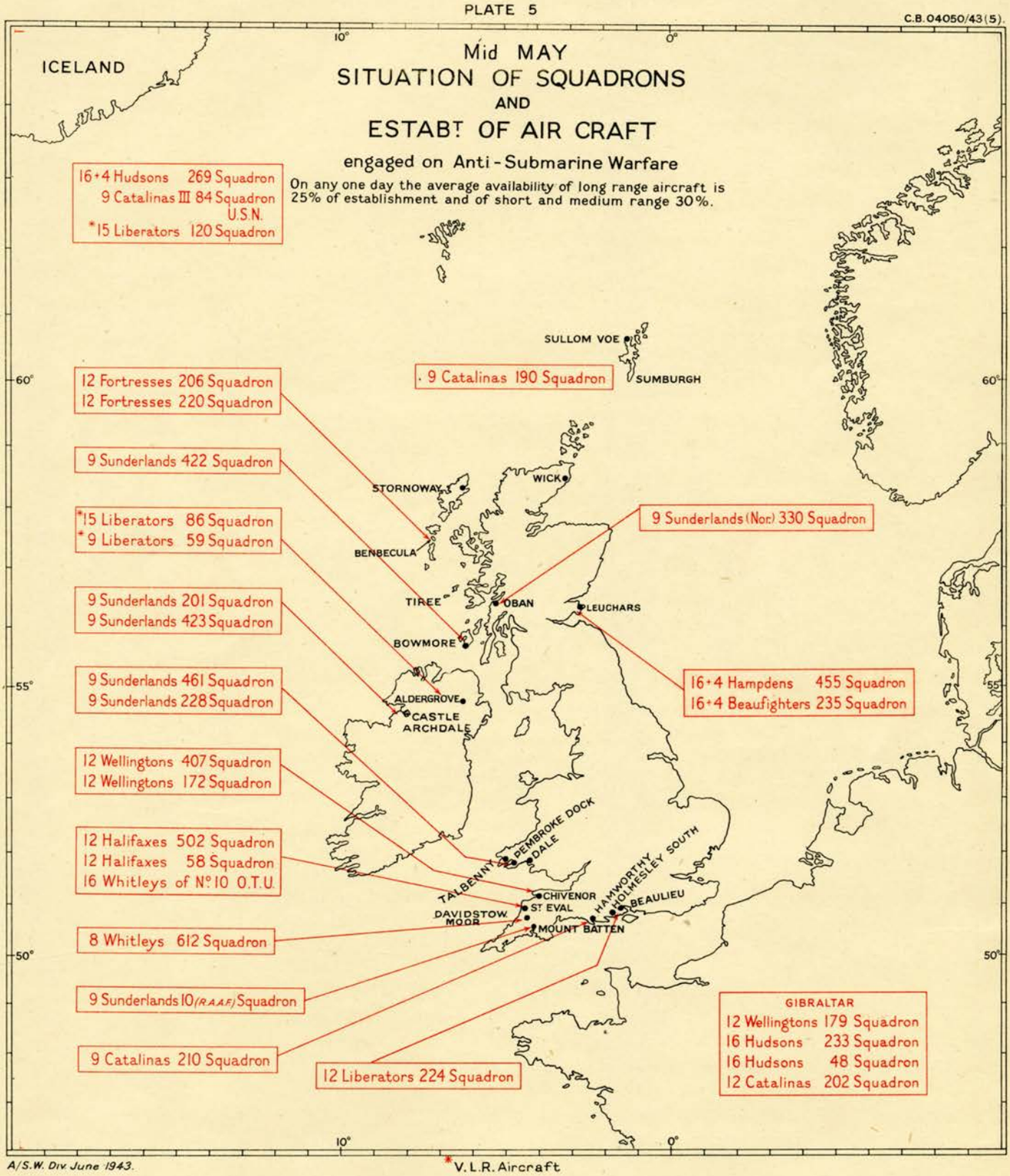
PLATE 5

C.B.04050/43(5).



A/S.W. Div June 1943.

* V.L.R. Aircraft

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(b) MONTHLY RETURN OF VESSELS CONVOYED AND LOSSES DUE TO ENEMY ACTION WHILST IN CONVOY AND EX CONVOY

(1)	Number Convoyed. Convoys. (2)	Number Convoyed. Ships. (3)	Number of Ships Lost by Enemy Action. In Convoy. (4)	Number of Ships Lost by Enemy Action. Ex Convoy. (5)	Percentage Loss in Convoy and ex Convoy. (6)
1. *Ocean Convoys*					
(a) *Inward*					
New York homewards (H.X.) ..	5	215	—	3	1·4
Halifax to U.K. (S.C.)	5	178	2	—	1·1
Sierra Leone homewards	1	54	1	—	1·9
Iceland (c) to U.K.	4	31	—	—	—
Sub-total Inward Convoys ..	15	478	3	3	1·3
(b) *Outwards*					
N. America and Canada outwards					
Fast	6	315	1	—	0·3
Slow	4	155	12	2	9·0
U.K. to Iceland (c)	4	31	—	—	—
Sierra Leone outwards	2	176	—	—	—
Sub-total Outward Convoys ..	16	677	13	2	2·2
(c) *Other Ocean Convoys*					
Gibraltar to Sierra Leone	1	2	—	—	—
Sierra Leone to Gibraltar	1	6	—	—	—
Caribbean to N.W. Africa	1	15	—	—	—
N.W. Africa to Caribbean	1	6	—	—	—
Sub-total Other Ocean Convoys	4	29	—	—	—
TOTAL OF OCEAN CONVOYS	35	1,184	16	5	1·8
2. *Coastal Convoys*					
Southend–Methil	26	835	—	—	—
Methil–Southend	26	883	—	—	—
Channel Convoys	15	279	—	—	—
Oban to Methil	15	170	—	—	—
Methil to Oban	13	225	—	—	—
Belfast to Bristol Channel	9	69	—	—	—
West Channel Convoys	29	499	—	—	—
Total of Coastal Convoys ..	133	2,960	—	—	—
GRAND TOTAL	168	4,144	16	5	0·5

The ships and convoys included in columns 2 and 3 are those arriving at their destinations in the month and the losses in columns 4 and 5 are the losses in those convoys.

(c) SUMMARY OF U-BOAT ATTACKS ON OCEAN CONVOYS

Convoys.	Number of Convoys arriving during May, 1943.	Number of Convoys actually attacked. Number.	Number of Convoys actually attacked. Per cent.	Number of Convoys which lost one or more ships sunk. Number.	Number of Convoys which lost one or more ships sunk. Per cent.
Inward	15	7	47	2	13
Outward	16	5	31	3	19
	31	12	39	5	16

(d) RETURN OF NUMBERS OF SHIPS CONVOYED AND LOSSES DUE TO ENEMY ACTION IN WESTERN ATLANTIC AND CARIBBEAN CONVOYS (EXCLUDING SMALL ESCORTED GROUPS NOT REGULARLY RUN AS CONVOYS)

Convoy.	Short Title.	May, 1943.				Total to 31st May, 1942.			
		No. Convoyed.		Losses.		No. Convoyed.		Losses.	
		Ships.	Convoys.	In Convoy.	Ex Convoy.	Ships.	Convoys.	In Convoy.	Ex Convoy.
Aruba–Curaçao	AW	29	12	—	—	223	97	—	—
Corner Brook–Sydney (C.B.)	BS	3	2	—	—	105	45	1	—
Baia–Trinidad	BT	61	3	—	—	357	13	2	—
Sydney (C.B.)–Wabana	BW	16	4	—	—	141	26	—	—
Cape Cod Bay–Halifax	BX	139	7	—	—	1,478	84	—	1
Curaçao–Aruba–New York	CAN	13	2	—	—	13	2	—	—
St. John's (N.F.)–Sydney (C.B.)	CL	46	5	—	—	377	66	—	—
St. John (N.B.)–Halifax	FH	43	10	—	—	310	67	—	—
Guantanamo–Curaçao–Trinidad	GAT	123	5	—	—	1,347	63	2	1
Guantanamo–Key West	GK	34	4	—	—	335	37	—	—
Guantanamo–New York	GN	192	7	—	—	1,594	62	—	—
Greenland–Sydney (C.B.)	GS	4	1	—	—	87	24	—	—
Guantanamo–Panama	GZ	25	2	—	—	472	39	—	—
Halifax–St. John (N.B.)	HF	55	7	—	—	411	57	—	—
Halifax–St. John's (N.F.)	HJ	20	8	—	—	212	56	—	—
Galveston–Key West	HK	122	6	—	—	923	44	—	—
Halifax–Sydney (C.B.)	HS	54	7	—	—	866	87	—	—
St. John's (N.F.)–Halifax	JH	21	4	—	—	331	60	—	—
Kingston (Ja.)–New Orleans	JO	5	3	—	—	5	3	—	—
Key West–Guantanamo	KG	77	4	—	—	493	38	—	—
Key West–Galveston	KH	6	3	—	—	468	29	—	—
Key West–New York	KN	77	6	—	—	1,413	78	—	—
Sydney (C.B.) – St. John's (N.F.)	LC	19	3	—	—	283	56	—	—
New York–Guantanamo	NG	119	6	—	—	1,441	65	—	—
New York–Key West	NK	70	6	1	—	507	44	1	—
Quebec (Bic Island)–Sydney (C.B.)	QS	7	2	—	—	598	51	8	—
Sydney (C.B.)–Corner Brook (N.F.)	SB	6	3	—	—	101	47	—	—
Sydney (C.B.)–Halifax	SH	46	6	—	—	563	85	—	—
Sydney (C.B.)–Quebec (Bic Island)	SQ	23	4	—	—	428	50	3	—
Trinidad–Curaçao–Guantanamo	TAG	147	6	—	—	1,576	66	10	—
Trinidad–Baia	TB	33	3	—	—	214	14	4	—
Wabana–Sydney (C.B.)	WB	8	2	—	—	197	21	—	—
Halifax–Cape Cod Bay	XB	94	10	—	—	528	60	2	—
Panama–Guantanamo	ZG	37	3	—	—	596	40	3	—
Convoys for which there were no arrivals in May		—	—	—	—	3,361	280	24	13
		1,774	166	1	—	22,354	1,956	60	15

(e) AN ANALYSIS OF THE OPERATIONS OF SUPPORT GROUPS IN THE NORTH ATLANTIC, 14th APRIL TO 11th MAY, 1943

Plate 6 shows diagrammatically the convoys, which during the period 14th April to 11th May, 1943, were reinforced by Support Groups. No U-Boats were encountered by these forces while on passage to or from a convoy but, on 1st June, after the period covered by this analysis, the Second Escort Group hunted and finally sank " U 202 " while on passage to reinforce H.X.241. (A detailed account of this action is given on page 7.)

The following facts emerge from this analysis :—

These nine convoys were shadowed for a period of 470 hours. During 38 per cent. of this time they were reinforced by Support Groups.

The six Support Groups spent altogether 700 hours with convoys, 180 while the latter were being shadowed, and 520 while they were not.

The Support Groups were at sea for a total of 1,860 hours and spent a little under one-tenth of this time with shadowed convoys. The corresponding figure for Ocean Escorts in the North Atlantic during this period was one-sixth.

The achievements of the Support Groups in terms of sightings and attacks were as follows :—

	Sightings.	*Attacks.*	*Remarks.*
Support groups	3	11	Two U-Boats sunk.
Ship-borne aircraft	1	2	One sighting lead to a kill by Support Group.
Escorts	9	45	Four U-Boats sunk. Two probably sunk.
Shore-based aircraft	7	9	One U-Boat sunk. Two probably sunk.

Thus, 24 per cent. of the sightings and 19 per cent. of the attacks made in the vicinity of these convoys were to the credit of the Support Groups and their aircraft.

The above figures do less than justice to the Support Groups, whose value cannot be measured purely in terms of the number of actual encounters they have with the enemy. The U-Boat expects to meet stiff opposition when attacking a Convoy but, to be chased and hunted when she is keeping her distance must be most disconcerting. On more than one occasion U-Boats have trailed Support Groups. Whether or not they have been under the impression that it was the convoy they had in sight, the complexity of the problem, from the point of view of the U-Boat control, must now be much increased. The proof of the pudding is that the U-Boats would now seem to have transferred their attentions to areas where they hope that the opposition is not so overwhelming.

In the following paragraphs the more eventful of these voyages have been briefly summarised. All times are G.M.T.

Convoy H.X.233

This Convoy was escorted by Group A.3 consisting of eight ships, U.S.S. " Spencer " being Senior Officer. H/F D/F bearings were intercepted on the 15th April in the vicinity of the Convoy but it was not thought at that time that any sightings had taken place. In the early hour of the following morning, however, a U-Boat was detected by R.D.F. and hunted.

At 1412 on the 17th, " Spencer," ahead of the Convoy, made an R.D.F. contact at over 13,000 yards. The subsequent hunt was inconclusive. At about 0605, when several of the escort, including " Spencer," were away from the Convoy for various reasons, the leading ship of the port wing column was observed to haul out of the line. No explosion was heard, no signal was made and no rockets were fired and it was considered at the time that she was suffering from engine trouble. She had, in fact, been torpedoed. The U-Boat was not detected and it is not possible to draw any deductions as to the nature of this attack. At 1250 on the same day, " Spencer," while sweeping ahead of the Convoy, obtained an asdic contact which she attacked. This first attack was a hurried one and was not considered accurate. A second was made shortly before the Convoy steamed over the area. " Spencer " was, however, able to maintain asdic contact with the U-Boat as the Convoy passed over her and, once clear astern of the Convoy, was rewarded by appearance of "U 175 " on the surface. Fire was immediately opened and the U-Boat's crew abandoned ship. At 1420 " U 175 " sank, the majority of the crew by this time being in the water. The Third Escort Group had joined to reinforce earlier in the day and had themselves been hunting a U-Boat shortly before " Spencer's " successful action.

Shore-based air cover was provided from 1630 on the 17th and by the afternoon of the 18th it was estimated U-Boats were no longer in contact. The Third Escort Group was then detached.

Convoy H.X.234

H.X.234 was escorted by B.4 Group consisting of H.M.S. " Highlander," Senior Officer, and six corvettes. It was given a northerly route.

The first enemy activity was experienced at 0400 on the 21st April when H.M.S. " Pennywort," on the starboard quarter of the Convoy, sighted a U-Boat and attacked it inconclusively. This was thought to have been a chance encounter, the U-Boat probably being on its way to Convoy O.N.S.3, at that time some 80 miles to the south-east. Later in the day " Highlander " obtained an H/F D/F bearing and a Liberator aircraft was put on to it and sighted the U-Boat.

At 0021 on the 22nd the ship in position No. 75 was torpedoed. There was at this time a wind Force 8 blowing from the north-east and a considerable sea running. The Convoy was somewhat spread out, the torpedoed ship probably being about two miles astern of the main body. The attack was unheralded by any H/F D/F bearings and Operation " Observant," carried out subsequently, was unsuccessful in locating the U-Boat. This was also thought to have been the result of a chance encounter.

The 23rd April was, in the vicinity of the Convoy, a beautiful day with extreme visibility and a calm sea ; in Iceland (c), however, aircraft were grounded by bad weather. It was then appreciated that about three U-Boats were in contact with the Convoy and during the day H.M. Ships " Highlander " and " Vimy " chased them in various directions. No decisive results were achieved in the hunts which took place but the U-Boats' task was undoubtedly made more difficult.

Shortly before 1400, while these two ships were away from the Convoy, an attack was attempted. Its failure was not due to the escort which were unaware of the U-Boat's approach. No ship was hit but a torpedo exploded alongside the leading ship of the 10th column causing slight damage. No other torpedoes were sighted and the U-Boat, which may have fired from extreme range, was not detected.

By the evening of the 23rd flying had become possible and from that time onwards the Convoy was continually escorted by shore-based aircraft which in the next two days made a series of attacks and drove the U-Boats off. One of these attacks by Liberator V/120, brought survivors to the surface and has been assessed as " known sunk."

H.X.234 was reinforced by the Fourth Escort Group, H.M.S. " Faulknor " Senior Officer, at 0800 on the 25th but by this time the Convoy was no longer in danger.

Convoy O.N.S.4

Convoy O.N.S.4 was escorted by B.2 Group (H.M.S. " Hesperus " Senior Officer) and was reinforced first by the Fifth Escort Group (H.M.S. " Biter " Senior Officer) and later by the First Escort Group (H.M.S. " Pelican " Senior Officer). No ships were lost during the passage of this Convoy and, indeed, U-Boats were never able to get into a position to attack, although they several times made contact. From the 14th April, when the Convoy sailed, until the 22nd, when it was first sighted, more or less continuous bad weather was experienced and the speed made good much reduced.

On 23rd April it was estimated that the Convoy was passing through a U-Boat patrol line and, at 1649, a U-Boat sighting report was D/F'd by " Hesperus," who swept out on the bearing and shortly afterwards sighted the U-Boat. Contact was made and the U-Boat hunted. In the last of six attacks the Hedgehog came home with a loud explosion 24 seconds after being fired. This was followed by several muffled sounds and the loss of asdic contact. Although there was no tangible evidence, it is thought that the U-Boat was sunk.

The destruction of this U-Boat evidently took place before others had been homed on to the Convoy and there followed on this action a period of quiet. The Fifth Escort Group had arrived in the vicinity of the Convoy on the morning of the 23rd but decided to remain at a distance of about 50 miles from it.

On the 25th April near H/F transmissions were again D/F'd by " Hesperus," whose plot indicated that at least one U-Boat was near " Biter " and probably shadowing her. " Biter " was warned to this effect and, in a sortie made later, the U-Boat was sighted and attacked. H.M.S. " Pathfinder " was detached from the screen to hunt and was successful not only in finding it but in sinking it. This brought the second phase of activity to an end and by nightfall on the 25th the Convoy was enveloped in fog.

It is probable that the First Escort Group, joining on the 26th, was sighted by a U-Boat which was inadvertently homed on to the Convoy. Low visibility, together with a 40 degree diversion at dusk, combined, however, to throw the U-Boat off the scent and no more signals were heard. The Convoy reached harbour safely and its score was two U-Boats sunk for no loss.

Convoy S.L.128

This Convoy sailed from Sierra Leone on 20th April and the first fortnight of its voyage was devoid of incident. On the 3rd May, Convoy M.K.S.12 joined up and there were then 55 ships escorted by the 37th Escort Group (Senior Officer, H.M.S. " Black Swan ") and three minesweepers.

In 39° N. the Convoy was located by a Focke-Wulf which homed a number of U-Boats on to it. Several inconclusive attacks were made by the escort and, in daylight on the 7th, the Convoy was attacked and lost one ship. This attack was probably made from long range by a submerged U-Boat, which was not detected, coming in from ahead. Several contacts were subsequently attacked by the escort. The results were inconclusive and it is by no means certain that any of them were, in fact, on the U-Boat.

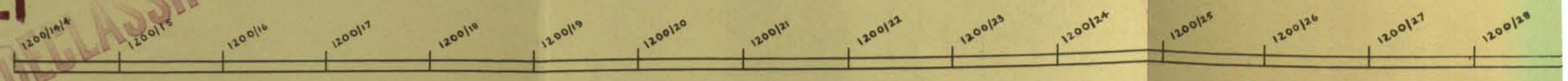
Shortly before dark on the same day the Second Escort Group (H.M.S. " Starling," Senior Officer) reached the Convoy. It was estimated at this time that a number of U-Boats were in the vicinity and were gathering for an attack but, in the words of the Senior Officer of the Escort Group, " the curtain never rose at all and the so-called (but rabbit-hearted) wolf pack softly and silently vanished away."

The Convoy completed its journey without further molestation.

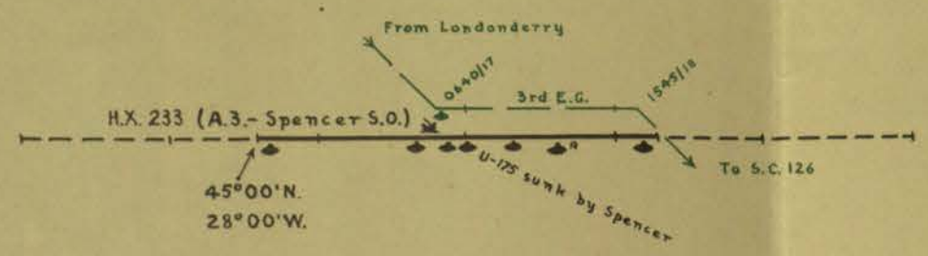
Convoy O.N.S.5

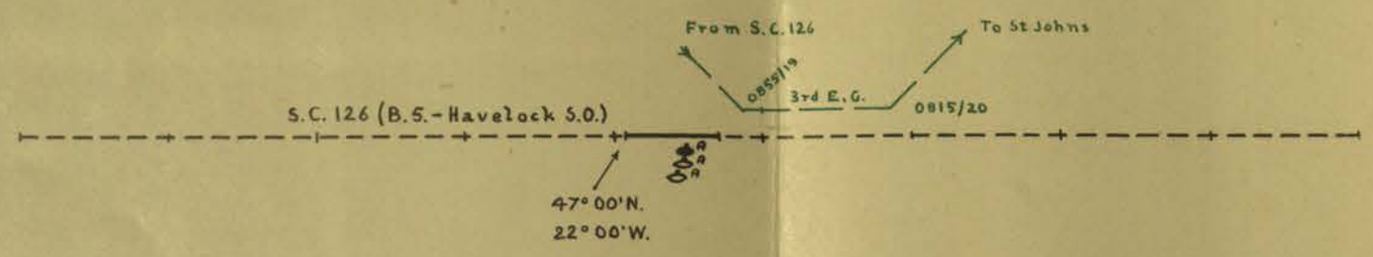
Owing to a combination of extremely strong head winds and very wide evasive routeing, this convoy, which sailed on the 23rd April, took 16 days from Oversay to the " Westomp." During this exceptionally long passage, it was on two separate occasions beset by U-Boat packs and in the interim had to face one of the heaviest gales of the year. The escorting group was B.7, of which H.M.S. " Duncan " was the Senior Officer, the other ships being H.M. Ships " Vidette," " Tay," " Loosestrife," " Snowflake," " Sunflower " and " Pink." Unfortunately, " Duncan's " fuel ran low and, as the weather made refuelling at sea impossible, she had to leave the Convoy before the second and heavier attack.

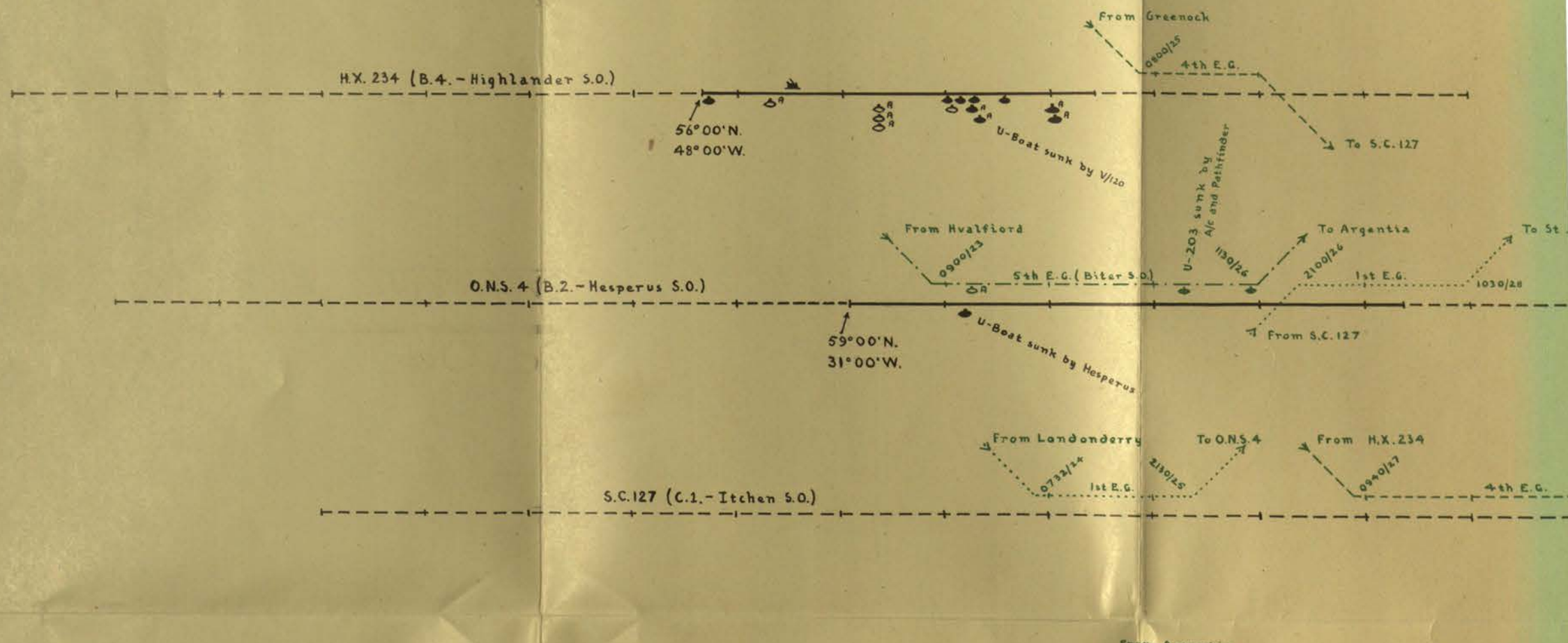
The Convoy was probably first sighted before noon on the 28th April, the U-Boats, thought to have been about eight in number, maintaining contact from then until the 1st May. They attacked several times during the night of the 28th/29th April—" Duncan " alone drove off four—but at about 0730/29 the ship in position 42 was torpedoed. This attack was preceded by an H/F D/F bearing and it seems likely that the U-Boat dived under the escort vessel sent to put her down and fired from inside the Convoy. In repelling these attacks, scare tactics based on H/F D/F appreciations were found to be most effective.

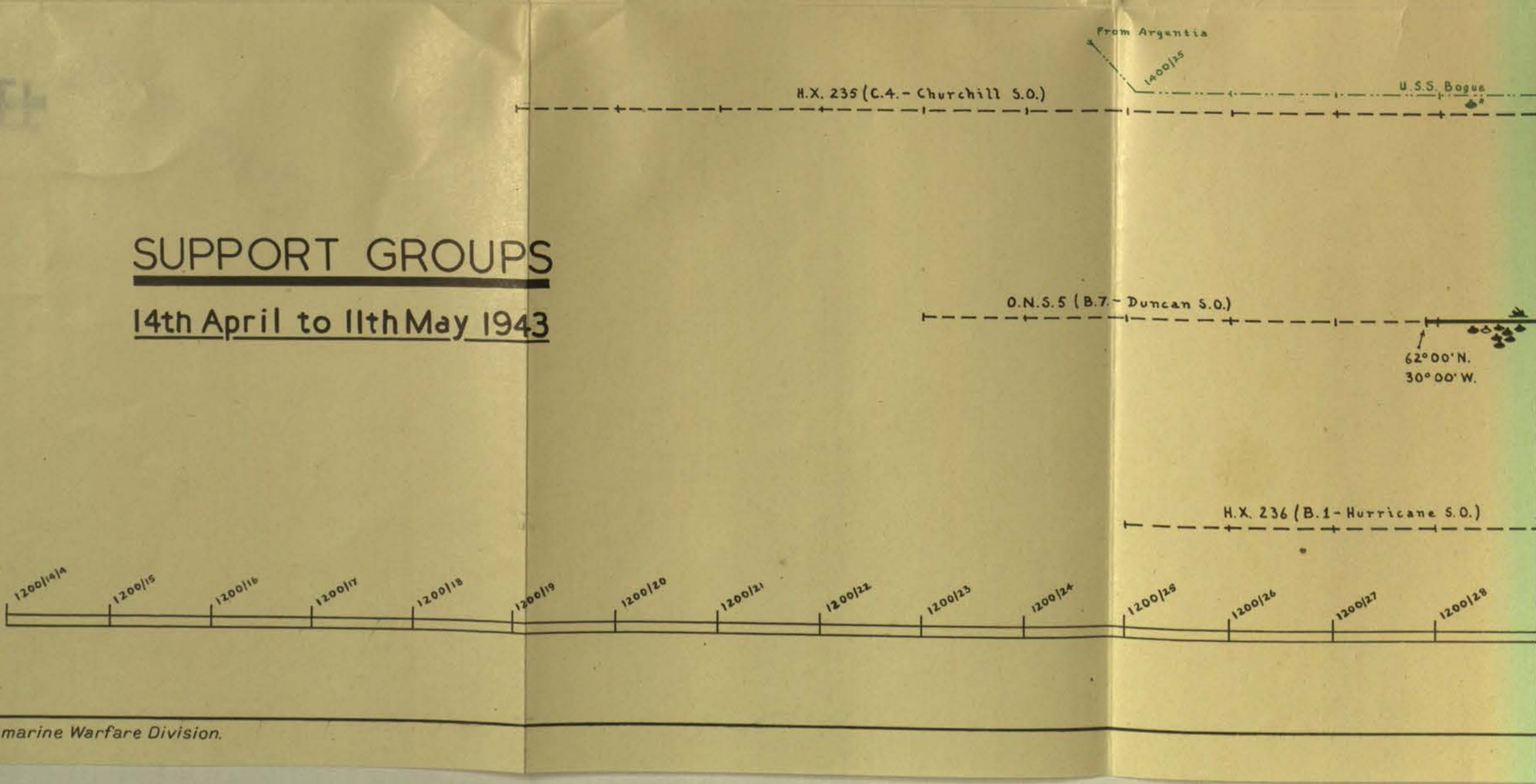


Time Scale - 1 inch = 24 ho









SUPPORT GROUPS

14th April to 11th May 1943

Anti-Submarine Warfare Division.

C.B. 04050/43 (5)

1200/25 1200/26 1200/27 1200/28 1200/29 1200/30 1200/1.5 1200/2 1200/3 1200/4 1200/5 1200/6 1200/7 1200/8 1200/9 1200/10 1200/11

Time Scale - 1 inch = 24 hours

KEY

- U-Boat attacked by Escort
- U-Boat sighted by Escort
- U-Boat attacked by Shore-based Aircraft
- U-Boat sighted by Shore-based Aircraft
- U-Boat attacked by Support Group
- U-Boat sighted by Support Group
- U-Boat attacked by Carrier-borne Aircraft
- Approximate period U-Boats in contact
- Ship torpedoed
- ..... 1st E.G. (Pelican S.O.)
- —— 2nd E.G. (Starling S.O.)
- – – 3rd E.G. (Offa S.O.)
- ---- 4th E.G. (Faulknor S.O.)
- —·— 5th E.G. (Biter S.O.)
- —··— U.S.S. Bogue

Support Groups

All times are G.M.T.

Greenock
0800/25
4th E.G.
To S.C. 127
U-203 sunk by A/c and Pathfinder
1130/26
To Argentia
2100/26
To St Johns
1st E.G.
1030/28
From S.C. 127

To O.N.S. 4
2130/25
From H.X. 234
0840/27
4th E.G.
0830/30
To Greenock

rom Argentia
1400/25
U.S.S. Bogue
To Londonderry

Sailed Freetown 0700/30/9
S.L. 128
39° 00' N.
16° 00' W.
From H.X. 236
2005/7
2nd E.G.
1030/10
To Liverpool
(37th Group - Black Swan S.O.)

Impulsive detached
Penn and Panther detached

From St Johns
2030/2
3rd E.G.
From St Johns
U-Boat sunk by Oribi
0550/6
To St Johns
0809/6
1st E.G.
2230/8
To St Johns

- Duncan S.O.)
62° 00' N.
30° 00' W.
Gale
U-Boat probably sunk by W/5
2 U-Boats sunk and 2 probably sunk 5th/6th by Escort

From Londonderry
0630/3
2nd E.G.
1800/5
To S.L. 128

H.X. 236 (B.1 - Hurricane S.O.)
U-Boat probably sunk by P/86

1200/25 1200/26 1200/27 1200/28 1200/29 1200/30 1200/1.5 1200/2 1200/3 1200/4 1200/5 1200/6 1200/7 1200/8 1200/9 1200/10 1200/11

This was the end of the first action, all the U-Boats apparently having lost contact by the evening of 1st May, by which time a south-westerly gale was blowing and the convoy becoming scattered. The foul weather persisted for four days, the wind reaching Force 9 on the evening of the 3rd.

" Duncan " had to leave the convoy at 1400 on the 3rd, when " Tay " became Senior Officer, but the escort had been strengthened by the arrival of H.M. Ships " Offa " (Senior Officer), " Penn," " Impulsive " and " Panther," forming the Third Escort Group, on the previous evening. H.M.S. " Oribi " was also in company at this time. Owing to lack of fuel, however, only " Offa " and " Oribi " could remain with the convoy for more than 48 hours.

By the morning of the 4th the wind had dropped to Force 6 and H/F D/F activity indicated that U-Boats were again in contact, on the port side. Despite the weather, aircraft of the Royal Canadian Air Force provided air cover during the afternoon and carried out two promising attacks, one of which is thought to have been successful.

The convoy now consisted of 30 ships, with four stragglers escorted by " Pink," proceeding as a separate convoy. One of these ships, " West Madaket," was torpedoed in daylight on the 5th, while " Pink " was rejoining after carrying out several attacks on a firm asdic contact.

The weather was improving and on the night of the 4th the struggle began again and raged until the morning of the 6th. It is possible that some 40 U-Boats were engaged. " North Britain," straggling some 6 miles astern, was torpedoed at about midnight. At about 0100/5 the defence was penetrated, three ships being torpedoed, but another four hours elapsed before the next successful attack, in which two more ships were sunk. Fog, which was later to spread to the area in which the battle was being fought, had already come down on the Newfoundland airfields and air cover could only be given for an hour on the morning of the 5th.

The fight went on throughout the day but only twice did the escorts fail to frustrate the enemy. One ship was sunk at 1240 and three at 1940 but that was the end of the U-Boat's successes, though they did not immediately give up their attempts. By midnight the weather had become calm and foggy, and from then onwards the escorts had the upper hand. In the course of the night they frustrated about 24 attempts to break through and inflicted heavy losses and much damage on the enemy ; a little before dawn the First Escort Group, composed of H.M. Ships " Pelican " (Senior Officer), " Sennen," " Wear," " Jed " and " Spey " came up from the south, completely surprising at least one U-Boat as they joined. The enemy, whose casualties have not so far, been fully assessed—it is thought that at least six U-Boats were sunk—broke off the action in the course of the day and did not renew it.

(f) TRACK CHART (Plate 6)

SECTION 5

NARRATIVES

(a) THE HISTORY OF " U 512 " SUNK ON 2nd OCTOBER, 1942, 115 MILES NORTH OF CAYENNE, BY UNITED STATES AIRCRAFT OF THE 99th BOMBING SQUADRON

Wolfgang Schultze, the Captain of U 512, came of a distinguished naval family but all that descended to him was the name ; vain and incompetent, he commanded his boat with extreme recklessness, strong in the belief that in him Prien was come again. Within a week of leaving Kiel for her trials in January, 1942, U 512 was paying the first of a number of visits to the Oderwerke at Stettin. Schultze had taken her down so steeply that she was in danger of hitting the bottom with her bows ; he pulled her out of her dive so violently that she hit it with her stern instead and limped into the yard at Stettin with a damaged propeller. She came out of dock on 28th January but, owing to the Baltic being frozen, the trials could not be resumed until the 10th April. Towards the end of the month she was at Hela, doing her " Agrufront" trials. During an exercise she dived out of control and panic siezed the crew, but Gerhard Suhren* was on board and, taking command, saved the situation. Soon after this, leaking diesel exhaust valves made it necessary for the U-Boat to go back to Stettin ; after they had been repaired she went to Danzig for submerged torpedo trials.

On the fourth day there she was rammed on the surface by another U-Boat and was so badly damaged that she had to make a third visit to the Oderwerke, where she was repaired and generally overhauled. She left the yards on 8th July, only to be back again in her old berth before the month was out. As she was backing out from the Schickauwerft at Danzig, the clutches failed to engage when the orders were given to stop and go ahead and U 512, carrying considerable sternway, rammed a small coasting steamer which was lying tied up at a nearby pier. The vessel capsized in such a way that her mast tore off a section of the conning-tower fairing.

This was repaired at Stettin and on 7th August U 512 left for Kiel, where she made ready for her first patrol. Already she was known throughout the U-Boat fleet as a " hell-ship." Schultze's heavy drinking and his strict and unfair discipline made him disliked and mistrusted and he was wont to make the crew pay for his recklessness. During practice aircraft attacks he would stay on the surface until the last minute and then dive without warning, leaving the men on deck to swim about until he chose to surface and pick them up.

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* The only Engineer Officer in the U-Boat Fleet to hold the " Oak Leaves "

After passing through the Rosengarten, U 512 set a southerly course which took her past the Azores and into the Sargasso Sea. There, at the beginning of September, she was surprised on the surface by an aircraft, which dropped two bombs before she could dive. Slight damage was done and in an exchange of gunfire Schultze was grazed by a splinter. About a week later the U-Boat came upon an independent, said to be of 12,000 tons and, in the late afternoon, essayed a submerged attack with two torpedoes. Both missed. Schultze waited until after dark and then surfaced and closed to about 1,000 yards to fire two more torpedoes. These not only missed but gave away his presence to the merchantman, which sent up flares and then, increasing speed, escaped into the darkness.

In his next encounter, which took place just before midnight on 12th September, Schultze was more effective and achieved the only success of his career. His victim was the United States tanker " Patrick J. Hurley," 10,865 G.R.T., which was proceeding independently. His torpedo attack was as ineffective as ever but he got dead ahead of the ship and, as she came up, veered off to starboard until he had her about 300 yards just abaft his beam. He then opened fire with all his guns. A hit was obtained on the bridge and other shots set the tanker on fire ; in 10 minutes she was blazing. Schultze signalled to Control that he had sunk a tanker of 7,500 tons and received a signal correcting his mistake in the tonnage—an unusual one—and giving him the name of the ship.

In the same month Schultze fell in with two other ships, one before and one after the sinking of the " Patrick J. Hurley." Both were sighted at night with all their lights showing and were stopped for questioning but both were able to satisfy Schultze that they were neutrals. He later received a signal from Control telling him that he had been deceived by a ruse as to the nationality of the second ship.

On 2nd October the career of the new Prien came to an end. At about 1150 a United States aircraft of the 99th Bombing Squadron sighted U 512 from a range of 15 miles. Attacking from dead ahead, she dropped four bombs from a height of 50 ft. Two were direct hits and she saw oil and air spout to the surface and then settle down into a steady flow which lasted half-an-hour. One man was observed to come to the surface ; a life-raft was dropped near him.

A little time before the aircraft had appeared, this man had gone up on the bridge for a smoke. Suddenly there was a cry " Aircraft dead ahead." The order to crash-dive was given and the man went to his diving station in the galley. He had scarcely reached it when two bombs struck the U-Boat between the galley and the 10·5 cm. gun. He was flung across the boat and, as he hit the opposite corner, a cauldron of soup, which had jumped into the air with the impact, landed on his head. Scalded and lacerated, he struggled up and began to put on his escape lung, only to find that there was no air in the flask.

Water was pouring in and the U-Boat was sinking rapidly. The blowing of all the tanks checked her descent but only for the moment and in a few minutes the U-Boat hit the bottom with her bows and then came to rest on an even keel. The gauges showed about 140 ft. of water.

The man made his way to the bulkhead door leading to the bow torpedo compartment and beat on it with a fire-extinguisher until it was opened. He found in the compartment 14 men coughing with the chlorine gas which was coming from the batteries of the electric torpedoes. A single light was burning. There were only four escape lungs in the compartment—they had been badly stowed and most of them, having got damp through condensation, had been taken to the engine-room to be dried out—but the man managed to get hold of one. He and three other men put them on in the hope that they would act as gas masks.

An attempt was made to get in touch with the other compartment of the boat. One man rang through to the after compartment and then collapsed, leaving the receiver dangling ; the survivor picked it up, gave another ring, heard the words " After compartment flooded " and then silence.

In the bow compartment men, bleeding at the mouth and ears, began to collapse. The air pressure and the chlorine grew worse but the survivor and boatswain's mate managed to open the torpedo hatch. As the water rushed in they found themselves wedged together in the hatch. After a short struggle the boatswain's mate, who had no escape lung, got past the other ; he apparently swam into the space between the hull and the superstructure.

The survivor found himself at the grating over the torpedo loading hatch. He was able to open it and reached the surface. After about an hour-and-a-half he climbed on to the rubber raft, on which he found a supply of food and water and a Very pistol and cartridges. He spent ten days on it.

Twice in that time he sighted ships. The first was a tanker, escorted by aircraft, and he used up all his cartridges without being noticed. A few days later another tanker came in view. At first she seemed to be making for him but she was zigzagging and her next alteration of course took her away from him. By then he had only one paddle—the other, rigged as a spar to carry a piece of rag, had been carried away in a squall. In a frenzy he tied a line round himself and, flinging himself into the water, swam madly after the tanker, towing the raft behind him. Again he was not seen.

His wounds began to fester and the heat of the sun was great ; to escape it he spent some time each day in the water. There were sharks about but in his misery he was beyond fear of them and would content himself with giving them occasional jabs with a paddle if they came too close. As he grew weaker, he was attacked, Prometheus-like, by birds but he was luckier than the god for they only picked pieces out of his shoulders and he was skilful enough to catch and kill two of his tormentors. These he split, dried in the sun and ate, though he did not like their fishy taste.

On the 12th October U.S.S. " Ellis " picked him up, landing him at Trinidad three weeks later. Thanks to his strong constitution and the care which he received on board, he quickly recovered his health.

(b) THE HISTORY OF " U 187," SUNK BY H.M. SHIPS " BEVERLEY " AND " VIMY " ON 4th FEBRUARY, 1943

" U 187's " first operation after entering the Atlantic on 21st January, 1943, was with " Gruppe Landsknecht " which was composed of 15 U-Boats patrolling on a south-westerly course to intercept a convoy outward bound from the United Kingdom. She was given the most northerly position. At the other end of the line—some 350 miles to the south—was " U 444." The speed of advance was intended to be 4 or 5 knots but in the extremely bad weather which prevailed only half that speed could be made and, after a great storm on the 24th, " Gruppe Landsknecht " was disbanded. " U 187 " and some other U-Boats were at first ordered to make for the Newfoundland coast and take up a position on the Grand Bank but almost at once these instructions were countermanded and " Gruppe Landsknecht " was re-formed as " Gruppe Pfeil " with orders to intercept, at all costs, a convoy believed to be carrying supplies to North Russia.

This was on 26th January. For the next five days " U 187 " steamed slowly westward, sighting nothing. The weather improved a little and then deteriorated, being at its worst on the 29th. Two days later " U 187 " sighted through rain squalls a ship of 12,000 tons proceeding independently on an easterly course. This was in the so-called " Swedish lane " and " U 187 " dived in order not to be seen but, observing that the ship was zigzagging, she surfaced again and began to close her from astern. She was almost ready to fire her torpedoes when the vessel suddenly altered course again and disappeared in a rain squall. " U 187 " tried to pick her up again by R.D.F. and on her hydrophones but she had eventually to set course to rejoin the patrol line without finding her. Travelling at her best speed throughout the night, she was back in position by the morning of 2nd February.

About 48 hours later the First and Second Lieutenants were talking on the bridge, the former having just relieved the latter as Officer of the Watch. They must have made a curious pair. The First Lieutenant, Rudolf Strait, was a blond and bulky Austrian from Vienna, who, though he had all the easy-going ways which distinguish the inhabitants of that city, had also a longing for the sea. This the Anschluss of 1938 had enabled him to satisfy and he had at once joined the German Navy. The other officer, Hans Buschman, came from Weimar and was described as a " tight-lipped young Hun." His U-Boat experience, far greater than that of Strait, who was only on his first patrol, had aged him beyond his 21 years without giving him maturity. He regarded himself as something of a " superman," but it was he and not the Austrian who failed in the agony of battle.*

They had talked together for some time when at about 0800 they sighted to port what they took to be a burst of Very lights. It was in fact a rocket fired accidently by a ship in Convoy S.C.118. The U-Boat at once closed the position and about an hour later sighted the smoke and mast-heads of a large convoy. It was 10 miles away and travelling across the centre of her area. The sighting was reported to Control and " U 187 " became contact-keeper; it was decided to shadow the convoy from a position about 10 miles ahead.

This was the first mistake of the U-Boat's Captain, Ralph Münnich. Well intentioned but irresolute, he did not inspire confidence—" If that man is to be our captain " thought one of his men on first meeting him, " then the U-Boat is bound to be lost." He had only made one cruise before taking command and was not at all helped by the fact that the experience of the crew was on the average greater than his. Perhaps his heart was not entirely in the work. Though he had joined the Navy in 1935, he had later transferred to the Air Force. After carrying out a hundred flights and winning an Iron Cross he had gone back to the Navy in 1941/42 as a prospective U-Boat Captain. He had married, about the time he obtained his command, a young and beautiful wife. They had first met at the famous White Horse Inn on the Wolfgangsee. He had taken the sign of the inn as a badge for " U 187 " and she had knitted 45 small white horses, one for each member of her husband's crew to wear.

Within half an hour of taking up the shadowing position ahead Münnich sighted the bow waves of two destroyers approaching at full speed.

H.M.S. " Beverley," stationed 5 miles ahead of the starboard wing column of the convoy, must have detected " U 187 " very soon after she had began to shadow. She at once gave chase. Almost simultaneously S.S. " Toward " obtained an H/F D/F bearing from the U-Boat, and H.M.S. " Vimy " was ordered to join " Beverley." Münnich then made his second mistake. He was anxious to report the speed of the convoy and the strength of its escort before diving and therefore gave orders to zigzag at full speed on the surface. It was at 1145 that he realized that he could not hope to escape from destroyers in this way and gave the order to dive. The U-Boat was sluggish and took a full 50 seconds to submerge. " Beverley " was then about 4 miles away and reached the position at 1200. " Vimy " made contact almost at once but, losing it for a time, did not carry out an attack until 1235.

As the depth-charges exploded, a Petty Officer in " U 187 " turned to his captain and said, " I never heard depth-charges dropped so far away before." Münnich was pleased, for the man had far more experience than he himself had, and said complacently, " Yes, they certainly are a long way away." " Vimy's " next pattern was somewhat nearer but did no appreciable damage.

The boat was trimming badly and whenever she lay on an even keel tended to rise. All the men who could be spared were, therefore, crowded into the bow compartment. Soon a lack of confidence, the result of placing an inefficient captain over a crew containing an unusually large number of experienced

* Though he had a great admiration for the " typical Prussian officer," Buschman could say on board " Beverley ": " I realised for the first time that British sailors are true seamen; the men we call sailors are really only soldiers."

ratings, began to show itself, and Strait, the Austrian First Lieutenant, had to go forward to calm them. Before he returned to the control room, he disconnected the depth-gauge in the compartment. The depth was then about 440 ft.

The gauges in the control room were soon out of action too for " Vimy's " next pattern was a good deal nearer. Lights failed, the hydrophone gear was temporarily put out of order and, due to some damage to the after hydroplanes, the boat suddenly became stern heavy and rose about 200 ft. before she could be checked and brought down to her original depth.

In each of the first three attacks, the hydrophone operator reported, " Run in beginning. Alter course ! " Twice Münnich said " Yes " and did nothing, making a slight alteration after the second attack only. " Pillenwerfer " were ejected after each attack but the boat was moving so slowly that it was thought that they betrayed rather than hid her position. At 1330 " Vimy," who, owing to the failure of " Beverley's " asdics at about 1250, was having to conduct the hunt alone in difficult conditions, made her fourth attack. In " U 187 " the operator picked up the hydrophone effect of two destroyers on opposite bearings. He reported " Run in beginning," adding in despair, " If we don't alter course now, it's all up." Buschman, the Prussian Second Lieutenant, was also listening ; the superman in him shrivelled and, flinging down his earphones, he hurried out of the compartment, his face white.

The next moment there was an explosion " like the roar of an avalanche." The Quartermaster, who was keeping the log, intended to enter " Depth-charges near," but he did not have time to get the third word down.

Some thought that part of the pattern actually exploded on the outer casing of the U-Boat. The port side of the control room was stove in and oil from a fuel tank came pouring down and swamped the batteries, which gave off thick smoke. A fracture 4 ft. long and $\frac{1}{8}$ in. across appeared in the pressure hull aft and the U-Boat, becoming stern heavy, once more took on an angle of about 45°. The unhappy party huddled in the darkness of the bow compartment, cried out in their distress and even the calmer members of the crew in other parts of the U-Boat where the lights had not failed took farewell of one another.

Meanwhile the U-Boat toiled slowly upwards, for Münnich had been told by the Engineer Officer that they must surface at once or lose their lives. The slow ascent took 5 minutes and consumed most of the air in the boat. The Captain gave the order to abandon ship and most of the crew made their way through the conning-tower hatch, being hustled up the ladder by the Engineer Officer, who himself stayed below and was drowned. The order to abandon ship did not reach the men in the bow compartment but the Austrian First Lieutenant again went forward and led them out on to the deck through the galley hatch.

On deck a number of ratings clustered round the 105-mm. gun, some merely for support, others unwisely attempting to clear it away. This at once drew " Vimy's " fire, which sweeping the deck simultaneously with a wave speedily completed the abandonment of the boat ; she sank in a few minutes.

Only one other man beside the Engineer Officer was lost and that was the Ca ptain. It is not certain how he died. He may have shot himself or he may have stood on the bridge and let " U 187 " take him down with her. Whatever he did, he rejected the distant prospect of home and died with his boat, which, by his mistakes, he had thrown away.

(c) THE DESTRUCTION OF " U 444 " AND " U 432 " ON 11th MARCH, 1943

About dusk on the 10th March, 1943, Convoy H.X.228 was attacked. H.M.S. " Harvester " carried out operation " Observant " round the wreck of one of the torpedoed ships, delivered an attack on an asdic contact with a fourteen-charge pattern and then, being out of contact, adopted baiting tactics and withdrew about six miles. There she turned and, after making another attack on an asdic contact, began to close the convoy.

The Captain of " U 444 " had not taken part in the dusk attack. He was a calculating sort of man who disdained wasting torpedoes on small ships when large ones were to be had by waiting. After spending two or three hours trying to work his way into the middle of the convoy, he had at last sighted a ship large enough to tempt him. Having done so, he gave his whole mind to stalking her. So intense was his concentration that it infected the watch, who, looking forward with him, failed to sight " Harvester " coming up astern until she was only about 500 yards away.

" Harvester " had obtained an R.D.F. contact bearing Green 60°, 1,000 yards, as she was taking up her station on the starboard beam of the convoy and, having closed, had sighted the wake and conning-tower of the U-Boat. Her sudden appearance so close astern violently shattered the concentration of the U-Boat's captain on his chosen target. So shaken was he that, as he gave the order to crash-dive, he turned to a petty officer telegraphist and said " Herr Funkmaat, you might as well make your will." The depth-charges of " Harvester's " pattern exploded above the U-Boat when she had reached about 120 ft. ; had they been below her, survivors thought that she must instantly have been destroyed. As it was, water poured in through the forward W.C. and could only be stopped with great difficulty, a switchboard went on fire and more water came in aft, owing to a leak in the cooling system ; to make matters worse, the bilge pumps were damaged and the lights failed.

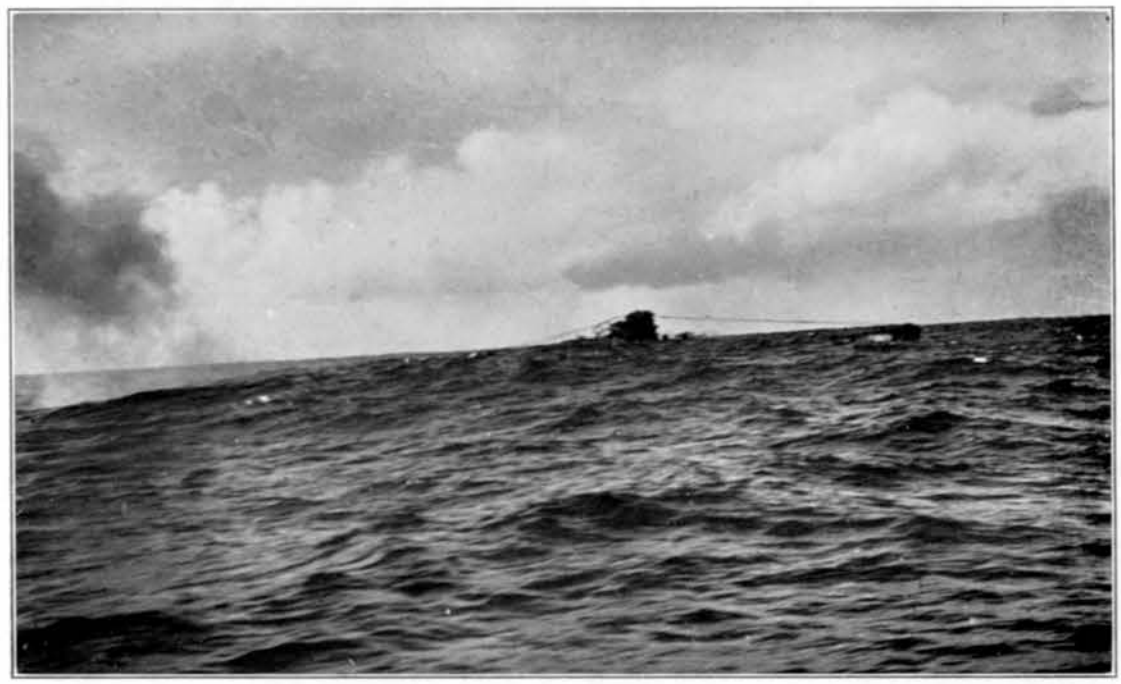
The morale and discipline of the crew were good, but the strain upon them was intense and the nerves of some broke under it. It was realised that there was little chance of saving the U-Boat and the order to surface was given. On coming up " U 444 " ran on her Diesels for a few minutes but was soon detected by " Harvester's " R.D.F. The destroyer bore down upon her, firing her 4·7-in. and Oerlikons' but, though caught in the beam of the 10-in. signal projectors, the U-Boat

PLATE 7

Photographs taken at the sinking of "U. 432"

I

II

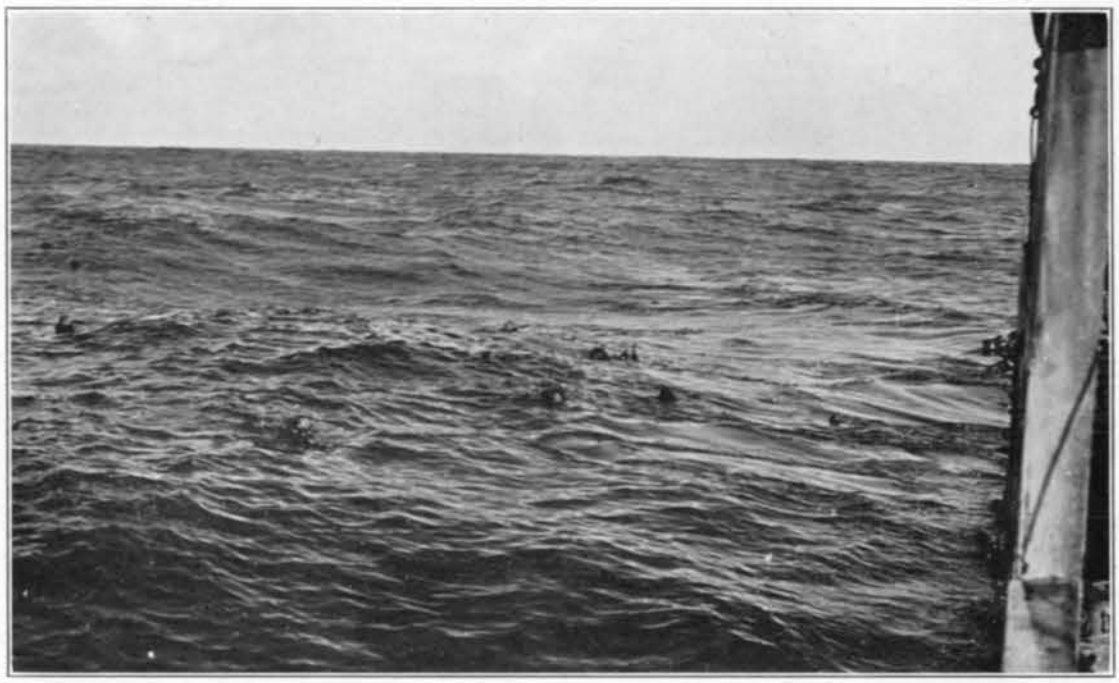


III

PLATE 7A

Photographs taken at the sinking of " U. 432 "

IV



V

twice escaped ramming, each time passing down " Harvester's " side twenty yards away. The third time, however, she was caught as she tried to cross " Harvester's " bows. The destroyer travelling at 27 knots, struck " U 444 " squarely abaft the conning-tower and rode over her, the U-Boat being jammed under her starboard propeller shaft. For ten minutes the U-Boat lay there on her side, bumping and scraping, while " Harvester," flooded forward, worked her engines in vain efforts to get rid of her. At length the U-Boat slid from underneath her stern. As " Harvester " went ahead, she saw " U 444 " sticking out of the water at a steep angle, the water being up to the conning-tower. There was then a loud explosion which so damaged " Harvester's " port engine as to put it out of action.

At about 0135 on the 11th, F.F.S. " Aconit " came on the scene. She first sighted " Harvester " lying stopped and then saw " U 444 " proceeding at slow speed. Picking up the latter with her searchlight, she rammed her amidships, dropping five depth-charges as she passed over her.

Four men were rescued by " Aconit " and one by " Harvester " who, though she had seen men abandoning ship as she rammed and had afterwards heard cries for help, had not been able to search for survivors. " Harvester " and " Aconit " then set course to rejoin.

During the forenoon of the 11th, " Harvester's " starboard propeller shaft cracked and she fell back astern of the convoy.

Three days earlier " U 432 " had left a patrol line off Greenland owing to shortage of oil. Her course to her rendezvous with a supply U-Boat brought her in sight of " Harvester " as she lay stopped and alone. Seeing her plight, the U-Boat circled her several times and then decided to attack. At about noon she fired one torpedo and a few minutes later, after turning, a second from a stern tube. " Harvester " broke in half and sank with great loss of life. As she went down, " Aconit," who had been recalled to screen her, was coming over the horizon.

In the wardroom of the U-Boat, then lying at 65 ft., they were drinking champagne with their dinner to celebrate their triumph. The First Lieutenant and the coxswain had urged the Captain to surface at once after an attack at periscope depth, but he had refused to do so until after he had eaten and drunk. An hour later, when the U-Boat was still at the same depth, there came as a surprise to all—including the hydrophone operator, who had been washing-up the champagne glasses—a series of depth-charge explosions.

Just before the attack, the crew had heard the sound of propellers and had hurried to their action stations, the mouths of many of them full of food. " Aconit " had begun a search and had soon made contact with " U 432," upon whom she dropped a pattern of ten depth-charges set to 100 and 225 ft. Comparatively small damage was done inside the U-Boat, but she lost trim and went down to a great depth.*

The crew thought that it was all over but the boat righted herself and, thanks to the Engineer Officer having started to blow tanks before she had gone very deep, began to rise slowly to the surface. As she came up, the Captain gave orders to prepare to abandon ship. He knew that if he dived again, he would probably not have enough high-pressure air to surface a second time but the First Lieutenant thought that they had a good chance of escaping on the surface and was for starting up the Diesels. On surfacing " U 432 " at once came under heavy fire from " Aconit," the Captain was killed by the second salvo and the U-Boat was abandoned, the Engineer Officer opening the vents. After two minutes of intense fire with all weapons, " Aconit " closed, intending to put her bows athwart the U-Boat and board her, but as it was she lightly rammed her amidships and " U 432 " immediately sank.

The survivors from " Harvester," clinging to rafts and wreckage, had observed " Aconit " turn away just when they thought that she had seen them. Then they had heard the sound of depth-charges and gunfire. These ceased and they saw " Aconit " bearing down to rescue them, the tricolour flying triumphantly at her masthead.

(d) PHOTOGRAPHS TAKEN ON BOARD F.F.S. " ACONIT " (Plates 7 and 7A)

(e) A SUBMARINE OF THE ROYAL NETHERLANDS NAVY SINKS AN ITALIAN U-BOAT

On 9th February, 1943, H. Neth. M. Submarine " Dolfijn " was patrolling submerged off the Cagliari swept channels, being 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, and within a minute an Italian U-Boat, with ensign clearly visible, came in sight of the periscope. She was about 2 miles away. " Dolfijn " went hard-a-starboard and steadied on a 110 degree track. At 1057, just as the Director Angle was coming on, the U-Boat altered course and " Dolfijn " had quickly to turn 40 degrees to port, and estimate the enemy's course and speed afresh. She had time, however, to turn back to starboard and at 1059½ fired a salvo of four torpedoes, set to 8 and 10 ft. at a range of about 2,500 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. At 1101½

* A survivor was certain that the boat went below 1,000 ft., adding that, apart from a slight leak in the stern glands, there was no water entry. " U 432," a 500-ton U-Boat, had been built at Danzig in the early months of 1941, and was on her eighth patrol. *See* p. 9 for a comparison of depths reached by " U 202 " and H.M. Submarine " Graph," both 500-ton boats built in 1941.

there was an explosion. Trim having been regained, the periscope was raised at 1102½ and a great air spout, with much smoke, was seen rising from abaft the U-Boat's conning-tower. She sank rapidly by the stern, disappearing after her bows had been seen 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 instead 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."

(f) A U-BOAT KILLED BY TWO AIRCRAFT OF THE ROYAL AUSTRALIAN AIR FORCE ON SEPARATE PATROLS

On 30th April, 1943, two Sunderland aircraft of the Royal Australian Air Force were independently carrying out anti-submarine patrols in the Bay of Biscay. At 1040 Aircraft " P " of 461 Squadron obtained contact by A.S.V. at a range of 12 miles and then sighted a U-Boat about 5 or 6 miles away, proceeding at 12 knots. The enemy dived too quickly for an attack to be made and the Sunderland, after dropping a marker, adopted baiting tactics and climbed to her original height of 2,800 ft.

About 20 minutes later the smoke float was observed by Aircraft " F " of 10 Squadron. As she closed it she sighted the periscope of the U-Boat about 1½ miles on her starboard bow and dived from 1,600 ft. to attack. The U-Boat surfaced and without delay opened fire, hitting one of the Sunderland's engines, but she could not prevent the aircraft obtaining a straddle with a stick of six depth-charges. The second of these exploded right alongside the port side about 25 ft. abaft the conning-tower.

The U-Boat stopped for about a minute and then went ahead slowly, steering an evasive course and keeping up her fire while the aircraft climbed into position for another attack. P/461, who had sighted F/10 just after dropping the marker and had also intercepted a signal from her, interrupted the U-Boat's manœuvres by herself attacking from astern with depth-charges and gunfire. The stick of six charges, dropped from 100–150 ft. as the aircraft was still in her dive and spaced 100 ft., straddled the U-Boat, the fire from which was now only light and inaccurate. The vessel lifted out of the water and then slowly settled, leaving no target for F/10, though a few moments later the stern was observed to rise vertically out of the water and then disappear again.

Soon after the U-Boat had been finally lost to sight, air bubbles were seen coming up over an area 250 by 50 ft. about a U-Boat's length ahead of the position in which she had submerged, continuing for at least 5 minutes. Two men, probably gunners, were also seen in the water.

(g) A HAMPDEN AIRCRAFT OF 455 SQUADRON SINKS A U-BOAT TO THE NORTHWARD OF THE FAEROE ISLANDS

At 0955 on 30th April, 1943, during an anti-submarine patrol, Hampden aircraft " X " of 455 Squadron, sighted a U-Boat moving very slowly on the surface about 3,000 yards away. She made a diving turn to attack up the U-Boat's course and having descended from 1,000 to 50 ft. dropped six depth-charges in the face of accurate machine-gun and Oerlikon fire. The depth-charges were set to shallow and spaced 95 to 100 ft. apart—the aircraft was travelling at 170 knots—and three of them exploded along the U-Boat's starboard side and three astern. Her stern was lifted about 10 ft. out of the water and she then settled down with a list of about 20 degrees to port.

The U-Boat nevertheless kept up her fire when the Hampden made a second attack but she could not prevent the aircraft from dropping two more depth-charges, again from a height of 50 ft. One of these exploded about 10 ft. from the starboard bow. The aircraft observed the U-Boat's stern rise steeply but when she had completed her circuit the vessel had disappeared and instead she saw about 30 men swimming in a large oily patch.

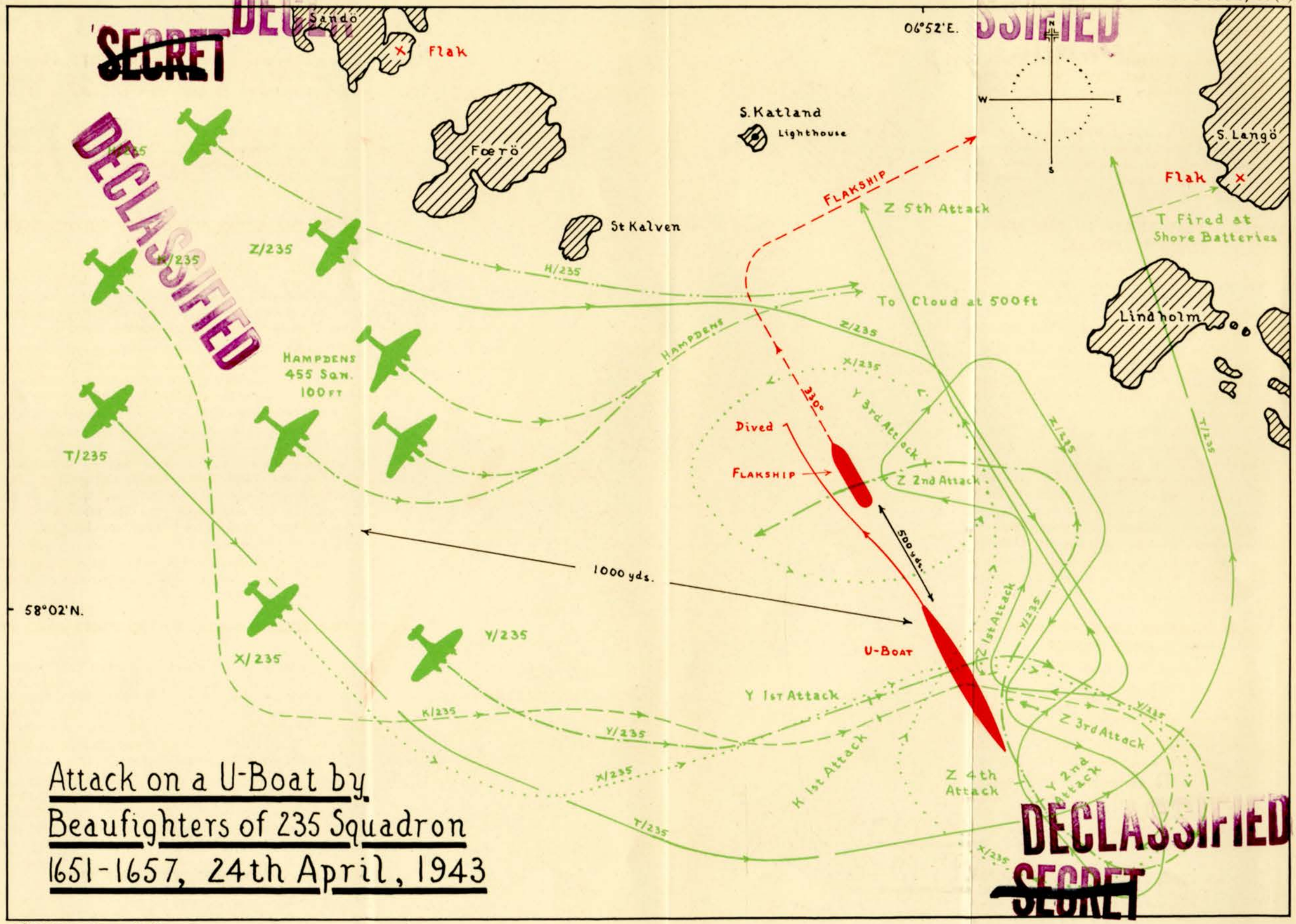
(h) AN ATTACK BY SIX BEAUFIGHTERS ON A U-BOAT ESCORTED BY A FLAK SHIP

On 24th April, 1943, six Beaufighter aircraft of 235 Squadron were escorting three Hampden aircraft of 455 Squadron on a rover patrol off Lister on the Norwegian coast. At 1651, when flying at 50 ft., they sighted a U-Boat. She was proceeding 500 yards astern of a Flak ship of 400–500 tons which, on the approach of the aircraft, opened fire. This fire, which was fairly accurate for height and direction, was supported by fire from the heavy anti-aircraft batteries believed to be on Sande Island. The U-Boat's guns also went into action.

The Hampdens turned slightly to port and disappeared into cloud at 500 ft. between the Flak ship and the coast, escorted by Beaufighter " H." Beaufighter " Y " attacked first, opening fire at 600 yards range, coming in full on the U-Boat's port beam and closing to point blank range. Hits were obtained on the conning-tower and casualties were probably caused among the U-Boat's gun crews for her fire ceased. The aircraft passed over the boat at a height of 50 ft., made a tight climbing turn to starboard and then attacked again from directly astern. Having closed from 300 yards to 100 yards, she made another tight climbing turn to port and opened fire on the Flak ship. Two red glows were seen on the vessel's structure.

Beaufighter " Z " followed, flying in from the direction opposite to that from which " Y " had come. She too attacked the U-Boat twice, the first time full on the starboard beam and the second time from astern on the starboard quarter, going on to attack the Flak ship on her port beam and quarter.

C.B. 04050/43(5)



Attack on a U-Boat by Beaufighters of 235 Squadron 1651-1657, 24th April, 1943

A/S W. Div. June. 1943

The U-Boat then received two attacks from Beaufighter "X," which had been flying on "Y's" starboard quarter but this aircraft gave most of her fire to the Flak ship, which suffered six assaults from her. After the fourth, flames and smoke could be seen coming from between her stern and the funnel; she ceased to reply and turning hard to starboard made for the shelter of the coast. The U-Boat had by this time submerged. As she dived, she came under fire from Beaufighter "K." Meanwhile, Beaufighter "T," finding herself prevented by the other aircraft from opening fire on the Flak ship, passed about 500 yards astern of the U-Boat and, with a wide turn to port, made for the shore batteries on the island of South Largö and attacked them with cannon fire.

Having inflicted some damage on the U-Boat and forced it to dive, the Beaufighters pursued the Flak ship with their fire until she was within 2 miles of Lister. "X" then sighted some Focke-Wulf 190 aircraft taking off from an airfield and the action was broken off.

(j) TRACK CHART (Plate 8)

SECTION 6

MISCELLANEOUS INFORMATION

(a) AN ANALYSIS OF RECENT ENEMY BROADCASTS ON THE U-BOAT CAMPAIGN

One of the leading German wireless commentators, Scharping, began his weekly talk on the 9th June with the words "Apart from the sea war, which we do not even wish to mention today . . .". Three months ago, the theme which Scharping so ingenuously avoids was the principal topic of German propaganda, both for home and foreign consumption. On 7th April the *Berliner Boersen Zeitung* wrote in comment on our heavy March losses :—

> Germany's enemies are calling for a counter-Dönitz-offensive and for a Dönitz to combat the U-Boat menace. By so doing, they have admitted that they are having to fight a rearguard action in the war at sea against U-Boats. The name of Dönitz is a fanfare for the German Navy and a symbol of confidence for the German people. For the enemy it spells terror.

The change in the tone of German propaganda about the U-Boats since the early days of April has been remarkable. Up to then, the theme of the "sea-war" had been used both to offset the winter's reverses in Russia and to encourage the German people into thinking that the U-Boats' successes would seriously delay, if not prevent, the launching of an offensive against Europe by Great Britain and the United States. Reviews of achievements and "front-line reports" describing exploits by individual U-Boats had occupied much space in the German newspapers and much time on the air. In spite of the difficulty of explaining away the Anglo-American landings in North Africa, German propaganda had largely reverted to the attitude expressed by Admiral Lützow in November of last year :—

> The key to Britain's military position lies in the fact that the British Navy and the Merchant Fleet cannot even think any more of offensive enterprises; they can only consider defence.

Towards the end of April this same Admiral Lützow produced a lengthy and elaborate apologia for the failure of the U-Boats in the Mediterranean and the irritating successes of the British submarine arm :—

> The sea-route for the British and Americans is, in the main, across the free ocean and ends on a coast which offers advantages. The depth of water everywhere is such that ships can sail near the coast, while it is not deep enough to give U-Boats the necessary freedom of movement . . . . The coast is long enough for U-Boat attacks on the supply transports to be avoided but it is not so long that it cannot be kept continually under observation by aircraft or auxiliary forces. . . . The water is more transparent in the Mediterranean than in the Atlantic. Consequently U-Boats can be spotted more easily. Finally, the enemy defences are amply supplied with bombs and depth-charges. . . .
>
> Our supply line is tied to the only sea-route across the Sicilian Narrows. Roundabout routes, evasive manœuvres, alternative unloading ports are not possible for us. On the other hand, mines for the protection of transports can only be employed in certain places despite the short sea-route, because the water is too deep. Enemy submarines, therefore, know where to lie in wait for their targets and can be effectively protected by land-based aircraft.

The meagre results achieved by the U-Boats during April seem to have caused consternation at the Propaganda Ministry. For the first time the official announcement issued at the end of every month, summing up the tonnage sunk, was delayed for four days. In the interim, the official German News Agency issued the long and detailed explanation of the situation headed with a special note for German news editors : "Embargo! Free for publication only when the U-Boat sinkings for the month of April are available" which was printed on page 7 of the last Report.

The material contained in this article was heavily drawn upon by German wireless commentators during the early days of May ; at the same time, however, German propaganda began to reveal certain inconsistencies and it looks as if central direction on this theme had temporarily ceased, individual commentators were being allowed to concoct their own explanations. Admiral Lützow disdained the

weather as an excuse and developed two lines of his own ; first, that U-Boats had been so active during March that a lull in April was to be expected and, secondly, that Allied counter-measures were undeniably more effective.

> In January and February, 1943, we were fully justified in holding the incessant storms responsible for the decrease in sinking figures. This does not apply to last month, when it was of decisive importance that our U-Boats, owing to their intensive activity in March, were prevented from continuing their operations to the same extent during April. . . .
>
> We concede bluntly to our enemies that they are leaving no stone unturned to make the war service of our U-Boats more difficult, to repel effectively their attacks, to equalise their successes by new shipbuilding and to fortify confidence among enemy crews. We are also convinced that the enemy will not relax his efforts ; he will make progress so that the struggle of our U-Boats will not become easier but more difficult, stern and splendid.

The other more elementary explanation offered to the German layman was that " there were simply not enough ships which could be sunk." The military spokesman in Berlin, perhaps replying to anxious queries provoked by Lützow, said, according to the official German News Agency :—

> The enemy's anti-submarine defence has not become stronger in any way and the number of German U-Boats has not decreased. No large convoys are crossing the Atlantic at present and the Atlantic has once more become empty. . . . Sinking figures will undoubtedly present a different picture when the Allies set their transports in motion again for any planned large-scale operations.

The German U-Boat sinking claims for March were 851,000 tons. For April, they were 415,000 tons ; for May they were 380,000 tons ; and up to 21st June they were 43,000 tons. To-day German propaganda, stumbling down this precipitous slope and embarrassed by the collapse in Tunisia, has had to reorientate its policy on the sea-war completely. So far as is safe or possible, it ignores the topic. The proportion of news items about the sea has dropped to 4 per cent. of the total broadcast output and the proportion of talks and commentaries has fallen to 6 per cent., but since complete silence would be a dangerous admission, a new line has been evolved for those naval commentators who are allowed to speak. Heinrich Schleicht set the new note in a broadcast on 24th May :—

> The present lull in our U-Boat campaign places us under the obligation of forming a clear picture of just how we stand in the battle of the sea. The German High Command has from the outset had to pursue an ultra-long-term policy. It has always been realised that our mighty opponents could not be prostrated by a blitz victory but only slowly and gradually. It wanted immense courage to take up the cudgels against such a world maritime power as Great Britain.

Since then, heavy emphasis has been laid in all comment on the character of the U-Boat campaign as a war of attrition. At the same time there has been an undercurrent of rather anxious denials that new Allied tactics or weapons can affect the final issue, although it is admitted that these have improved. Attempts are made to distract the attention of the German public from the low current sinking figures by stressing total sinkings since the war began, including the claims made by Japan. A typical extract from the *Voelkischer Beobachter* on 9th June stated :—

> We do not conceal the fact that for several reasons our U-Boats have been denied any striking successes for some weeks past. But the U-Boat war is not limited to the monthly sinking figures. It must be viewed over longer periods. It is quite wrong for Churchill to project the present situation on to the situation in the U-Boat war as a whole. He purposely overlooks the fact that he is now facing the combined European and Japanese menace on all the oceans. The war on the oceans of the world does not end in May or the first weeks in June ; it goes on. Once our U-Boats have adapted themselves to the new conditions, the time will have come to ask Churchill again whether he considers the situation in the U-Boat war as extremely satisfactory.

(b) GERMAN SEARCH RECEIVER (G.S.R.) FOR R.D.F. TRANSMISSIONS

There are now strong indications, from prisoner-of-war evidence, that it has become apparent to the enemy that there is a gap in the G.S.R. wavelength cover (referred to in the March Report*, where it was stated that there was nothing to show that the gear would pick up Types 271/2/3 and their associated types). It is even said that the Germans are losing faith in the gear's efficiency, if they have not lost it already.

They may therefore be expected to make every endeavour to discover what hitherto undetected means of location we are employing and may fit a new experimental search receiver or even an " all-round-looking " R.D.F. An early report of any suspicious fitting on a U-Boat, preferably accompanied by a photograph or a sketch similar to that received from " Spencer " would be of great value.

(c) R.D.F. IN U-BOATS—H/F D/F IN U-BOATS—U-BOATS' ANTI-H/F D/F MEASURES—M/F D/F IN U-BOATS

No more information has been obtained.

(d) MISCELLANEOUS INFORMATION OBTAINED FROM PRISONERS OF WAR

U-Boat Tactics

The U-Boat which first sights a convoy reports the sighting and her own exact position to Control, this being followed as soon as possible by a signal reporting the size, formation, course and speed of the convoy and the number of escorts.

The U-Boat has therefore two signals to make, the second requiring careful observation.† Control passes the position to other U-Boats, which report when they are in touch with the convoy. The contact-keeper, if put down after making his sighting reports, is likely to remain at periscope

* C.B. 04050/43(3), page 37.

† " U 187's " captain, in his anxiety to obtain this information, delayed submerging and tried to avoid the hunting destroyers by evasive st[illegible] page [illegible].

depth in order to pick up low frequency signals from Control. She will probably try to keep within 10 or 15 miles of the convoy, closing in at night to something just over 5 miles. The extreme range for shadowing is 20 miles, contact being then maintained by hydrophone.

The contact-keeping U-Boat reports her position about once an hour but at no definite times. If more than an hour and 20 minutes elapse between two signals her duties pass to another U-Boat, which sends a message reporting that she has taken over and giving the course, speed and position of the convoy. In bad visibility the contact-keeper will make signals at regular intervals twice an hour to home other U-Boats on to the convoy.

As each U-Boat arrives in position, she reports to Control, which gives the order for simultaneous attack when a sufficient number are in contact. The contact-keeper remains astern of the convoy.

The Senior Officer of a group allots attacking positions and keeps himself informed of such things as the number of torpedoes and the amount of fuel remaining in each U-Boat by means of " W/T coded conversation ". This means of communication can only be ordered by Control or the Senior Officer of a group, who fixes a time for the conversation to begin. Otherwise U-Boats do not communicate with each other unless a U-Boat is acting as a link between Control and a group of U-Boats out of direct contact with the base.

U-Boats and Blockade Runners

There have been two recent instances of U-Boats acting in co-operation with blockade runners. On 28th February, 1943, when in 20° W., " Regensburg," who was afterwards intercepted and sunk by H.M.S. " Glasgow " received orders to rendezvous with a U-Boat on 21st March before making the passage of the Denmark Strait. She was two days late in meeting the U-Boat, which she eventually sighted on the surface when she herself was lying almost stopped about 300 miles to the south-eastward of Cape Farewell. She sent across a boat which returned with a G.S.R. set with a diamond-shaped aerial, two telegraphists to operate it and a number of charts of northern waters*.

Another blockade runner, S.S. " Irene," received orders on 13th March, 1943, to rendezvous with a U-Boat in a position north of the Azores, being then about 900 miles to the north-westward of the Cape Verde Islands, but the meeting did not take place until 4th April when they met about 75 miles north of Flores. The U-Boat again provided a G.S.R. set and two operators. She had left Lorient on 18th March, had spent 7 days on passage and had waited 9 days at the rendezvous, being under orders to refrain from attacks until after the meeting with " Irene." While a party from the blockade runner was being entertained on board the U-Boat, a large merchantman was sighted. The guests returned to blockade runner and the U-Boat set course to intercept but when the Germans closed again and renewed the party the U-Boat Captain had to confess that the vessel had got away. H.M.S. " Adventure " eventually caught " Irene " on the 10th April when she was 250 miles west of Cape Finisterre†.

(e) INFORMATION CONCERNING JAPANESE U-BOATS ‡

Great attention is paid to all details which would increase the habitability of the U-Boat during long cruises distant from base in tropical climates—air-purifying, distillation of water and preservation of fresh provisions.

Fresh Air

Air-purifiers increase the endurance of the crew while diving :—

Cruiser U-Boats	From 14 to 76 hours.
Large sea-going, Type 3	From 17 to 63 hours.
Large sea-going, Type 4	From 11 to 56 hours.
Medium sea-going, Type 4	From 12 to 52 hours.

Note.—Oxygen inside the U-Boat while on the surface is given as 20 to 20·5 per cent. ; in one hour's diving, oxygen decreases by ·25 to ·35 per cent.

Fresh Water

In the " I," Type 7, U-Boat, which can carry 24 tons of fresh water, with strict economy consumption can be cut down to ·8 ton per day. The smaller types use about ·5 ton.

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

As regards drinking distilled water, the Japanese are not too happy about it and research is being carried out.

Provisions

These will last, in U-Cruisers, 3 months ; in medium U-Boats, 2 months ; in the smallest type, 20 days.

Ice-boxes are capacious and great attention is paid to the efficiency of refrigerating plants.

Detecting Instruments

Effective range of model 93 hydrophones is given as 25,000 to 30,000 metres with directional error up to 2·8° ; the " H.O." model, 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.

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* *See* C.B. 04051 (66), Section 4, sub-sections xxxiii and xxxvii.

† *See* C.B. 04051 (67), Section 4, sub-sections xx, xxi and xxii.

‡ The following data were obtained from a captured Engineer Officer's notebook. Accuracy of information is graded " B.2."

Wireless

Maximum effective ranges, 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 varies from 3 hrs. 57 mins. to 4 hrs. 12 mins. The K.S.M. model compressor can work up to a depth of 75 metres, the Kampon model up to 100 metres.

Angles

In normal running on the surface the axis of the U-Boat, for different types, varies from 2° to 6° up. Minelayers, however, normally proceed 8° up.

Batteries are installed to permit of an angle up or down of 30° and a list of 45°. Electrolyte may spill with a 45° roll. Maximum list for stability of the U-Boat is about 65°.

(f) EVASIVE ALTERATIONS OF COURSE AT DAWN

In the past it has not been the practice for convoys to make evasive alterations of course at the start of the day, but recent experience has shown that U-Boats may be sent ahead to maintain a diving patrol on the expected line of advance in order to carry out submerged daylight attack. Convoy S.C.130 carried out evasive turns on two successive mornings when U-Boats were known to be in contact ; U-Boats were subsequently located submerged on the original line of advance and were avoided by the convoy.

(g) ICEBERGS

Evidence has been accumulating that a noise closely resembling high-speed diesel hydrophone effect may be heard from an iceberg. This may be caused either by water noises of an iceberg of particular shape or possibly by reflection of a ship's hydrophone effect from the surface of the ice. All personnel should be warned of this as it may have dangerous consequences if attacked by an escort vessel.

(h) HELICOPTERS

Trials took place recently in Long Island Sound of one-man Helicopters landing on a tanker which had a landing platform built over her normal cargo stowage hold before the funnel and with a mast sticking up through it. The pilot had had only 40 hours training in Helicopters. The weather was fine and the sea calm. No difficulty was experienced in landing on this tanker from almost any direction with the ship at any speed ahead or astern.

SECTION 7

MATÉRIEL AND PERSONNEL

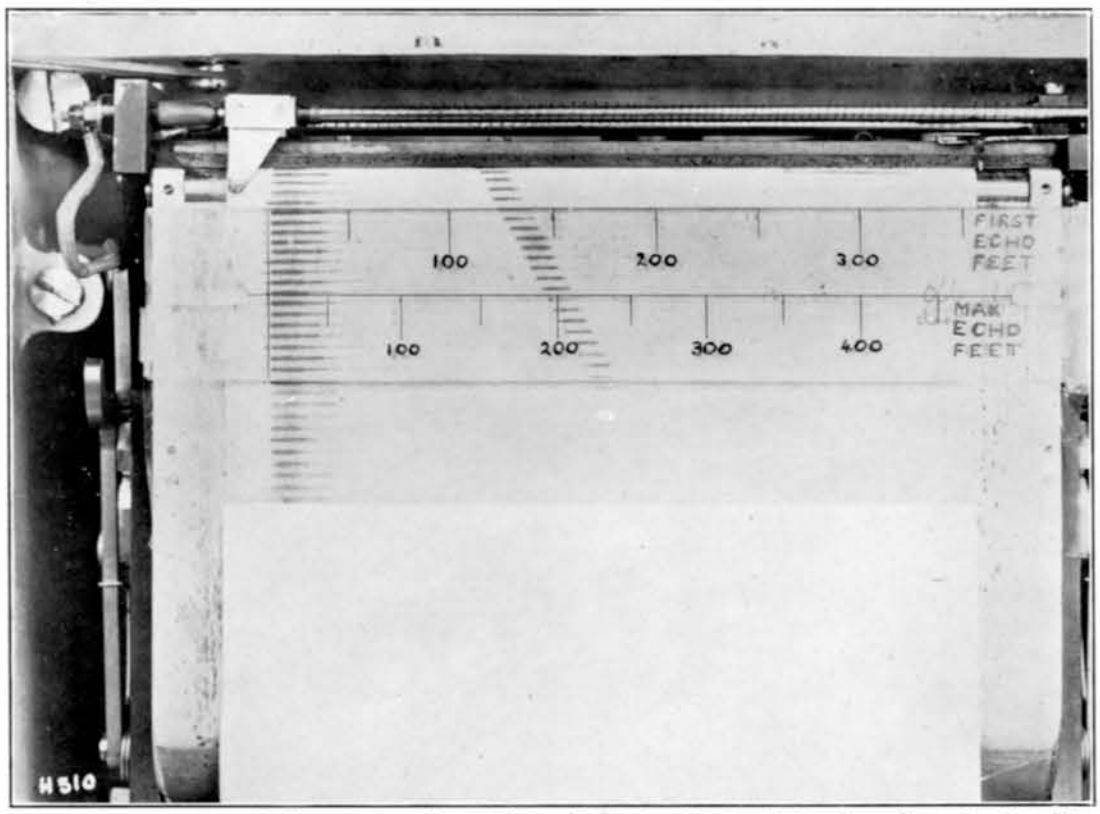
(a) ASDIC DEPTH PREDICTOR*

A means of determining the depth of a U-Boat in time to make use of the information in the attack that is impending has been engaging the attention of all concerned since it became apparent, in the second year of war, that U-Boats were diving to considerable depths in attempts to evade attack.

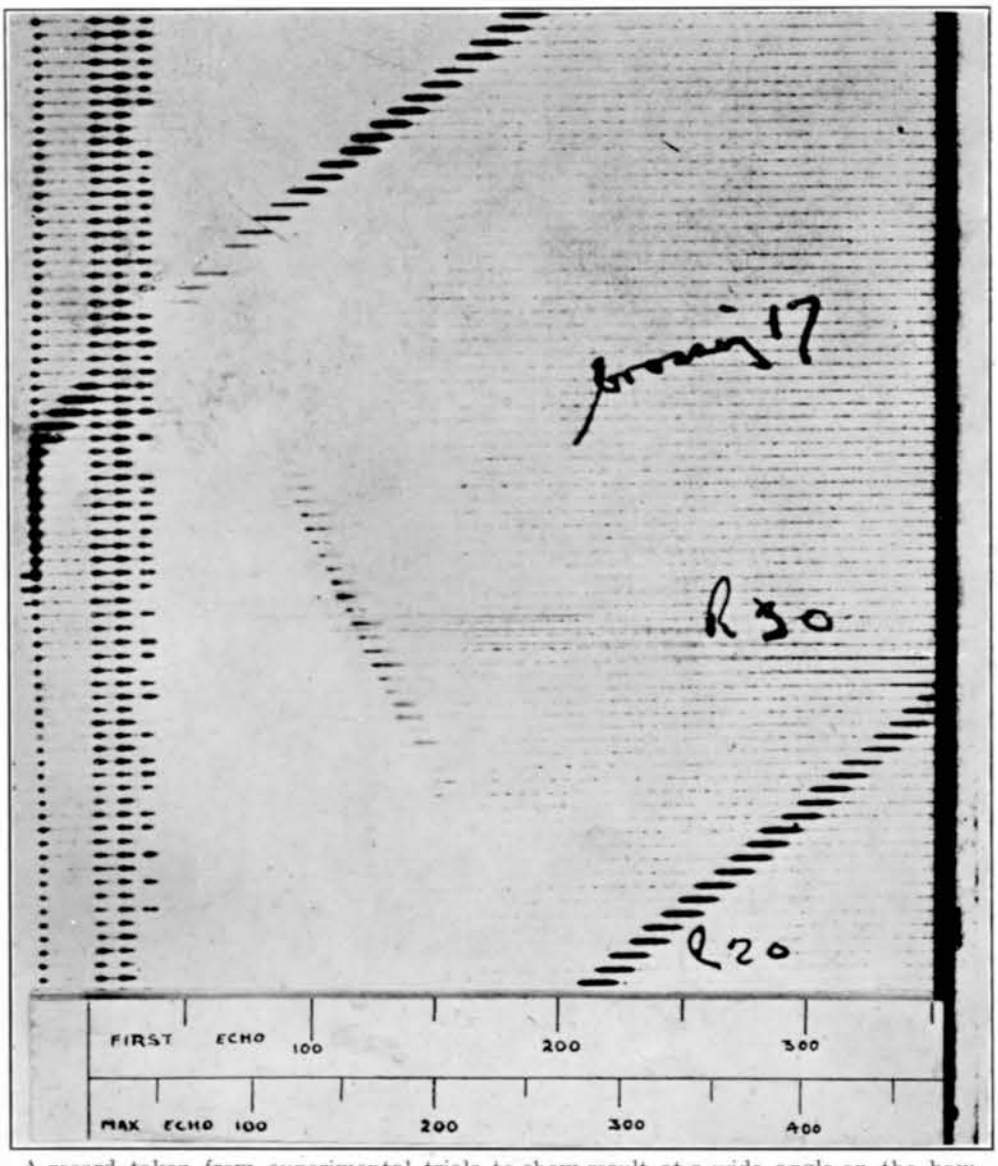
The first sets were developed to obtain experimental experience in the use of the asdic principles involved. They were given the set number Type 147X and employ a means whereby a fan-shaped beam, narrow in the vertical plane and broad in the horizontal plane, is transmitted at an angle of depression of 9° from the horizontal and stabilised to correct for the effects of roll. The beam is effective up to approximately 40° on either bow and also over an angle of approximately 5° in the vertical plane, that is, from 6½ to 11½ below the horizontal. The 18 in. by 1 in. quartz oscillator designed to produce such a beam has a frequency of approximately 60 kilocycles/second.

* For use with the Squid, when depth must be accurately determined over a wide range, a more complicated depth-determination set, Type 147 BX, has been developed. It incorporates a tilting oscillator, the depression of which can be varied between the vertical and 45 degrees. A full description of the set will appear in the next Report.

PLATE 9
I



A portion of a record has been reinserted to illustrate the method of reading depth. The maximum intensity echoes are under the upper part of the perspex and will cut the maximum echo scale at 175 ft. The first echo, now opposite the lower edge of the perspex, would have indicated approximately 170 ft. The light echoes obtained earlier from outside the oscillator beam *may* occur with a beam on target but should not cause confusion as correspondingly strong echoes will have been obtained throughout on the main set.



A record taken from experimental trials to show result at a wide angle on the bow. The 147X was not synchronised with the main set whose transmissions appear as heavy traces right across the record. Short transmission was used on the 147X.

The oscillator is mounted, at 9° depression, in the fore and aft plane in a streamlined strut, or sword, with a Staybrite window; the sword is stabilized for roll in the athwart ship plane by an A.R.L. oil unit, controlled by a vertical seeking gyro. The directing gear is contained in a ten-inch diameter trunk and can be housed inside the hull or lowered to the working position by means of hand-operated hydraulic rams.

The directing gear must be fitted on the centre line at least some ten feet forward of the main asdic dome. The top of the trunk is below the water line and water tightness is maintained by suitable glands through which the moving parts can pass. To economise in space, arrangements are made so that the sword is tilted in the athwart ship plane on its passage to the working position.

A valve transmitting panel provides high frequency power at low voltage, which, through the medium of a tuning panel, is stepped up to about 1,500 volts. A relay type transmitting key, in the transmitting panel, is operated from a recorder working in slave with the recorder of the main asdic set.

A separate receiver amplifies, heterodynes and rectifies the signals before they are passed to the stylus of the recorder. Two telephone jacks are fitted for listening.

The set has been designed so that no special operator is required. Switching-on can be accomplished in a few seconds by the operator nearest the switches and it is only necessary to maintain an intermittent watch on the recorder until the echoes are observed.

The depth may be estimated from the range of either first echo or maximum echo. The former is obtained when the submarine is in line with the upper " cut-on " of the oscillator beam, the latter when it is on the axis of the beam. To enable depth to be predicted by either method, two scales are provided on a single perspex strip mounted in front of the record and just beneath the stylus. The position of the scale is shown in Fig. I in Plate 9.

Fig. II in Plate 9 shows a typical record with a 150-ft. submarine at a relative bearing of 30°.

If the U-Boat is deeper than 500 ft., it is improbable that any echoes will be obtained; if the U-Boat is shallow, the echoes will be obtained too late for any effective action to be taken but between depths of about 100 ft. and 500 ft. valuable information should be given by the recorder. The trace obtained may be seriously affected by pitch but the bad effects can be eliminated if at least four consecutive echoes can be seen on the trace.

Four of these sets have been manufactured, three actually fitted in ships, one of which has been given preliminary trials and used on service in H.M.S. " Sunflower." In the preliminary trials satisfactory results were obtained with a submarine diving at 200 ft. and 150 ft. on various runs. By predicting from the first echo the greatest error was 25 ft., while in the majority of runs it was less than 10 ft. By using the maximum echo method, the greatest error was slightly larger but, in the majority of cases, the accuracy was the same as for the first echo method. Preliminary experience shows that the sword has no adverse effect on the performance of the main set.

It is hoped that the use of the set will in most cases determine the depth of the target in time to apply appropriate depth-charge settings or line up the recorder for attack with the hedgehog and will also assist in estimating the best course to steer for an accurate attack. Results obtained will also give more information of the tactics adopted by the enemy for evasion during the hunt and, last but by no means least, its use may assist in the classification of echoes.

(b) PHOTOGRAPHS (Plate 9)

(c) ASDIC ELLIPTICAL TARGET MODIFICATIONS

A description of the prototype asdic elliptical target appeared in the April, 1942, issue of the Monthly Report. Since that date, experience on service has shown the necessity for modifications of the target towing equipment and a brief outline of the new arrangements is appended.

The wire suspension pennants between target and oropesa float have been replaced by chain. The lower ends are secured inside the target on the centre line and the upper ends to 1-ton shock absorbers shackled to the float. The introduction of the shock absorbers considerably reduces the risk of parting the suspension pennants.

A larger oropesa float is now employed, of a length of 14 ft. 6 ins. The shock absorbers are secured to its underbody and the guide tubes originally used for the suspension pennants have been dispensed with.

Attached to the float are a clip and guides to take the free end of the rubber hose with which the target is wrapped. This permits the air pressure in the hose being readily checked. Although desirable that this should be maintained at between 15 and 25 lb./sq. in., it is not essential and lower pressures are acceptable. It is, however, important that the rubber hose be entirely cleared of water, since otherwise the sound reflecting properties of the target will be adversely affected.

Other modifications consist of the introduction between the float and towing wire of a single wire bridle 18 ft. long and the incorporation of a mooring pendant in the towing span.

The target is shown in Plate 10 and a further description is given in a revised handbook, A/S.H.63/R.1, copies of which are being issued concurrently with supply of the new equipment.

A further type of elliptical target will shortly be available for issue. Steel tubing is used instead of rubber hose and a steel shell will replace the existing wooden framework. This type will be supplied shaken for assembly by base staffs. Minor alterations only will be made to the float and towing assembly.

(d) DIAGRAM SHOWING TARGET AND METHOD OF TOWING (Plate 10)

(e) FITTING OF ASDICS IN MERCHANT SHIPS

Selected merchant ships of the fast cargo-liner type which normally sail independently are now being provided with asdic for self-protection. The vessels average 7,000 to 10,000 tons displacement with speeds of 15 to 18 knots. The majority of those being fitted are new construction but opportunity is also being taken to equip existing ships of this type when the duration of refit or repair permits.

To date eight ships have been fitted ; the new construction programme embraces over 80 vessels and at present two existing ships are having asdic installed concurrently with damage repair.

At present installation is undertaken only in the United Kingdom, although in one case the bulk of the preliminary work, including the fitting of directing gear and dome, was completed in New York while the ship was under repair.

The set provided is Type 136. It incorporates destroyer-type dome and directing gear but the trunk is slightly deeper, so that the dome when housed does not project below the keel. This is necessary, since ships may often take the ground in rivers and ports abroad.

Electrically, the set is primarily designed for the hydrophone effect method of detection though provision is made for echo-ranging. For this reason automatic oscillator training is fitted so that a continuous all-round sweep is normally used. Hand control can be reverted to when it is desired to search a given sector or investigate a suspicious bearing. A.V.C. receiver, telephone and loud speaker reception and an oscillator bearing indicator, showing relative bearing only, complete the receiving apparatus. A compact valve transmitter, which obtains its power from the A.V.C. motor alternator, and a trawler-type recorder are provided for echo-ranging.

The set forms part of the defensive equipment of the ship and the operators are drawn from D.E.M.S. pools. An anti-submarine school has been established in H.M.S. " Carrick " at Greenock : a Lieutenant-Commander, R.N.V.R., is in charge assisted by two instructors, one of whom is a colour sergeant of the Royal Marines. The D.E.M.S. S/D course lasts three weeks and some 20 to 25 ratings are passed out each month. When qualified these S/Ds draw extra pay of sixpence a day. They must then put in six months sea time before becoming eligible to take an H.S.D. course. Short courses are also held for ships' officers. The instruction lays particular stress on the indentification of hydrophone effects and realistic tuition is obtained by using a trainable hydrophone mounted on Gourock Pier, which commands the full width of the Clyde at a point where it can detect all the traffic of this busy estuary.

The ship's asdic complement consists of an H.S.D. and three S/Ds. Until D.E.M.S. ratings have served long enough to qualify for the higher rate, H.S.D.s are lent from the Royal Navy.

A special listening operating procedure has been evolved for Type 136. If contact is obtained, the rules governing avoiding action are generally similar to those used by the larger cruisers. Since the ships make long and possibly uneventful passages, each carries a gramophone and instructional record set in order to test the proficiency and keep alive the interest of the operators. The majority of the merchantmen carry four depth-charges and may later be given " R " mines. Either can be used as an offensive or a deterrent weapon. An adequate gun armament is also mounted.

Most of the vessels fitted are still on their maiden voyages and it is, therefore, not yet possible to quote any specific cases whereby use of the set has prevented possible disaster ; no doubt exists concerning the keenness of both officers and men to make the best possible use of the equipment. When these ships are also given a W.S. R.D.F. set, intelligent use of the two devices should contribute greatly to their security.

(f) THE SQUID

The Squid is in principle a long-range depth-charge thrower, automatically operated and controlled.

It is a three-barrelled mortar, electrically fired, designed to discharge bombs ahead of the attacking ship. It has been made possible to do this from the deck of a comparatively small vessel by a development in mortar design which has reduced the size of the recoil forces. These bombs will closely resemble depth-charges in weight and explosive effect but will have four advantages over depth-charges :—

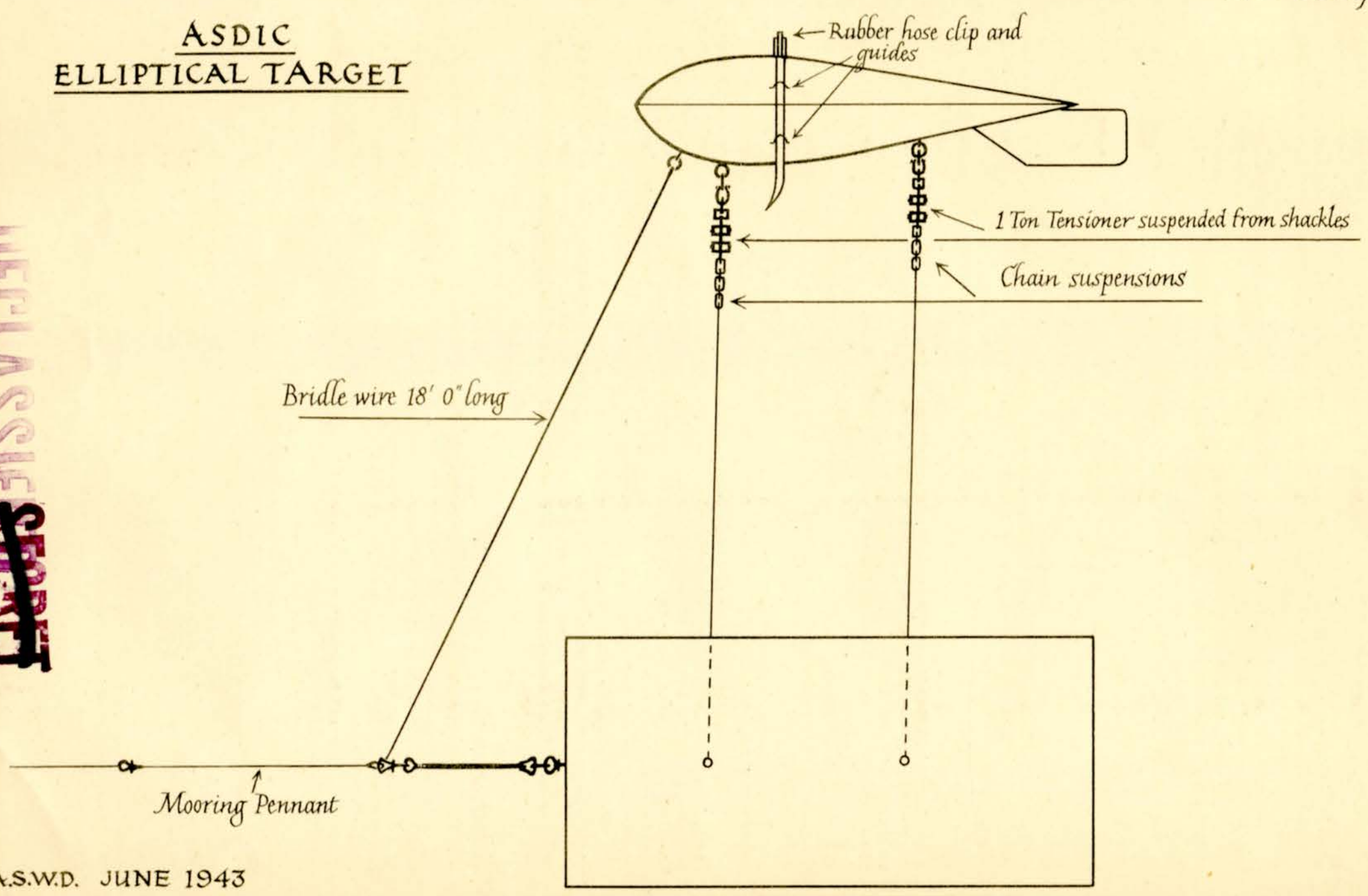
They will be projected with accuracy to a known point well ahead while the attacking ship is still in asdic contact with the U-Boat.
They will have a reliable under-water course.
They will have a much higher sinking speed.
They will incorporate a new type of fuze which will be set automatically to the required depth with a high degree of accuracy.

The depth will be set on the fuzes electrically from the new depth-prediction asdic gear* The mortars will be fired automatically from the asdic range recorder and there will be automatic power stabilization and control. The errors associated with the human element should therefore be very largely eliminated. The mortars will be fitted on the superstructure. The bulk of the projectiles will be stowed below but there will be a ready-use supply in a shelter on the superstructure and the projectiles will be loaded into the mortars from small trolleys, which will run on a type of mine rail. The barrels are turned over into a horizontal position and the projectiles are pushed straight into them from the trolleys.

*. Type 147 BX. See page 26, *note*.

C.B. 04050/43(5)

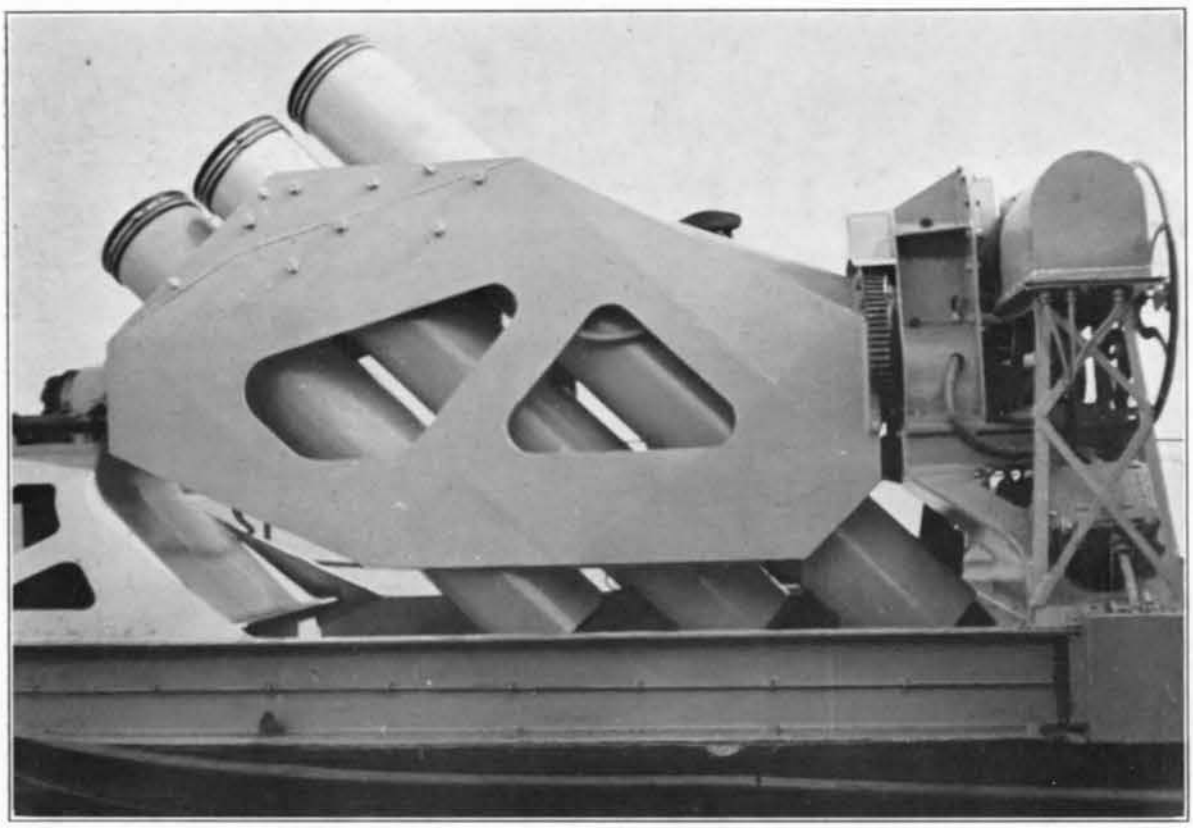
ASDIC
ELLIPTICAL TARGET



A.S.W.D. JUNE 1943

PLATE 11

I



Starboard Mounting. Viewed from inboard.

II

Mounting in Loading position. Showing method of loading.

PLATE 12

III

General view of Mountings in H.M.S. "Ambuscade."

IV

A pattern with practice projectiles.

The intention is to fit the Squid in the frigates and corvettes of the new prefabricated 1943–1944 classes. There will be one mortar in corvettes and two in frigates. The charges will be thrown to the points of an equilateral triangle. When two mortars are fitted, the pattern will be in two layers. When dealing with very shallow U-Boats, only one mortar will be used. Corvettes will carry 24 salvos, frigates 20.

The intention is that the Squid should normally be used where depth-charges are used now and where the Squid is fitted the depth-charge complement will be reduced to three five-charge patterns. These are a standby for cases where the U-Boats appears within, say, 300 yards of the ship.

The pilot model of this weapon has been fitted in H.M.S. " Ambuscade " for trials which have proved very satisfactory.

Naturally, the success of this new weapon depends greatly on the highest degree of security being maintained in connection with it.

(g) PHOTOGRAPHS (Plates 11 and 12)

(h) A.F.O.s AND C.A.F.O.s ON ANTI-SUBMARINE SUBJECTS ISSUED DURING MAY, 1943

Order.	Subject.	Brief Description.	Work by.
A.F.O. 2084/43	Types 145XB/XC	Issue of Establishments lists	—
A.F.O. 2158/43	Hedgehog	Type " B " roll control unit—precautions to be observed.	—
A.F.O. 2387/43	Depth-Charge Rails	All ships fitted—modification	A. and A.
A.F.O. 2388/43	Depth-Charge Traps	All ships fitted—modification to check pawls	A. and A.
A.F.O. 2404/43	Types 144XB/XC	Issue of Errata to Establishment lists	—
C.A.F.O. 917/43	F.A.A. A/S School	Formation	—
C.A.F.O. 933/43	Depth-Charge Outfit	Abolition of 14-charge pattern	A. and A.
C.A.F.O. 934/43	Depth-Charge Drill	Revised procedure	—
C.A.F.O. 937/43	Depth-Charge Outfits	Ships built in U.S.A.—description of equipment	—
C.A.F.O. 938/43	Hedgehog	" River " class frigates—fitting switch A.P. 4087	—
C.A.F.O. 948/43	Types 127/8, 133, 141	Fitting of spare Recorder—REPORT	A. and A.
C.A.F.O. 949/43	Type 134A	Modification to Clamping Plate, Pattern A. 2095	SS/BS.
C.A.F.O. 950/43	Centre Bearing Bases	Modifications	SS/BS.
C.A.F.O. 974/43	Coastal Force Officers	Short A/S Courses	—
C.A.F.O. 979/43	Instructional Films	Distribution of film on Type 144	—
C.A.F.O. 993/43	Hedgehog	Installation of Type " B " roll unit—Amends C.A.F.O. 1296/42.	—
C.A.F.O. 994/43	Hedgehog	Between deck stowage of projectiles	—
C.A.F.O. 1005/43	Type 134A	Supply of spare H.T. connectors and plugs	—
C.A.F.O. 1006/43	Types 144/145 Series	Supply and method of fitting spares for Control Training.	—
C.A.F.O. 1007/43	E/S Types 752/3	Conversion to Types 754/760—Procedure and Reports.	S.S.
C.A.F.O. 1022/43	Ramming U-Boats	Report on damage received	S.S.
C.A.F.O. 1039/43	Types 134 A/C	Removal of Oscillator Unit and Strut–new procedure	B.S.
C.A.F.O. 1041/43	Arc Receivers	Periodical calibration—Amendment to C.A.F.O. 73/43.	—
C.A.F.O. 1082/43	Depth-Charge Equipment	Amendment to C.A.F.O. 654/43	—
C.A.F.O. 1083/43	Grenades No. 36M	Amendment to C.A.F.O. 542/43	—
C.A.F.O. 1095/43	Types 127/8, 132, 133	Fitting Arc receiver	A and A.
C.A.F.O. 1096/43	" Q " Attachment	Use in A/S operations	—
C.A.F.O. 1098/43	A/S Escort Destroyers	Re-armament of " A " to " J " class, etc.	A and A.
C.A.F.O. 1102/43	Depth-Charge Outfit	" Y " cutters only—Modification to stowage	A and A.

(j) RECORD OF OFFICERS AND RATINGS TRAINED MAY, 1943

	Long Course Officers.	Short Course Officers.	Electrical Officers.	S.D. Instructors.	H.S.D.s.	S.D.s.	R.N.P.S. H.S.D.s.	R.N.P.S. S.D.s.	A/S Fixed Defences. Officers.	A/S Fixed Defences. H.D.O.1s.	A/S Fixed Defences. H.D.O.2s.	A/S Fixed Defences. H.D.O.3s.
Numbers in Branch on 1st May, 1943	234	—	—	151	1,028	4,278	355	1,367	175	63	179	791
Numbers qualified, recovered survivors, etc., during May, 1943	3	—	—	—	34	223	23	60	—	—	11	28
Numbers rated up, casualties, withdrawals, etc.	—	—	—	—	3	70	1	32	3	—	—	11
Numbers in Branch on 1st June, 1943	237	—	—	151	1,059	4,431	377	1,395	172	63	190	808
Numbers under training in " Osprey " and " Nimrod " on 1st June, 1943	24	57	6	24	177	341	14	48	27	6	17	31

H.M.S. " Seahawk " :—	*Officers.*	*Ratings.*
1. Total trained up to 31st May, 1943	733	873
2. Total in training on 1st June, 1943 (not included in 1)	22	26

SECTION 8

RETURN OF U-BOAT CASUALTIES

AMENDMENTS AND ADDITIONS

PART A

German U-Boats known sunk

No.	U-Boat.	Ship or Aircraft Concerned.	Date.	Position.
			1943.	
126	"U—"? ..	H.M. Ships "Black Swan" and "Stonecrop."	2nd April ..	320 miles west of Oporto.
127	"U—"? ..	Aircrait (2) of 233 Squadron ..	5th April ..	10 miles south-east of Grand Canary.
		* * *		
133	"U—"? ..	Aircraft of 224 Squadron ..	29th April ..	110 miles north-west of Cape Ortegal.
134	"U—"? ..	Aircraft of 10 and 461 Squadrons, R.A.A.F.	29th April ..	180 miles north-west of Cape Ortegal.
135	"U—"? ..	Aircraft of 455 Squadron ..	30th April ..	130 miles north of the Faeroe Islands.
136	"U—"? ..	Aircraft of 461 Squadron, R.A.A.F.	2nd May ..	81 miles north-west of Cape Ortegal.
137	"U—"? ..	H.M.T. "Coverley"	4th May ..	About 150 miles west-north-west of Cape Finisterre.
138	"U—"? ..	H.M.S. "Oribi"	5th May ..	About 400 miles north-east of Cape Race.
139	"U—"? ..	H.M.S. "Snowflake"	5th May ..	About 400 miles north-east of Cape Race.
140	"U—"? ..	H.M.S. Loosestrife"	5th May ..	About 400 miles north-east of Cape Race.
141	"U—"? ..	Aircraft of 60 Squadron, R.A.A.F.	7th May ..	240 miles north-north-west of Cape Ortegal.
142	"U 528" ..	Aircraft of 58 Squadron and H.M. Ships "Fleetwood" and "Mignonette."	11th May ..	500 miles west of St. Nazaire.
143	"U—"? ..	Aircraft of 58 Squadron	15th May ..	150 miles north-west of Cape Ortegal.
144	"U 128" ..	Aircraft of the United States of Brazil and U.S. Ships "Moffet" and "Jouett."	17th May ..	200 miles east-north-east of Bahia.
145	"U 569" ..	Aircraft from U.S.S. "Bogue" ..	22nd May ..	About 600 miles south-south-east of Cape Farewell.
146	"U 752" ..	Aircraft from H.M.S. "Archer"	23rd May ..	750 miles west of the mouth of the River Shannon.
147	"U—"? ..	Aircraft of 608 Squadron ..	28th May ..	70 miles north-east of Valencia.
148	"U—"? ..	H.M. Submarine "Tuna"	30th May ..	200 miles north-east by north of Muckle Flugga.
149	"U—"? ..	Aircraft (2) of 58 Squadron, aircraft of 10 Squadron, R.A.A.F., and aircraft of 288 Squadron.	31st May ..	270 miles south-west of Scilly Islands.

PART B

German U-Boats probably sunk

			1943	
58	"U—"? ..	H.M.S. "Tay"	6th April ..	400 miles south-west of Reykjavik.
59	"U—"? ..	Aircraft of 172 Squadron ..	29th April ..	100 miles north-west of Cape Ortegal.
60	"U—"? ..	Aircraft of 86 Squadron	4th May ..	600 miles west-south-west of Cape Clear.
61	"U—"? ..	Aircraft of 502 Squadron ..	5th May ..	60 miles north-north-west of Cape Ortegal.
62	"U—"? ..	Aircraft of 233 Squadron ..	7th May ..	180 miles south-west of Cape St. Vincent.
63	"U—"? ..	Aircraft of 86 Sqadron	12th May ..	500 miles north by east of Tekceira.
64	"U—"? ..	U.S.N. Aircraft Pat Ron 84 ..	14th May ..	360 miles south-west of Reykjanes.
65	"U—"? ..	Aircraft of 86 Squadron ..	14th May ..	500 miles north of Fayal.
66	"U—"? ..	Aircraft of 311 (Czech) Squadron	16th May ..	160 miles north-west of Cape Ortegal.
67	"U—"? ..	Aircraft of 58 Squadron	16th May ..	360 miles south-west of Lands End.
68	"U—"? ..	Aircraft of 120 Squadron ..	19th May ..	400 miles south-east of Cape Farewell.
69	"U—"? ..	U.S.N. Aircraft of Pat Ron 84 ..	25th May ..	100 miles south-south-east of Iceland (c).

PART C

German U-Boats probably damaged (A)*

No.	U-Boat.	Ship or Aircraft Concerned.	Date.	Position.
			1943	
45	—	Aircraft of 206 Squadron ..	27th March ..	210 miles north by west of Rockall.
46	—	Aircraft of 58 Squadron	26th April ..	160 miles north by west of Cape Ortegal.

* This assessment indicates a promising attack, believed to have damaged a U-Boat seriously and which may have proved fatal, but on which a higher assessment is withheld pending receipt of intelligence indicating that the attack was probably successful.

PART D

German U-Boats probably damaged (B)

			1943	
116	—	U.S.S. " Charles F. Hughes " ..	24th February	600 miles south of Flores, Azores.
117	—	Escorts of Convoy U.C.1 ..	About 25th February.	About 600 miles south of Flores, Azores.
118	—	Aircraft of 224 Squadron ..	26th February	300 miles west-north-west of Cape Finisterre.
		* * *		
122	—	H.M.S. " Lavender "	18th March ..	540 miles west of Blacksod Bay.
123	—	Aircraft of 220 Squadron ..	19th March ..	480 miles west of Blacksod Bay.
124	—	U.S.S. " Babbitt "	19th March ..	540 miles west of Blacksod Bay.
		* * *		
128	—	H.M.S. " Vidette "	4th April ..	330 miles south-west of Cape Farewell.
129	—	Aircraft of 172 Squadron ..	10th April ..	190 miles west-south-west of Ushant.
130	—	Aircraft of 190 Squadron ..	21st April ..	110 miles north-west by north of the Faeroe Islands.
131	—	Aircraft of 612 Squadron ..	1st May ..	100 miles west-north-west of Cape Ortegal.
132	—	U.S.N. Aircraft of 15 Squadron	15 May ..	220 miles west by south of Madeira.

Note.—This assessment indicates that a U-Boat was seriously damaged and had to return to port.

PART E

German U-Boats probably slightly damaged

			1943	
221	—	Escorts of Convoy U.C.1 ..	About 25th February.	About 600 miles south of Flores, Azores.
222	—	Aircraft of 233 Squadron ..	4th March ..	70 miles west-north-west of Cape St. Vincent.
223	—	H.M.C. Ships " Shediac " and " St. Croix."	4th March ..	200 miles west of Vigo.
		* * *		
233	—	Aircraft of 141 Squadron ..	22nd March ..	70 miles west-north-west of La Rochelle.
234	—	H.M.S. " Vanessa "	26th March ..	180 miles south-east of Cape Farewell.
235	—	Aircraft of 423 Squadron ..	5th April ..	440 miles west of Cape Clear.
236	—	Aircraft of 120 Squadron ..	6th April ..	390 miles south-west of Reykjavik.
237	—	Aircraft of 58 Squadron	22nd April ..	90 miles north of Cape Ortegal.
238	—	Aircraft (4) of 235 Squadron ..	24th April ..	Off Lister.
239	—	Aircraft of 172 Squadron ..	1st May ..	180 miles north-west by west of Cape Ortegal.
240	—	Aircraft of 269 Squadron ..	2nd May ..	165 miles west of Ostero, Faeroe Islands.
241	—	Aircraft of 612 Squadron ..	2nd May ..	210 miles north-west of Cape Ortegal.
242	—	Aircraft of 58 Squadron	7th May ..	225 miles west-north-west of Cape Ortegal.

PART J

Italian U-Boats probably damaged (B)

			1943	
38	—	H.M. Ships " Dulverton " and " Exmoor."	19th April ..	40 miles north-west of Tobruk.

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