SECRET

COASTAL COMMAND REVIEW

August, 1943

Vol. II, No. 4

HEADQUARTERS,
COASTAL COMMAND
ROYAL AIR FORCE

No. 569

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The Air Officer Commanding-in-Chief,
Coastal Command.

COASTAL COMMAND REVIEW

Vol. II, No. 4—August, 1943

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CHART

SUMMARY OF THE MONTH'S WORK—AUGUST, 1943

1. August has seen a new turn in the critical and hard-fought Battle of the Bay—a battle which, when all the facts are known, may one day rank with the Battle of Britain as one of the decisive actions of history. July's results made it obvious that Doenitz must take some drastic action if the U-Boat was to survive as a major factor in German strategy; and the first week of August, in which five U-Boats were killed by Coastal Command, brought—anyway temporarily—to a close that phase of the battle which has lasted since May when the U-Boat ran surfaced by day and fought back against the aircraft which caught him before he had time to get to a safe depth. It was always obvious that, while this policy would probably result in some increased loss to ourselves, it would also mean considerably more U-Boats killed; and the astonishing thing is, not that it should have been temporarily abandoned, but that it lasted so long. There is, of course, no guarantee that it will not be resumed—that depends largely on how effective we can make our night patrols. But for the time being it is clear that the enemy within our range are as a rule running submerged by day, surfacing only to charge at night.

2. This phase seems to have started about August 7, since when only 3 U-Boats were sighted in the Bay up to the end of the month, making a total of only 15 for the Bay, plus 4 just south of the Bay, throughout the whole month of August—a figure disappointingly low after the large numbers to which we have got accustomed in the preceding months. Actually, however, there are no grounds for depression in the August results; rather the reverse. The main reason for there being so few sightings in the Bay in August was that less U-Boats passed through the Bay. And one of the main reasons for the fall off in the traffic through the Bay was that we had sunk a high proportion of their big supply boats, which was bound to result in a lot of very thirsty U-Boats hanging about in the Atlantic waiting for the drink that never arrived, and consequently a drastic dislocation in their whole programme. Add to that the fact that in August only 13 ships were torpedoed (in the Atlantic only one ship was torpedoed north of the equator) for the loss during the month of something in the neighbourhood of 20 U-Boats, and it will be clear that, if anyone has grounds for depression about the month's results, it is the Hun.

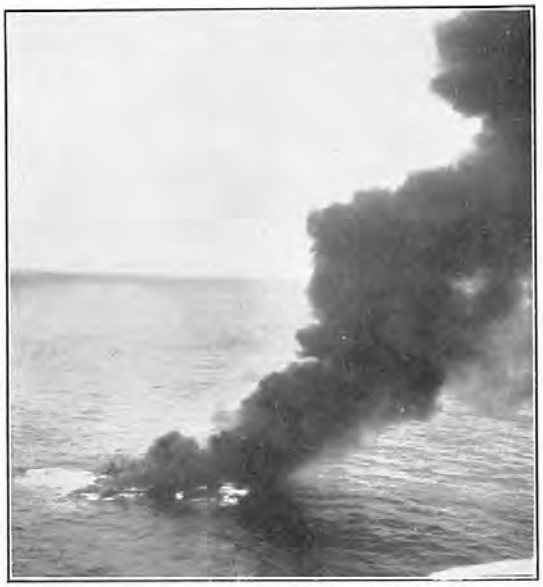
3. It became apparent in the second week of August that, in addition to remaining submerged by day, the U-Boats in transit were squeezing in and out close to the Spanish coast, sometimes actually in territorial waters. This made things more difficult for us, owing to the range from 19 Group's bases both for A/S aircraft (particularly the Leigh Light Wellingtons) and supporting fighters; there were other difficulties such as the prevalence of fishing craft in these coastal waters and the interference with the A.S.V. by Coast returns. On the other hand, this course had also serious disadvantages for the U-Boat; it is a dangerous bit of coast, and by using this narrow channel the U-Boat's liberty of manœuvre was restricted and the area we had to search reduced. A vigorous, if to outward appearances rather unfruitful, series of patrols was laid on off the Spanish coast from 42° northwards with the assistance of British and American Squadrons from Gibraltar and Morocco, and in conjunction with the escort groups in the area between Ortegal and Finisterre. And by the end of the month there was reason to think that these measures had been successful in forcing the enemy away from the coast farther north into the middle of the Bay where we can more easily get at him. If this is confirmed—as it looks like being at the time of writing—it is a notable success and a significant indication of the state of mind of the enemy Naval Command; there is genuine and increasing (and incidentally not surprising) evidence that the morale of the U-Boat crews has suffered severely; and it looks as though their High Command is also anything but confident and determined.

4. An inevitable development during August was a marked intensification of enemy fighter activity in the Bay. The enemy are bound to try everything within their power to break the stranglehold which we have secured over this vital transit area, and we must not expect this increased fighter opposition to be temporary. It was forecast in this summary for June that it will need all our courage and resource to retain the lead we have won—a lead which will break the U-Boat menace for good if we keep it up, as we shall. We shall not be driven out of the Bay by the fighter, any more than Bomber Command or the Eighth Air Force are prevented from reaching their objectives in Germany by the fighter. 19 Group have been reinforced by two more fighter squadrons from the North Sea; we are getting valuable assistance from the Mosquitos of 10 Group; and measures are in hand both to improve the efficiency of our fighter patrols in the Bay and to deal with the enemy fighter bases on the Biscay coast. It will be a tough fight, but we shall win it.

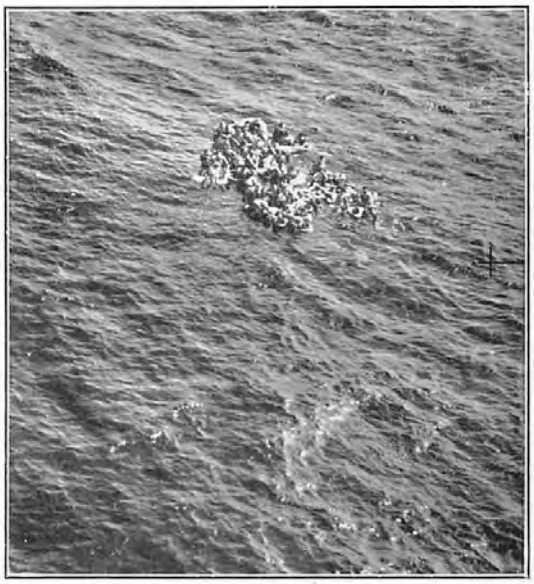
5. The activities of the surface hunting groups in the Bay have evidently also got him on the raw. At the end of August he came out with his new gliding bomb, which unfortunately resulted in the loss of H.M.S. *Egret* with heavy loss of life, including Squadron Leader C. W. P. Selby of the Anti U-Boat Staff in this Headquarters.

6. The measures adopted earlier in the year to clear the fishing vessels out of our patrol areas in the Bay had considerable success, but there has recently been a marked increase in the numbers encountered by day and night. Orders have since been issued that all fishing vessels, including French tunny-men, are to be attacked by day as well as night. No one likes beating up defenceless fishing craft; but they cannot be allowed to interfere seriously with our action against the U-Boat. They have all received ample warning that they appear within the restricted area at their own risk. Not only are they a serious handicap to the operations of the Leigh Light aircraft—on one night over 100

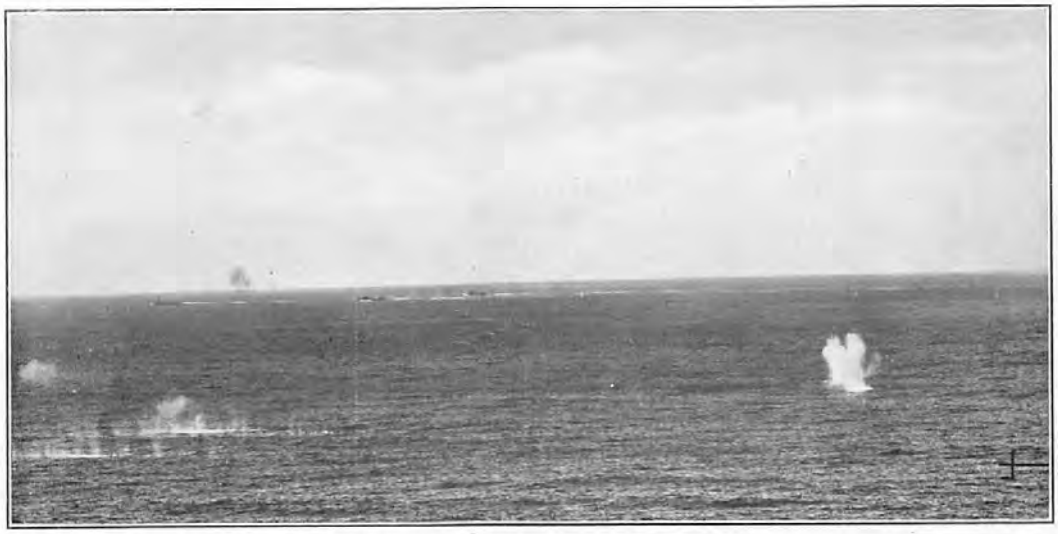
The 10,000 ton German tanker *Nord Atlantic* after lying idle at Vigo, in Spain, for a long time, sailed at the beginning of August presumably for a Biscay port. She appears to have struck a reef on the way and she is seen in this photograph, taken by 461 Squadron, partially submerged. She has since been refloated but her future is at present obscure.



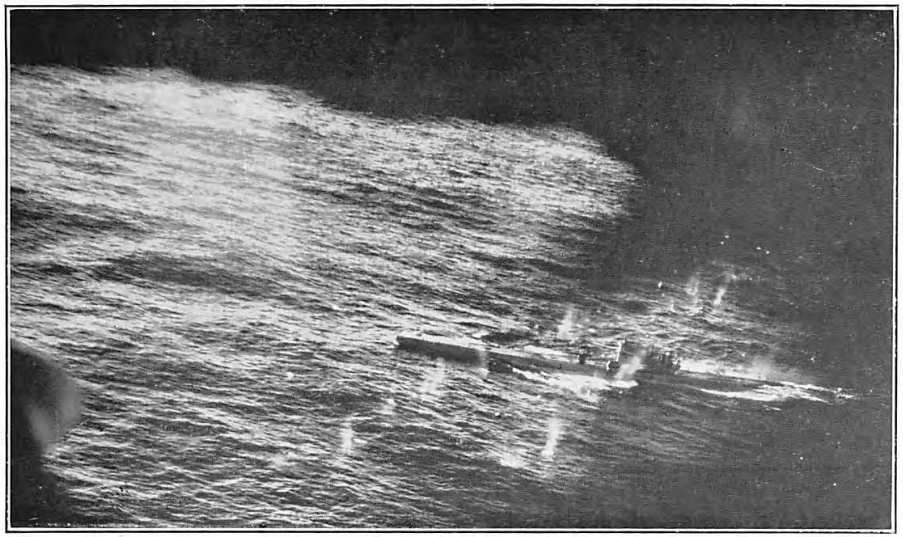
F.W.200, shot down by 248 Squadron, burning on the water.



Survivors from U-Boat, photographed by 461 Squadron on July 30, in the Bay. The Germans continue to release a large number of small dinghies from their sinking U-Boats.

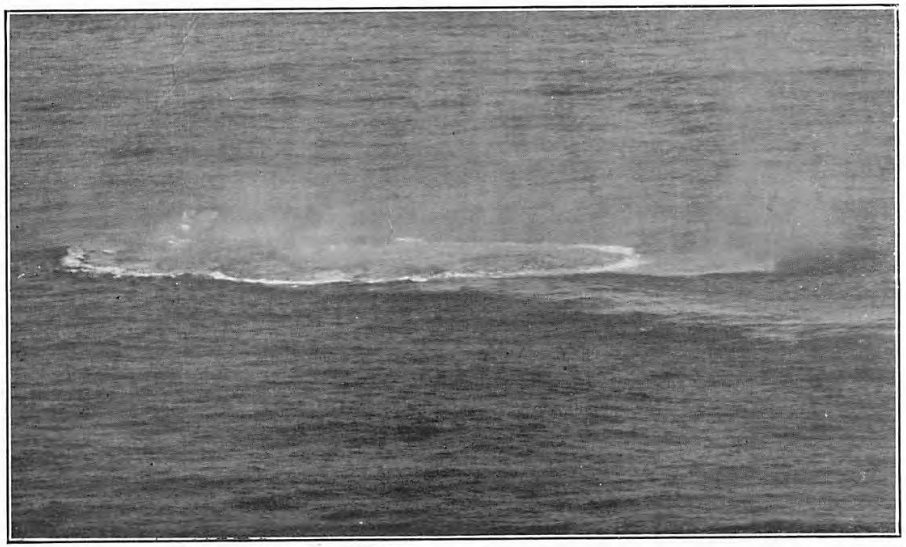


Three *Elbing* class destroyers on passage through the Bay on August 2. Since these vessels rarely leave Biscay ports it is possible that they were intended to escort a damaged U-Boat or other Unit at the time of this encounter. Photographed by 228 Squadron.



Front gun fire from M/461.

M/461's attack. Taken by N/228.



After M/461's attack. Taken by N/228.

After N/228's attack. Taken by M/461.

U-BOAT KILLED BY TWO SUNDERLANDS. (*See* letterpress page 8.)

contacts on fishing vessels were made in the area west and south of Finisterre—but also there have been grounds for the suspicion that they are not all as innocent as they look; but that some may be being used by the enemy either as a sort of "Q ship" with A.A. armament or for some form of fighter control, or both.

7. Trade in the Northern Transit area was again slack in August, though there was one most important success in that area early in the month when a brand new supply boat was destroyed in an action with a Sunderland of No. 423 Squadron, R.C.A.F., which was itself shot down, though six of the crew were rescued. The small numbers in which new U-Boats from the Baltic have been coming out through the Faroes–Iceland passage in these last few months is extraordinary—the enemy has nothing like replaced the wastage he has suffered in the Atlantic since the beginning of May. It is hard to believe that this is due solely to fitting out new U-Boats with extra light flak and training flak gunners, and it makes one think the enemy may be having much more trouble in finding trained crews than we know of.

8. Comparison of the last four months with the corresponding period of 1918 is not without interest, bearing in mind that the U-Boat crews were the first in the German Navy to crack last time. The total strength of the U-Boat Fleet to-day (excluding boats of under 500 tons) is about 390, of which roughly half are still fitting out and working up in the Baltic, leaving about 200 boats operational in the Atlantic, in Norwegian and Russian waters, and in the Mediterranean. During the last four months they have lost in round figures about 30 a month, or 15 per cent. of the operating fleet. In 1918 their total strength was about 170 at the end of the war; an exact comparison with to-day is very difficult, because they were all relatively short-range boats, and a higher proportion of their total strength was operational than it is to-day. But their average monthly loss in 1918 was under seven boats; and it is probably conservative to say that the monthly rate of loss to-day per cent. of the operating fleet is more than twice the rate which broke their morale in 1918.

9. August saw a welcome addition to the strength of the air forces for the Bay offensive in the form of the advance guard of the 7th Fleet Air Wing U.S. Navy (Captain W. H. Hamilton, U.S.N.) who, with four squadrons of Liberators, will eventually relieve the U.S. Army Air Force Squadrons in 19 Group. No. 128 Squadron (P.V.1) is relieving No. 84 Squadron in Iceland. No. 84 has been co-operating with us from Reykjavik for 11 months in which time it has made 31 attacks and killed 5 U-Boats, a really magnificent record for one squadron in Iceland. We see them and their old PBY's go with real regret, and wish them luck in their new assignment.

10. It is very satisfactory to be able to record a real improvement in the rate of unnecessary loss of aircraft and crews from accidents. The A.O.C.-in-C. received on August 31 the following letter from the Chief of the Air Staff which will be a source of great satisfaction to all ranks, particularly in the O.T.U.s, who have worked so hard to reduce the accident rate:—

"I have just seen the flying accident statistics for June. They are most impressive and show a lower rate per 10,000 hours' flying in the M.A.F. than for any previous month since the beginning of the war.

"This is a really outstanding achievement and reflects great credit on all the Home Commands. Its value can be realized from the fact that it has resulted in the saving in the M.A.F. in the single month of June of over 200 complete aircraft and about the same number of aircrew as compared with the number we should have lost if the accident rate of June last year had been maintained.

"I should like to extend to you and all those in your Command responsible for this great achievement my congratulations and thanks. There is no need for me to emphasize how important it is to reduce still further the accident rate and I am sure you will continue to do everything possible to ensure even greater improvements within your Command."

This rate of improvement must be maintained. There are still too many accidents due to two causes in particular, namely, carelessness in taxying, and over-shooting. For the first there is very rarely any excuse; and the second can be greatly reduced by regular practice in overshoot or "mislanding" procedure, particularly in heavy four-engined aircraft.

MESSAGE FROM SECRETARY OF STATE FOR AIR TO A.O.C.-IN-C., COASTAL COMMAND.

I am charged by the War Cabinet to convey to you an expression of their gratitude and admiration on the outstanding success achieved by your Command in the battle against the U-Boats. This battle has not paused since the war began and your aircrews have flown in all weathers interminable miles over the seas to search out and destroy the enemy. Often driving home their attacks with unsurpassed gallantry at low level in the face of heavy opposition.

To all members of your Command in the air and on the ground their work may at times have appeared unspectacular by comparison with that of other Commands of the Royal Air Force. Their unwearying efforts have, however, brought great success in this most vital task, which earns for them the proud thanks of the Nation and the Empire. These thanks are due alike to British, Czech, Norwegian and Polish Squadrons of the Royal Air Force, to the squadrons of the Royal Australian, Canadian and New Zealand Air Forces, and to those of the United States Army and Navy operating with your Command.

The War Cabinet charge me, therefore, to convey to you and to all ranks under your Command, their admiration of this strenuous endeavour and their thanks and congratulations upon the success with which it has been crowned, especially during the month of July.

I.—ANTI U-BOAT

(*See* notes on opposite page.)

ANTI U-BOAT SCORES—JULY, 1943

PERCENTAGE FIGURES OF MERIT IN BIG NUMERALS

63 Sq. U.S.N.	10 Sq.	48 Sq.	53 Sq.	58 Sq.	59 Sq.	86 Sq.	120 Sq.	172 Sq.
0 **0**	0 0 **0**	—	10 3 0 3 0 **32**	3 10 **65**	0 0 0 **0**	3 10 3 **53**	—	10 10 10 **100**

179 Sq.	190 Sq.	201 Sq.	202 Sq.	206 Sq.	210 Sq.	220 Sq.	224 Sq.	228 Sq.
10 0 **50**	—	—	3 3 **30**	—	3 10 3 **53**	—	10 0 10 10 3 0 10 **62**	10 **100**

233 Sq.	269 Sq.	304 Sq.	311 Sq.	330 Sq.	333 Sq.	407 Sq.	423 Sq.	461 Sq.
—	—	3 **30**	—	—	—	—	—	3 10 0 **43**

502 Sq.	547 Sq.	612 Sq.	236 (R.P.).	4 Sq. U.S.A.A.F.	19 Sq. U.S.A.A.F.
0 10 0 0 0 0 **16½**	0 **0**	—	—	0 0 0 10 10 **40**	10 10 0 **66½**

ANTI U-BOAT SCORES FROM JANUARY TO JULY, 1943

PERCENTAGE FIGURES OF MERIT IN BIG NUMERALS

63 Sq. U.S.N.	10 Sq.	48 Sq.	53 Sq.	58 Sq.	59 Sq.	86 Sq.	120 Sq.	172 Sq.
—	$\frac{36}{170} = 21$	$\frac{71}{150} = 47\frac{1}{4}$	$\frac{16}{50} = 32$	$\frac{108}{210} = 51$	$\frac{25}{110} = 23$	$\frac{104}{350} = 30$	$\frac{182}{460} = 39\frac{1}{2}$	$\frac{145}{270} = 54$

179 Sq.	190 Sq.	201 Sq.	202 Sq.	206 Sq.	210 Sq.	220 Sq.	224 Sq.	228 Sq.
$\frac{38}{110} = 34\frac{1}{2}$	$\frac{48}{110} = 43\frac{1}{2}$	$\frac{25}{70} = 36$	$\frac{29}{80} = 36$	$\frac{91}{180} = 50$	$\frac{22}{50} = 44$	$\frac{46}{80} = 57\frac{1}{2}$	$\frac{75}{310} = 24$	$\frac{30}{40} = 75$

233 Sq.	269 Sq.	304 Sq.	311 Sq.	330 Sq.	333 Sq.	407 Sq.	423 Sq.	461 Sq.
$\frac{84}{190} = 44$	$\frac{86}{240} = 36$	$\frac{22}{60} = 37$	$\frac{19}{40} = 47\frac{1}{2}$	—	—	$\frac{16}{40} = 40$	$\frac{36}{70} = 51\frac{1}{2}$	$\frac{36}{80} = 45$

502 Sq.	547 Sq.	612 Sq.	236 (R.P.)	4 Sq. U.S.A.A.F.	19 Sq. U.S.A.A.F.
$\frac{35}{190} = 18\frac{1}{2}$	$\frac{6}{40} = 15$	$\frac{26}{90} = 29$	$\frac{10}{20} = 50$	$\frac{20}{50} = 40$	$\frac{20}{30} = 66\frac{1}{2}$

Attacks on U-Boats

Note on Tables on Opposite Page showing Squadron Scores for July, 1943, and for the First Seven Months of this year

The tables are based on the Admiralty assessments of all attacks by squadrons. Attacks are divided into the following categories :—

(1) Misses. (2) Insufficient evidence of damage. (3) Damage.

The assessment Damage includes : **Known sunk, Probably sunk, Damage A, Damage B, Slight damage.** For the purpose of arriving at the result, the following system has been adopted :—

For each attack assessed as **No damage**	0
For each attack assessed as **Insufficient evidence of damage**	3
For each attack assessed as **Damaged**	10

All types of damage have been awarded 10, because a pilot who has placed his stick close enough to inflict even slight damage has obviously done a very good attack.

In the chart for the first seven months of the year, on the lower half of the opposite page, the points scored out of the points possible are expressed as a percentage figure of merit.

The highest credit for July must be awarded to **224 Squadron** with four 10's and one 3 out of seven attacks, and to **172 Squadron** for three 10's out of three attacks. **172 Squadron's** scores represent one success by night and two by day, as this squadron was employed during the long hours of daylight on daylight patrols and partly on their normal duty of night hunting.

Squadron Results—August

				No of sorties when U-Boat sighted.	*No. of sorties when U-Boat attacked.*
(i) *United Kingdom and Iceland*					
4	(U.S.A.A.F.)	Liberator	St. Eval	1	1
59		Liberator	Aldergrove	1	1
86		Liberator	Aldergrove	1	—
120		Liberator	Reykjavik	1	—
224		Liberator	St. Eval	1	—
58		Halifax	Holmsley South ..	1	—
10	(R.A.A.F.)	Sunderland	Mount Batten ..	2	1
228		Sunderland	Pembroke Dock ..	3	2
330		Sunderland	Sullom Voe	1	—
423		Sunderland	Castle Archdale ..	1	1
461		Sunderland	Pembroke Dock ..	1	1
190		Catalina	Sullom Voe	2 (1 night, 2 U/B) (1 day)	
210		Catalina	Hamworthy	2	— *See* Note.
269		Hudson	Reykjavik	2	2
220		Fortress	Benbecula	2	—
172		S/L Wellington	Chivenor	1 (night)	—
407		S/L Wellington	Chivenor	2 (1 night) (1 day)	1 (day)
304		Wellington	Davidstow Moor ..	1	—
547		Wellington	Davidstow Moor ..	1	1
415		Hampden	Thorney Island ..	1	1
455		Hampden	Leuchars	1	—
(ii) *Gibraltar*					
202		Catalina	New Camp	1	—
179		S/L Wellington	North Front ..	3 (night)	2 (night)
				33	14

Note.—The two aircraft of 210 Squadron were not carrying major weapons.

SECRET

SUMMARY OF ANTI U-BOAT OPERATIONS BY COASTAL COMMAND AIRCRAFT

(Including Gibraltar, Iceland and U.S. Aircraft from Agadir and Port Lyautey)

AUGUST, 1943

Duty and Base or Area.	Total Sorties.	Hours Flown.		U-Boats Sighted		U-Boats Attacked.		Hours per Sighting.		No. of Sorties.		Percentage of Attacks to Sights.	Col. 10 Sorties with Flak.
		Base to Base.	On Patrol.	Day.	Night.	Day.	Night.	Base to Base.	On Patrol.	When U-Boat Sighted.	When U-Boat Attacked.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Convoy Cover													
United Kingdom	108	1,427	555	—	—	—	—	—	—	—	—	—	—
Iceland	36	380	168	—	—	—	—	—	—	—	—	—	—
Gibraltar and Moroccan Sea Frontier — British A/c	320	2,024	1,101	—	—	—	—	—	—	—	—	—	—
Gibraltar and Moroccan Sea Frontier — U.S. A/c	—	1,737	—	—	—	—	—	—	—	—	—	—	—
TOTALS	464	5,568	1,824	—	—	—	—	—	—	—	—	—	—
A/U Patrols													
North Transit (North of 58° N. and East of 20° W.)													
United Kingdom	274	3,433	1,739	5	2	1	0	490	248	8	1	12 %	3
Iceland	315	2,583	1,353	3	0	2	0	861	451	3	2	66 %	1
Northern Convoy (North of 43° N.)	1	14	10	—	—	—	—	—	—	—	—	—	—
Bay of Biscay (East of 15° W.)	1,355	12,911	6,646	13	2	7	0	861	443	18	9	50 %	9
Gibraltar and Moroccan Sea Frontier — British A/c	278	2,270	1,228	1	3	0	2	567	307	4	2	50 %	1
Gibraltar and Moroccan Sea Frontier — U.S. A/c	—	1,775	—	—	—	—	—	—	—	—	—	—	—
TOTALS	2,223	22,986	10,976	22	7	10	2	793	—	33	14	41 %	—
Add Convoy Cover	464	5,568	1,824	—	—	—	—	—	—	—	—	—	—
TOTAL A/U EFFORT	2,687	28,554	12,800	22	7	10	2	985	—	33	14	41 %	14
Chance Sightings (Transit, P.R., etc.)	—	—	—	6	—	—	—	—	—	—	—	—	—
GRAND TOTAL	—	—	—	28	7	10	2	—	—	—	—	—	—
				35 U-Boats Sighted		12 U-Boats Attacked							

Summary—*continued*

Assessments

Month.	Known Sunk.	Probably Sunk.	Damaged. A.	Damaged. B.	Slight Damage.	No Damage.	Insufficient Evidence Damage.
June	3	2	3	3	2	9	33
July	10	2	1	4	—	22	19
August (provisional)	5	—	—	1	(9 unassessed—(*see* Note).)		

Analysis of Sightings

U-Boats.			A/U Aircraft.		
No. in Company.	No. of Occasions.	Total of U-Boats.	No. to Sight.	Total to Sight = Col. 10.	No. to Attack = Col. 11.
1	2	2	3	6	3
1	1	1	2	2	2
2	1	2	1	1	0
1	24	24	24	24	9
Totals		29	—	33	14
Add chance sights ..		6	—	—	—
		35	—	33	14

Note

Two attacks were made by one of the 14 aircraft which attacked U-Boats. Each of these attacks will be assessed, thus accounting for a total of 15 Assessments for August.

Recent Attacks on U-Boats

U-BOAT KILLED BY AUSTRALIANS

On August 1, **Sunderland B/10 (R.A.A.F.)** was on Musketry patrol flying on a track of 045° at 1,700 ft. Cloud base was 2,000 ft., sea very heavy and visibility seven miles. Shortly after 1630 hours the aircraft saw five sloops and a Catalina engaged in a U-Boat hunt. The captain altered course towards them and sighted a U-Boat two miles away on the starboard bow. The enemy vessel was about six miles from the sloop, and was steering 310° at 10 knots. She carried one big gun forward, one 20-mm. gun on the bridge and two 20-mm. guns on the single bandstand. The Sunderland flew over the U-Boat and made a tight turn to attack from the U-Boat's starboard quarter at 60° to the track. During the approach the front gunner opened fire, but the aircraft was subjected to very accurate return fire from the 20-mm. gun on the bridge. First the aircraft's inner engine was hit, and then, when the aircraft was about 400 yards away, a hit in the starboard main fuel tank caused petrol to pour out on to the bridge. It is believed that all three pilots were seriously wounded. The attack was nevertheless gallantly pressed home, and six depth charges set to shallow depth and spaced at 60 ft. were released from 50 ft. Three depth charges fell on either side of the target, and the rear gunner saw the U-Boat lift out of the water and then sink by the bows. After the attack the Sunderland maintained course for about six miles, turned 180° to port and ditched down wind at about 45° to the swell. Apparently the captain was trying to get as near as possible to the sloops. The aircraft bounced twice and then settled, with the hull very seriously damaged. Six members of the crew succeeded in getting out on to the starboard mainplane which had broken away from the rest of the aircraft. They used this as a raft for about half an hour, and were then picked up by one of H.M. ships. Fourteen survivors from the U-Boat, which sank in 30 seconds, were also picked up.

Remarks of the Naval Staff

An excellent attack in the face of accurate flak. The U-Boat was obviously making a get-away from the sloops, which were carrying out an Asdic hunt. It is confirmed that the U-Boat was sunk, and survivors were picked up by H.M.S. "Kite."

This is yet another fearless and gallant attack pressed home in the face of accurate flak.

A Determined Attack and First-class Airmanship

On August 1 **Sunderland V/228** was on Musketry patrol flying a westerly course at 800 ft. below 6/10ths cloud. The aircraft was actually searching for a dinghy when, shortly after 2000 hours, a U-Boat was sighted 3–4 miles away on the port beam. Visibility was 6 miles and the sea moderate. The U-Boat was believed to be a 517-tonner. It had a big gun forward and a small one in the conning tower; this gun was seen to be manned. Her course was 180° and her speed about 6 knots. The Sunderland began to circle and was met with light flak. At 2013 hours the aircraft lost height and began an attack from up sun. The U-Boat put up very rapid fire and the aircraft took violent evasive action and thus failed to track over the target. During the approach the air gunners opened up accurate return fire and two of the German crew were seen to fall. The Sunderland then turned to port, circled, and began another attack. The U-Boat turned slowly to port and ceased fire. When the aircraft was 600 yards away the enemy again opened very accurate fire which carried away the starboard float and put the starboard aileron out of action. The hull was holed in several places and a shell exploded in the port mainplane. There were, however, no casualties in the aircraft, and the front gunner and port galley gunner accurately raked the conning tower. The attack was delivered from the U-Boat's starboard quarter at 15° to the track: seven depth charges, set to shallow depth and spaced at 60 ft., were dropped from 75 ft. The depth charges straddled the target just abaft the conning tower and the U-Boat was completely enveloped in spray. When the plumes subsided the U-Boat had a bad list to port and was turning sharply. Six men, who had not been seen before, jumped from the conning tower into the sea. The Sunderland left the scene immediately, as the damage to the lateral control prevented it from turning.

Remarks of the Naval Staff

A very determined approach on the two runs with very good front gun fire. An excellent low-level attack pressed home against accurate flak which damaged the aircraft and prevented the full results being observed. From the evidence available there are indications of serious damage and possible destruction.

Remarks by the Air Staff

A very commendable performance. After conducting an outstandingly gallant and determined attack, the captain of the aircraft showed first-class airmanship in flying his damaged aircraft back to base and making a skilful night landing in difficult conditions.

Fine Gunnery by two Sunderlands

On August 2 shortly after eight o'clock in the evening two **Sunderlands, M/461** and **N/228,** destroyed a U-Boat. For several hours before this three **Elbing** class destroyers had been occupying most of the attention of our aircraft, and the sinking of the U-Boat was the climax to a fine day's work. The aircraft were originally on Musketry patrol, and when M/461 was flying a westerly course at 5,500 ft. above 2/10ths cloud, she sighted a U-Boat a mile and a half away on the starboard bow. The U-Boat was a 740-tonner, painted light grey, and was steering 050° at 6 knots. The sea was calm with a moderate swell. The U-Boat took violent evasive action and tried to keep the aircraft on her beam. Considerable flak was experienced but the Sunderland's front gun kept spraying the enemy's decks and bodies fell into the sea. Just before the depth charge attack the aircraft's front gun fire was so accurate that it prevented the relief crew from manning the U-Boat's guns. Meanwhile N/228 had arrived on the scene and saw M/461's attack. This was delivered from the U-Boat's port bow at 80° to the track while the U-Boat was still on the surface turning to starboard. From 50 ft., seven depth charges were dropped set to shallow depth and spaced at 60 ft. The depth charges straddled the U-Boat, the centre of the explosions being just abaft the conning tower. At the moment of attack the U-Boat was still turning to starboard, and in doing so she presented her starboard quarter to the waiting N/228. Before the plumes of the first attack had subsided N/228 ran in and dropped another seven depth charges with the same setting and spacing. This attack was made only 30 seconds after the first, and also resulted in a straddle.

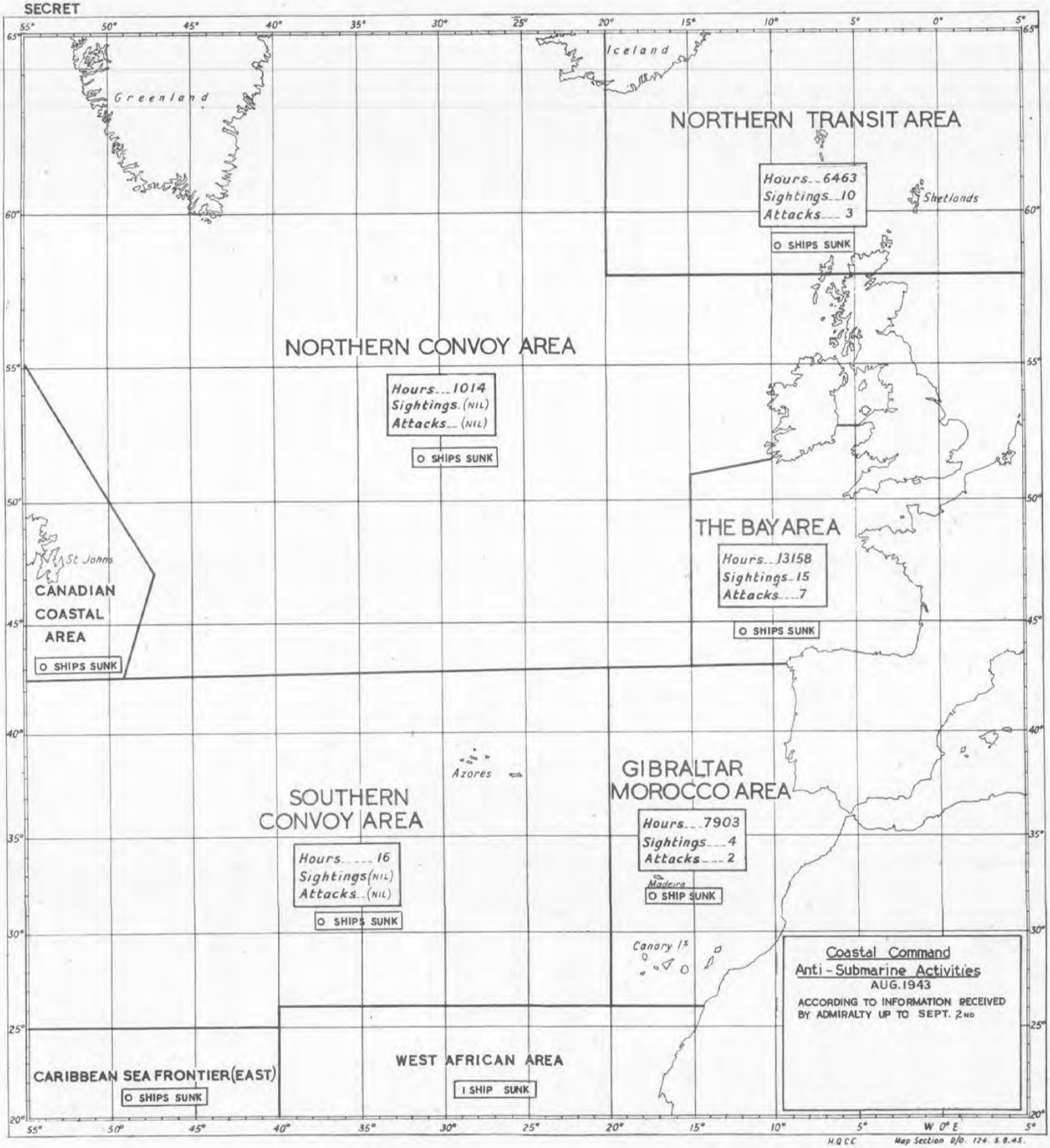
After the attacks the U-Boat stopped and began to settle by the stern. Black smoke, white smoke and oil were pouring from her. The crew rushed out of the conning tower and began to jump into the sea. Some, however, attempted to man the guns again, but were mowed down by the concentrated fire of the two Sunderlands. M/461 then left for base, but N/228 was able to stay, and 40 minutes later saw the U-Boat blow up and sink as the demolition charges went off.

Remarks of the Naval Staff

M/461. *An excellent attack and very good work by the front guns. The follow-up by N/228 completed the kill. A fine example of co-ordinating.*

N/228 *A very fine follow-up after M/461's attack and an excellent piece of co-operation resulting in the U-Boat being destroyed. I think (the crew having taken to the water) that the demolition charges inside the U-Boat were fired. This aircraft did a very good day's work.*

SECRET



H.Q.C.C. Map Section D/O. 124. 6.8.43.

An excellent and accurate attack

On August 2 **Liberator T/4 A/S Squadron,** U.S.A.A.F., was on Musketry patrol, flying on a track of 204°. At 0912 hours when the aircraft was flying at 2,500 ft. above 4/10ths cloud, an S/E contact was obtained at 20 miles. The visibility at the time was 10 miles and the sea moderate. The aircraft altered course and at 0917 hours sighted a large wake 10 miles away. Immediately afterwards, from a height of 1,500 ft. the U-Boat herself was sighted steering 030° at 12 knots. The Liberator captain maintained his course as he was approaching out of the sun hoping to achieve a surprise. The U-Boat was thought to be a 740-tonner, painted darkish grey, and had a single bandstand type conning tower. When the aircraft was about a mile away the U-Boat opened up with light flak. The fire was not very accurate, though one shot hit the aircraft's port wheel. The top turret gunner returned the fire at 1,500 yards, and the front gunner at 600 yards. The U-Boat's decks were well raked and the flak subsided before the actual attack. At 0920 hours the Liberator, coming in from the starboard side at 50 ft., delivered an attack directly across the U-Boat's beam. The American A.1 low level bomb sight was used, and 12 depth charges were dropped set to shallow depth and spaced, it is estimated, at 50 ft. The aircraft tracked directly over the conning tower and the rear gunner saw that the depth charges straddled the U-Boat. When the plumes subsided he saw the whole U-Boat lift out of the water and then settle quickly by the stern until the bow was sticking up at an angle of 30° to the horizontal. About 10 seconds after the attack the U-Boat sank. The Liberator turned to port and returned to the scene. At least 15 men were in the water surrounded by a large patch of oil and much white and yellow wreckage. Marine markers and a dinghy were dropped. Five men were seen to climb aboard. Other aircraft had now arrived and the Liberator returned to base after 1½ hours.

Remarks of the Naval Staff

An excellent S/E pick-up and approach; also very good tactics on the run in. An excellent and accurate attack confirmed by photographs. The U-Boat was destroyed. W/10 saw a sloop pick up the survivors at 1315 hours.

Sunderland hit by 4·7 inch shell

On August 4, 1943, **Sunderland G/423** was carrying out an anti-submarine patrol in the North West passage, known to U-Boat crews as "Rosengarten." While flying on north-westerly course at 4,000 ft., the captain sighted a surfaced U-Boat at a distance of about 4 miles. Her course was westerly and her speed about 7 knots. The Sunderland immediately lost height to deliver an attack, and had closed to within 1 mile when it became apparent that the U-Boat was not attempting to dive. The captain therefore decided to manœuvre for position in order to deliver an attack from dead ahead, but the U-Boat circled in such a way as always to present her stern to the aircraft. Smoke puffs were seen coming from the U-Boat's guns but no bursts were seen or hits felt on the aircraft. The U-Boat's armament appeared to consist of two cannons mounted fore and aft of the conning tower and a big gun aft of the conning tower on deck. She was thought to be a 740-tonner. When the captain decided that he could not outmanœuvre the U-Boat, he flew to a position about 1 mile up sun of it and turned in to attack at about 300 ft. Fire was opened at the correct time, *i.e.*, at 1,200 yards, with the ·5-in. machine guns installed in the nose, and an undulating approach was made. The bullets were seen falling very close to the conning tower after the first few rounds. At 500 yards range the aircraft levelled out at 50 ft. and flew straight in, opening up with the ·303 guns in the front turret. Unlike the ·5, the splashes from these bullets could not be seen, but tracers indicated that they were falling near the conning tower. At that moment the aircraft began to be hit by the U-Boat's flak.

At 300 yards the aircraft was seriously hit near the port wing root by a lucky shot from the U-Boat's 4·7-in. gun. Although this damaged the aircraft's controls, and the flak increased in intensity, the captain pressed home the attack and released six depth charges spaced at 60 ft. and set at 25 ft. depth. By this time a violent fire was raging in the wing root and the galley of the aircraft, and the ailerons and trimming-tab controls had become useless. The outer engine controls were also out of action, so the pilot switched off those engines and made a forced alighting. The aircraft bounced three times and the port wing dropped. The wing tip hit the water and caused the aircraft to swerve violently to port and nose in. Six out of the eleven members of the crew managed to get clear of the aircraft, which was then burning furiously. After about four minutes it sank. The U-Boat approached the scene of the crash with its stern low in the water, and after 15 minutes was within 200 yards. The crew were standing on the forward deck taking to their raft. The U-Boat continued to sink until only the bow was visible at an angle of 30 degs. to the horizontal. Scuttling charges were then fired and after a violent explosion the nose rose sharply and the U-Boat disappeared. Twenty minutes later, a destroyer picked up the survivors from the Sunderland, who were swimming in the water, and the prisoners of war from the U-Boat in their raft. The German crew had made no attempt to help the swimmers.

Remarks

This was a skilfully executed and determined attack and but for what must have been a freak shot from a gun intended for anti-shipping and not anti-aircraft purposes, it is probable that the aircraft would have reached its base safely. Considerable credit is due to this crew for their gallant and accurate attack after receiving this crippling blow during the approach.

U-boat sunk off West Africa

Although West Africa is not in the Coastal Command area, the following account of an attack off Dakar should be of interest to our own crews, particularly as all the details were supplied by the enemy.

On August 11 **Liberator D/200** took off on an anti-U-Boat sweep to the south-west of Dakar. It was the first operational sortie made by this crew in a Liberator. When the aircraft did not return to base at the limit of its endurance, a search was organized. At 1451 hours **Sunderland H/204** sighted an aircraft dinghy containing several men about 240 miles south-west of Dakar. Later in the afternoon an empty dinghy was seen a few miles away. Food was dropped to the occupants of the first dinghy and H.M.S. *Clarkia* went to their rescue. It was not until *Clarkia* reached the dinghy next morning that the occupants were found to be seven Germans : the only survivors from a U-Boat attacked and sunk by D/200. At the same time it was learned (from the Germans) that after making the attack the Liberator had been badly hit by the U-Boat's guns and had crashed into the sea. All the crew were killed. The U-Boat Commander gave the following description of the action :—

" Between 9 and 10 o'clock on August 11, while on the surface, we sighted an aircraft and engaged it with all our guns. At first we thought it was a Sunderland, but we now know we were mistaken. As the aircraft was coming in to attack it was hit and set on fire, apparently near the tail. Although the aircraft was well alight, the pilot pressed home his attack, released his bombs from a height of 15 metres, attacking from the port quarter and crossing the submarine just aft of the conning tower."

The Commanding Officer of the U-Boat, supported by the Engineer Officer, then expressed sincere admiration of the pilot's courage in not allowing the submarine's heavy and accurate fire, and the precarious condition of his aircraft, to deter him from pressing home his attack. He continued :—

"As the aircraft passed over us we could see our fire entering the aircraft through its open bomb doors. The bombs burst near the U-Boat and I momentarily lost sight of the aircraft. However, I recovered from the shock in time to see the aircraft dive straight into the sea about 100 metres from the submarine, there being no survivors."

Both the U-Boat's Commanding Officer and the Engineer Officer were on deck throughout the engagement and are in entire agreement regarding the above account.

The submarine was badly damaged by the aircraft's attack and it sank in 20 minutes, few of the crew having time to get their life-saving jackets. Most of the crew were suffering from severe chlorine gas poisoning (the battery room was flooded with sea water) and only the strongest swimmers of those least affected managed to survive the sharks. They kept them away by submerging their heads and " roaring " under water. The U-Boat's Commanding Officer, two other officers and one rating were in the sea for about 1½ hours after the sinking, one of the officers supporting the rating on his back. Then they sighted a rubber dinghy already occupied by three other survivors. They climbed in and learned that the folded dinghy had been found floating in the water and that one of the three had opened it and inflated it with the oxygen bottle. (On examination the dinghy proved to be of the type supplied to the Liberator. It must have floated free at the moment of the crash. It is presumed that the empty dinghy sighted by one of the rescue aircraft came adrift in like manner.)

Thus there can be no doubt that this U-Boat was sunk by D/200. The crew did not hesitate to press home their attack with skill and determination, regardless of their own safety.

At the Receiving End

In spite of sudden bursts of activity and sharp air–sea combats, anti-U-Boat patrolling still remains a very monotonous job. Its importance is by now realized by everybody, but even this realization, backed by very encouraging results, does not eradicate the tendency to be gloomy and bored when purely routine patrols are laid on in apparently barren areas. Nevertheless it is still true that the vital thing is to *be there*. Our source for this statement is the German Navy. Prisoners of war from several enemy submarines sunk in the early part of this year make no bones about the efficiency of Allied anti-U-Boat patrols. A few of their statements should help to convince those who still have doubts.

Read, for instance, of the experiences of the crew of an Italian submarine which left Messina in August, 1942, to lie in wait for the Malta convoy which sailed at the beginning of that month. She completely failed even to contact the convoy because, as the crew said, the continued presence of aircraft forced her to remain submerged. She was therefore prevented from reaching a position from which she could carry out an attack. Although neither seen nor attacked by air, constant air patrols had made her entirely ineffectual.

On another occasion the same vessel left Cagliari with orders to patrol off Bougie. This mission, too, was a failure. The crew maintained that aircraft on patrol off the North African coast made navigation on the surface extremely dangerous. This, they said, so restricted the submarine's movements that although there was a great deal of shipping in the area, opportunities for establishing contact and making an attack were extremely limited.

The Germans in the Atlantic have exactly the same trouble. At the end of 1942, a U-Boat was shadowing a convoy and trying to get into an attacking position. In spite of repeated attempts she was sighted by the escort vessels each time and forced to dive. But she still kept touch. Then the air cover arrived, and the crew

told us that the U-Boat found it increasingly difficult even to close the convoy. She was attacked by aircraft no less than four times, three times with depth charges. The last attack damaged her considerably.

On one occasion the same U-Boat was proceeding on the surface when she twice had to crash-dive because of the presence of aircraft. After the second dive she came to periscope depth at intervals, only to find the aircraft still circling overhead. It was a considerable time before she was finally able to surface and proceed. All this means waste of time, of battery power, of time on patrol, and might well make all the difference between reaching a patrol line in time to intercept a convoy and missing it altogether.

Although the mere presence of aircraft is most disconcerting to the enemy, it is not, of course, their only business, and there is no doubt that far too often the U-Boat sees the aircraft before the aircraft sees the U-Boat. One, for instance, sighted aircraft no less than 40 times in a short period without being attacked. She frequently had to dive, of course, and her activities were restricted. But 40 times ! ! On the homeward passage through the Bay this U-Boat sighted aircraft fairly frequently, but was always able to dive before she was sighted. Sometimes during this Bay passage the bridge watch is increased from four to five men.

The effect of depth charge attack from the air appears to be very great on the crew as well as on the U-Boats. One U-Boat suffered a damaging attack on her first patrol. Four depth charges straddled her forward, causing her stern to reappear out of the water and putting all her hydroplanes out of action. All on board felt very lucky to escape with their lives. Another U-Boat was even more lucky. She was attacked by an aircraft which completely surprised the look-outs and which was seen only when it was within six hundred yards. The U-Boat crash-dived and an accurate attack was made just as she was submerging. Considerable damage was caused. Two battery cells were smashed, there were several short circuits, and fuzes blew. Many hours passed before repairs were completed.

This same boat suffered an even worse attack at the end of January 1943. The sky was overcast at the time and prisoners freely admitted that the aircraft, which approached from the starboard bow, took them completely by surprise. The U-Boat attempted to crash dive, but barely had she got below the surface when a number of depth charges fell uncomfortably close. She rapidly reached a depth of at least 300 ft. Damage had been considerable. Water entered through the stuffing-box and the exhaust cut-out, lighting temporarily failed, the hydroplanes were rendered useless, and the steering was seriously affected. Number 4 fuel tank was fractured, casing a leak which might have proved serious as the U-Boat was a long way from her base. An inrush of water aft caused her to be dangerously down by the stern, so that batteries spilled and a certain amount of chlorine gas was generated. A large variety of dials and gauges were smashed. When the U-Boat was finally able to surface all hands were set to repair the damage. After sixteen hours everything possible had been done. It was found, however, that the propeller guard between the propellers and the ship's side had been loosened, and the port propeller, when revolving, struck against the guard, causing considerable noise. It was therefore decided to use the starboard shaft only, which, it was realized, would seriously handicap the U-Boat should she have to crash-dive.

Before this attack, the U-Boat still had about 72 tons of fuel left; more than sufficient to see her safely back to Lorient. Owing to the burst tank, however, the fuel situation had become critical and the captain had to make arrangements to obtain fuel from another boat. After refuelling, the U-Boat set course for base.

Although they are put there to help them against the aircraft they so much dislike, some prisoners disapprove of the new H.A. platform and guns. On a 500-ton U-Boat they are said to add between five and eight seconds to the boat's best diving time, and some captains consider they make the boats unseaworthy. They are also said to be very dangerous places in rough weather. Prisoners also claim to doubt the efficiency of quadruple 20-mm. guns on the grounds that they are magazine fed and require too many men to load them. One man already finds he has his work cut out to load one. It is also felt that larger gun crews will mean more casualties with a consequent shattering effect on the morale of the crew in a confined space.

In general it is certain that many enemy U-Boats regard air attack as more dangerous than surface attack. The Chief Quartermaster of another U-Boat was one of these, though he added that aircraft were too easily tempted into bombing oil tracks. He also thought that no Allied aircraft could carry more than nine depth charges. The captain of an Italian U-Boat was another who feared aircraft more than anti-submarine surface craft. Constant air patrols, he said, and the menace of searchlight-carrying aircraft by night, had made things extremely difficult in the Mediterranean. He believed that other Italian submarine commanders shared his views.

Incidentally, interrogation left no doubt about the views and the morale of the crew of this submarine. The report states that a more anti-Fascist, anti-German, anti-war body of men has not been encountered. Perhaps the most apparent feature was their utter war-weariness. They were bitter against their own Government for plunging them into the war; bitter against the men in the surface ships, especially the battleships, who never had to endure the hardships which they as a submarine crew had to put up with, and bitter against the submarine staffs, who, when they returned from a patrol which had been unsuccessful, treated them with contempt. This crew was Italian and possibly exceptional, but Admiral Doenitz's broadcast to the German U-Boat crews (quoted on page 1 of *Coastal Command Review*, Vol. II, No. 3—July, 1943) to the effect that there must be no vacillating and no giving way to the mood of the moment, is an even better indication of the enemy's opinion of this monotonous job of submarine hunting. The U-Boats' crews can never afford to relax in these days. Not long ago they knew they were safe from air attack in mid-Atlantic and could concentrate on their job of sinking ships. The very long range, and very monotonous, patrols have stopped this. Every day and every night wherever they are, the U-Boat crews are open to attack from the air. It is beginning to get on their nerves.

The Unclimbable Fence

1. Perhaps not all of us fully understand the principle on which the patrol areas in the Bay of Biscay are defined. One is asked why do we go on flogging the So-and-So area night and day instead of varying it, or, if a U-Boat is sighted in it during the night, shifting it East or West according to whether the sighting was of an inward- or outward-bounder.

2. Now—the last thing in the world we should be in our tactics is inflexible; we must be ready to adapt them as the situation demands; and in fact our patrol areas, relative effort by night and day and so on, are pretty frequently changed. But there is a basic principle underlying the definition of patrol areas which has come to be known as the "Unclimbable Fence" theory; that principle is briefly as follows:—

3. A U-Boat can travel a certain distance in 24 hours, the distance varying with such factors as to the proportions of that period he spends on the surface and submerged; whether he is running surfaced by day and submerged by night—as he obviously was most of the months of May to July inclusive; or whether he is running all his time submerged except for the four or five hours in the 24 that he must spend on the surface to charge and renew his air supply—as he appears to have been doing mostly since the first week of August; and the number of hours of darkness.

4. Let us suppose he has had it so badly in daylight that he has decided to cross the Bay submerged, only surfacing to charge by night—which is what it looks as though he is doing at present after the terrible losses he sustained in July and the first week of August. Submerged he will make good—say—3 knots, and he may do that for 20 hours; that's 60 miles. On the surface charging he will do about 10 knots for the other 4 hours—40 miles. So in the 24 hours he will do about a 100 miles. But it isn't necessary to make our patrol area the whole width of the 100 miles he may travel in those 24 hours—even assuming all U-Boats crossed a patrol area at right angles to its axis, which they do not. We want to catch them on the surface; but to do that we don't necessarily want to have all boats that cross the patrol area inside that area for the whole time they are surfaced for charging. That would be nice if we had unlimited aircraft. But what we do in fact is to strike a compromise between that ideal and the density of patrol that we can afford according to the aircraft we have got. It will be clear that if we make our patrol area 90 miles wide, every U-Boat that crosses it must be on the surface for about 30 miles—or three hours.

5. So, if we select a patrol area 90 miles wide,* and stick to it, we give ourselves a chance of sighting by day or by night every U-Boat that passes through that area. It doesn't follow that we are bound to see him—that depends on a number of factors such as the number of Leigh Light aircraft we can make available, the efficacy of the U-Boat's search receiver or Radar if he has one, the distractions caused by fishing vessels, the weather, and so on. But if everything works reasonably well we should have a very good chance of seeing him either at night or—if we have forced him to dive and keep submerged by night—next day when he will have to come up to charge.

6. We must keep patrols going by day so as to catch him by day if he has been unable to get in his charge during the night. If we have sighted U-Boats at night the chances are they will be on the surface some time during daylight next day. It is true that if, say, an outward-bounder is sighted near the western limit of a Bay patrol area during the night, he will be outside it by the time he has to surface next day; but if we shifted the whole patrol area westwards so as to give us a chance of catching him, what would be the result? Apart from the fact that every degree of longitude that we shift a patrol area to the westwards we lose something of the order of 10 per cent. of patrol time in the area, we should miss the chance of sighting other U-Boats that are in the original area. It may be argued that that does not matter if we know they are running submerged by day. But we do not know that we did not force down several other U-Boats during the night who will have to surface in the area during the day. As a matter of fact in the Bay we have got the something in the deep field, west of the main patrol areas, in the shape of the 15 Group patrols which give us another chance of catching the U-Boats who slip through the 19 Group area. Sometimes, when our information is especially good, it may pay us to reinforce the outer area at the expense of the inner. But as a rule we stand to lose more than we should gain by trying to chase single U-Boats instead of sticking to the proven principle of the "Unclimbable Fence."

7. It may be that the meaning of the "probability areas" that are issued by signal daily is misunderstood. We obviously cannot say exactly where all the U-Boats are—more than half our problems would be solved if we could. These "probability areas" are only indications of probability, not established facts. Very often they are little more than intelligent guesses. And, that being so, it would obviously be a mistake to allow ourselves to be led into changing our areas every other day and departing from the sound basic principle of the "Unclimbable Fence" which, after all, has done us on the whole uncommonly well for a number of very profitable months. Let us ring the changes occasionally by all means—we do so now, when we think it desirable. But until we have proved our present policy to be out of date and found something better, let's stick to it.

8. As long as we keep the "Unclimbable Fence" going day and night we do in fact sight a high proportion of, though obviously not all, the U-Boats passing through it. If he evades the normal night patrols, by a new search receiver or a more efficient Radar, then we may have to resort to what is known as "flooding"—filling up the Bay at night with so many aircraft that the U-Boat has to choose between (*a*) keeping submerged at night—which means he will have to surface next day and then we shall get him, and (*b*) taking a chance on it and remaining surfaced at night—when again we have a chance of getting him with the Leigh Lighters. He can't go on bobbing up and down whenever he gets a blip on his tube. But that means a lot of aircraft, and anyway is not the situation we are faced with yet. In any event the principle of the "Unclimbable Fence" holds good—select an area of suitable width, saturate it with aircraft at night so as either to find him and kill him by night, or force him under so often that next day we find him on the surface still in the area, and kill him by daylight.

**This is merely for the sake of illustration. Actually there is no fixed width for a patrol area—it is fixed according to what we think the U-Boats are doing at the time.*

Order of Battle—1939

We publish below the Order of Battle in Coastal Command for September 10, 1939—four years ago. Some nineteen squadrons were available in the first month of war, at fewer than twenty bases. Many of these squadrons were equipped with aircraft which were, to say the least, obsolescent. There were only three operational groups and no training group.

The position after four years is a tribute to the growth of the Command and to the manufacturers of our aircraft. To-day there are four operational groups, and Iceland and Gibraltar, one training group, and a photographic reconnaissance wing. More than a dozen types of aircraft are operating, several of them the latest productions of the United States' factories. There are over fifty operational squadrons and almost fifty major operational and training aerodromes. Coastal O.T.U.s are numerous and widespread.

These figures take no account of West Africa and other areas which are not under the control of this Command, but which have grown out of it. The road from Ansons to V.L.R. Liberators and from Stranraers to Catalinas has been long and difficult, but we have made it, and we are beginning to see the results of our faith and enterprise.

LOCATION OF OPERATIONAL UNITS OF COASTAL COMMAND
September 10/11, 1939

Headquarters, No. 15 Group, Plymouth

Mount Batten	No. 204 Squadron (Sunderland).
Pembroke Dock	No. 210 Squadron (Sunderland) (less two flying boats at Woodhaven). No. 228 Squadron (Sunderland).
Warmwell	No. 217 Squadron (Anson) (less one flight).
Carew Cheriton	One flight of No. 217 Squadron.
Aldergrove	No. 502 Squadron A.A.F. (Anson).

Headquarters, No. 16 Group, Gillingham

Bircham Newton	No. 206 Squadron (Anson). No. 42 Squadron (Vildebeeste). Mobile Torpedo Base.
Thorney Island	No. 48 Squadron (Anson) (less flights at Guernsey Airport and Detling). No. 22 Squadron (Vildebeeste) in reserve to No. 42 Squadron.
Detling	No. 500 Squadron A.A.F. (Anson). One flight of No. 48 Squadron.
Guernsey Airport	One flight of No. 48 Squadron.

Headquarters, No. 18 Group, Pitreavie Castle

Shetlands	S.S. Manola. No. 201 Squadron (London).
Invergordon	No. 209 Squadron (Stranraer). No. 240 Squadron (London).
Woodhaven	Two flying boats of No. 210 Squadron.
Montrose	No. 269 Squadron (Anson).
Leuchars	No. 224 Squadron (Hudson). No. 233 Squadron (Hudson).
Thornaby	No. 220 Squadron (Hudson). No. 608 Squadron A.A.F. (Anson).
Dyce	No. 612 Squadron A.A.F. (Anson).
Oban	Preparations in hand for reception of one flying boat squadron. Latter not yet decided.

II. ANTI-SHIPPING

Torpedo and R.P. Operations in August

The No. 16 Group Beaufighter Wing carried out a daylight attack on a southbound convoy off Texel on August 21, 1943. The convoy, which was first sighted on the same morning by a reconnaissance Beaufighter of No. 254 Squadron, was reported to consist of four merchant vessels of about 3,000 tons, with the largest of them at the rear. The escort was reported as three " M " Class minesweepers leading and one following the merchant vessels, with ten trawler type auxiliaries disposed on either beam.

The striking force consisted of fourteen aircraft of No. 236 Squadron and ten aircraft of No. 143 Squadron, each armed with eight 60-lb. R.P., cannon and machine guns, as flak destroyers, and twelve torpedo carrying Beaufighters of No. 254 Squadron. An escort of four squadrons of long-range fighter Spitfires was provided by No. 12 Group.

The three rearmost merchant vessels were to be attacked, each by four torpedo aircraft of No. 254 Squadron. No. 236 Squadron were to attack all the trawlers on the seaward side of the convoy, and No. 143 Squadron were to attack the starboard escorts which might interfere with the get-away of the torpedo aircraft.

It was originally intended not to attack the " M " Class minesweeper at the rear of the convoy.

Landfall was made off the Dutch coast at the entrance to Den Helder. The Wing then climbed up and turned to port up the convoy route. Soon after turning to port, the leading escorts of the convoy were sighted to the north, about five miles away. An S turn was carried out by the Wing which attacked from seaward. In spite of this manœuvre within sight of the convoy, the anti-flak squadrons timed their attack excellently and proceeded according to plan, except that the fourth section of No. 143 Squadron was rebriefed over the V.H.F. to attack the " M " class minesweeper at the rear of the convoy.

Eleven Mark XV torpedoes were dropped (one failed to release) at a height of 100 to 150 ft., range 800 to 1,500 yards. One merchant vessel, identified as the *Fortuna*, 2,700 tons, was hit by a torpedo. It blew up and sank immediately. One trawler type auxiliary also blew up, from a possible torpedo hit. The merchant vessel, *Jonn*, 2,000 tons, was also claimed to have been hit by a torpedo. It was also claimed that damage by R.P. was inflicted on three further trawlers, one " M " Class minesweeper and a small merchant vessel. The Spitfire escort destroyed four Me.109's and claimed two probably destroyed.

The flak opposition was reported to be considerably less than usually met by the Wing, and the anti-flak Beaufighters opened fire at long range with their cannons, closing to 600 to 700 yards before releasing the R.P.

Some of the vessels attempted evasion by turning to starboard during the attack. All the aircraft returned from this very successful attack. One aircraft of No. 236 Squadron and one of No. 143 Squadron returned, each on one engine, crash landing at fighter base without injury to the crews.

Hampdens T, F and D/455, each armed with one Mark XV torpedo, carried out a Rover patrol off the Norge coast on August 2. After making landfall the aircraft, flying in Vic formation, " F " leading, turned south-east. Six minutes later there were sighted at 5 miles distance ahead, one merchant vessel, 3,500 tons, one merchant vessel, 2,500 tons, escorted by one minesweeper, one flak ship and two smaller possible escort vessels. They were on a north-westerly course and their speed was slow. The escorting minesweeper was weaving on the seaward side of the larger merchant vessel. T/455 went straight in to attack, releasing his torpedo fine on the starboard bow of the 3,500-ton merchant vessel, then turning to starboard. " F " and " D " both attacked another vessel, but their torpedoes failed to release. One was possibly due to a cannon shell hit on the tail of the torpedo. The cause of the other is unknown. There was accurate light flak but the aircraft returned safely to their base. The beam gunner of D/455 reported seeing a vessel down by the stern after the attack; also a small explosion by the side of the ship and a disturbance in the water. A hit was claimed.

Hampdens B, C, J and **L/489** (R.N.Z.A.F.) carried out a Rover patrol off the Norge coast on August 8. The aircraft, flying in two sections of two, made landfall off Egero and turned south. When off Lister, a convoy was sighted three miles ahead, consisting of one " M " Class minesweeper and one escort vessel leading, followed by a 2,000-ton three island type merchant vessel, and a 4,000-ton ore carrier. A probable escort vessel was stationed astern the three island type and on the port quarter of the ore carrier, with a further possible escort vessel astern. The convoy was steaming northwards, the cloud base was 200 ft. and visibility was poor. From their position dead ahead of the convoy, there was little time for the aircraft to deploy and they attacked, with torpedoes, from a very fine angle on the bow of the three island type and the leading merchant vessel. As the aircraft broke away, the probable escort vessel on the ore carrier's quarter was seen to be enveloped in smoke. It is possible that a torpedo missed its original target and scored a lucky hit on a vessel further astern. Light flak from the convoy and heavy flak from shore batteries followed the attack. Three aircraft were hit by cannon shell. Two rear gunners received slight leg wounds. Our aircraft all returned safely to base.

III. OTHER OPERATIONAL FLYING

Combats With Enemy Aircraft

Catalina J/63 A/S Squadron, U.S.N., on August 1, was on A/S patrol when it sighted three Ju.88's five miles away on the starboard quarter. " J " increased speed and set course for the nearest cloud cover. This proved inadequate and as J/63 emerged unexpectedly into a clear patch, eight Ju.88's were sighted 2½ miles to starboard in close echelon formation, flying about 6,000 feet. The enemy aircraft then closed and carried out attacks from the starboard bow, breaking away at 500 ft. below. " J " evaded by steep turns to starboard. The bombs were now jettisoned. The enemy aircraft changed their tactics and made simultaneous attacks on the port and starboard bow. J/63 turned in towards the nearest attacker. During the first of these attacks the navigator was killed by cannon fire while acting as fire controller. Two members of the crew in the central compartment were wounded, and the intercommunication was also rendered unserviceable. Fire was returned from the ·303 free guns in the bow, and the ·50 machine gun in the blisters aft. Hits by the starboard blister gun were estimated on three enemy aircraft. In the next attack, the radio operator was killed, the set demolished, the starboard gunner wounded and the gun put out of action. The captain of the aircraft was also killed. The bow guns jammed and could not be cleared in time for the next attacks. J/63 went into a steep slipping diving turn to port, but the enemy aircraft closed in to 100 yards. The petrol tanks were set on fire, the aileron, and rudder controls shot away. The starboard engine now stopped, and only longitudinal control remained. " J " dived crazily from 2,000 feet to sea level to make a crash landing, but when in a semi-stalled condition before becoming waterborne, cannon fire burst in the bow compartment killing the bow gunner and seriously wounding the pilot. By luck the Catalina was already heading into a 35 knot wind and a successful crash landing was made. The second pilot retrieved a dinghy, inflated it and got the wounded first pilot and starboard gunner aboard. The three survivors out of the crew of ten were rescued by surface craft after 24 hours in the dinghy.

Hampden T/415 (R.C.A.F.) was on A/S patrol on August 2 when it sighted five Ju.88's at 1 mile on the starboard quarter. The enemy aircraft climbed and attacked simultaneously from below on the port and starboard quarters, opening fire at 600 yards and breaking away at 200 yards. Four attacks were then made on the beam, and as the waist gunners had difficulty in replying, the enemy continued them. One Ju.88 then attacked from dead astern, closing to 300 yards and causing considerable damage to the Hampden, but not to the crew. The gunners replied whenever possible and many hits were estimated on the enemy aircraft, although this did not seem to reduce their attacks to any great extent. After twenty minutes' combat, T/415 reached cloud cover and the enemy were not seen again.

Sunderland F/10 on August 2 was flying in clear weather on A/S patrol when it sighted three Ju.88's two miles dead astern, and three Ju.88's three miles on the starboard quarter. F/10 altered course in a westerly direction and three Ju.88's attacked from dead astern at 2,000 yards with cannon. No hits were registered. F/10 took evasive action and the three enemy aircraft broke away to port. A single attack was then made on the starboard bow, followed by two from the port bow. The last of these attacks caused damage to the port main plane and to the port float. Fire was returned by all gunners as and when the enemy presented themselves. The Sunderland took evasive action by making turns towards the attacks. There was no further action.

Beaufighters P, W, J, and L/248 on August 2 sighted a F.W.200 in the Bay of Biscay. The F.W. was 1,000 yards distant on the beam flying on a reciprocal track to the Beaufighters. The F.W. climbed for cloud cover and " J " attacked from the port quarter firing a test burst at 700 yards and a long burst at 500 yards. A dull red glow which developed into flames appeared underneath the enemy's cockpit. Simultaneously the windscreen of " J " was shattered by return fire, the pilot being temporarily blinded by dust and splinters. He consequently overshot and was again hit by the F.W.'s front gun. Aircraft " L " followed in from astern simultaneously with " J " and fired from 700 to 400 yards, causing large pieces to fall from the enemy aircraft which had to swerve to avoid collision. As aircraft " W " came in, the F.W.200 was well on fire. It dived into the sea at a flat angle, the tail fin leaving a pronounced wake.

Mosquito L/333 (Norwegian) was on a shipping reconnaissance on August 13 when it sighted two enemy aircraft 300 yards to starboard, flying on a reciprocal course. " L " made a steep turn to starboard passing over one enemy aircraft and coming up astern of the second. " L " opened fire with a short burst—corrected sighting, and gave a long burst. The enemy was seen to be shaking badly and clouds of black smoke were coming from the fuselage. The Mosquito turned to search for the other enemy aircraft but it could not be seen. Owing to the bad weather and visibility at the time the enemy could not be identified as other than Ju.88's or He.111's.

Wellington G/547 was on patrol in the Bay of Biscay on August 15 when it sighted seven Ju.88's which took station three on either beam, one weaving 500 feet overhead. The first attack was by a single aircraft from the port bow. G/547 countered with a diving turn to port and the front gunner opened fire. As the enemy aircraft broke away under the bow towards the starboard quarter, the rear gunner opened fire at 50 yards, estimating hits. The second attack was made by two aircraft from the starboard and one from the port. G/547 made a diving turn to port. Three more attacks were made by the Ju.88's before the Wellington succeeded in reaching cloud cover. The only damage to the Wellington was one machine gun hit on the leading edge of the port main plane.

Liberator E/19 A/S Squadron, U.S.A.A.F., on August 16, engaged on A/S patrol in the Bay of Biscay, sighted two sections of four Ju.88's, eight miles distant on the port quarter. "E" increased speed to 270 m.p.h. and dived for 5/10 cloud cover. Five Ju.88's formed into line abreast formation and followed the Liberator at 1,200 yards astern through the broken clouds, while two enemy aircraft passed 200 feet above. Three Ju.88's then drew ahead and the port waist gunner opened fire with two short bursts before the enemy aircraft again dropped astern. At this point Liberator "E" gained 10/10 cloud cover and changed course 90 degrees every five minutes. No direct attacks were made at any time by the Ju.88's, and they did not open fire.

Liberator D/19 A/S Squadron, U.S.A.A.F., was on patrol in the Bay of Biscay on August 16 when it sighted a Ju.88 on the port quarter, five miles away. No evasive action was taken until the enemy had closed the range to 800 yards. "D" then turned 30 degrees port, dipping the port wing to allow the port waist gunner and top turret gunner to begin firing. At 200 yards the enemy aircraft turned to port and began to climb, thus presenting an excellent target. Hits were estimated on the Ju.88 which began to yaw. Black smoke appeared from the starboard engine. The enemy did not make any further attacks and disappeared.

Sunderland X/461 (R.A.A.F.) was on A/S patrol in the Bay of Biscay on August 16 when the nose gunner sighted six Ju.88's on the starboard bow, flying in stepped up echelon formation. The nearest enemy aircraft was at 1,000 yards and was already making a beam attack with the remainder preparing to follow the leader in. With these tactics X/461 could not turn in towards the attack as this would have brought the Sunderland into such a position that some of the enemy would have had practically a no deflection shot. Speed was increased in a rapid dive for cloud cover to 230 knots on the same course. The first enemy aircraft got in a successful burst with explosive cannon fire, killing the midship gunner, making the tail turret unserviceable, severing the elevator trimming wires, and causing considerable damage to instruments, etc., in the cockpit. The nose gunner of "X" got in several bursts at the starboard enemy aircraft at 600 yards, but no hits were observed. The remaining four Ju.88's attacked from 1,200 to 800 yards with explosive cannon shells but they all appeared to burst to starboard. X/461 gained cloud cover for three minutes during which time attempts were made to remove the midships gunner. On emerging from the cloud, two Ju.88's attacked from the starboard bow. "X" turned to port and then, as the range closed, it made a steep diving turn to starboard, passing beneath both enemy aircraft. Owing to the steepness of the dive the nose gunner was unable to return the fire and "X" was hit forward. The wireless operator was wounded, but he continued to transmit messages. After one more attack, the Sunderland again entered cloud and contact with the enemy was lost.

Hampden Y/455 (R.A.A.F.) on August 18, was on a night Rover patrol off Kristiansund when it sighted a Ju.88 on the port quarter. The enemy aircraft opened fire at 400 yards, but did not obtain any hits on the Hampden. Y/455 took corkscrew evasive action, and although this made shooting difficult, the rear gunner was able to fire a short burst of ·303. No hits were observed. The Ju.88 again carried out a port quarter attack as it then had the Hampden up moon. Y/455 countered by a diving turn to port jettisoning the torpedo at the same time. The rear gunner got in three more bursts of fire. The moon now became obscured by a cloud and the enemy aircraft was not seen again.

Liberator S/59 on August 19 was on convoy escort when it obtained a S.E. contact 18 miles to port. It was thought by the operator to be an aircraft. "S" climbed and set course to investigate. A F.W.200 was sighted making for the convoy six miles away. S/59 turned to intercept, and it was noticed that the enemy aircraft was unaware of the approach of the Liberator as it was cruising at about 130 knots. As the range closed, "S" turned to starboard to bring the nose gun to bear, and fire was opened at 300 to 400 yards. Owing to the awkward gun position it was not possible to allow sufficient deflection and no hits were estimated. The F.W. immediately increased speed and turned sharply to port making for the cloud cover in that direction. The Liberator was overshooting and therefore turned to starboard to bring the rear turret to bear. Although the rear turret was turned to the maximum, the rear gunner was unable to get the enemy aircraft in his sights. The F.W. now succeeded in making cloud cover opening fire with cannon as it disappeared. No hits were made on "S." The Liberator returned to the convoy.

Sunderland X/228 was flying on A/S patrol on August 20 when it sighted three Ju.88's in line astern formation 1,200 yards on the starboard beam. A few seconds later three more Ju.88's were seen in the same formation, 500 yards astern of those first sighted. The depth charges were jettisoned and the Sunderland set course for a large patch of cumulus cloud 45 degrees to starboard. The first three enemy aircraft prepared to attack from the starboard quarter while the other three tried to position themselves on the port quarter. As X/228 passed through clear patches before entering the main mass of cloud, a single enemy aircraft fired short bursts from 1,000 yards to 800 yards, but made no hits. The Sunderland now entered the large cumulo-nimbus cloud and lost contact with the enemy. After 10 minutes, severe icing of the carburettors and A.S.I. forced the Sunderland out. X/228 was not damaged and no guns were fired.

Sunderland U/201 engaged on convoy escort on August 21 was jumped by two Ju.88's. The enemy aircraft made a surprise attack on the port quarter and U/201 was hit several times. The intercommunication was made unserviceable, also the W/T. Both port engine exactors were shot away. The captain was shot in the leg and the W/T operator in the face. The aircraft then evaded, and the front gunner hit one enemy aircraft and set the starboard engine on fire. This Ju.88 was not seen again. The remaining Ju.88 then set course eastwards.

Liberator J/19 A/S Squadron, U.S.A.A.F., was on patrol in the Bay of Biscay on August 21 when it sighted four enemy aircraft at 800 yards on the starboard beam; also three enemy aircraft on the port quarter at 2 miles. Aircraft " J " had just emerged from 10/10 cloud and the starboard waist gunner saw the Ju.88's peeling off to attack. The enemy aircraft opened fire at 600 yards range, and the starboard waist gunner and top turret gunner of " J " returned the fire at the same range. No hits were observed. As the Ju.88's closed, " J " was hit in the starboard inner engine which was put out of action. This was apparently the first time that the first and second pilot were aware that the Liberator was being attacked. The pilot immediately turned to port and set course for the nearest cloud cover which was reached in less than a minute. There was a tip and run combat as the Liberator dodged from cloud to cloud. During one attack on the starboard beam " J " waited until the enemy aircraft was well committed to its attack. It then dived towards it, taking violent evasive action, which resulted in the enemy passing overhead into the fire from the top turret gunner and the tail turret gunner. Thick smoke was seen coming from this aircraft as it passed out of sight astern. Two enemy aircraft are believed to have been seriously damaged. There was no further combat and the Liberator returned safely to base.

Wellington Y/547 was on A/S patrol on August 21 when the second pilot sighted, from the astrodome, three aircraft following. " Y " increased speed and made for cloud cover 500 feet above, at the same time jettisoning the depth charges. On emerging from cloud seven Ju.88's were seen following astern. One of them closed to 800 yards and the beam gunner of " Y " opened fire. No hits were seen. The Wellington took evasive action by climbing, diving and turning from cloud to cloud. None of the enemy opened fire and they were not seen again. When greater cloud cover was reached, Y/547 climbed in cloud to 8,000 feet.

Wellington T/304 (Polish) was on A/S patrol in the Bay of Biscay on August 22 when it sighted a Ju.88 at 1,000 yards on the starboard quarter. The enemy aircraft circled to port then back to starboard, but did not close to more than 1,000 yards. The Ju.88 then attempted a stern attack. T/304 jettisoned bombs and depth charges and began a steep turn. The rear gunner fired four short bursts at 1,000 yards but no hits were observed. The Wellington then reached cloud cover and lost contact with the Ju.88.

Liberator V/4 A/S Squadron, U.S.A.A.F., on August 23, was on A/S patrol when it sighted three Ju.88's heading for the Liberator. These were closely followed by four other enemy aircraft flying in pairs. As V/4 turned away from the enemy, three more were sighted. V/4 continued to turn in towards these aircraft and they passed under " V." One of the aircraft obtained hits on the Liberator, wounding both the first and second pilots and the S.E. operator. The nose gunner and top turret gunners opened fire at the three aircraft as they passed by and hits were registered. Numerous and varied attacks were then made from all angles. During one of these, number one engine was hit and the propeller had to be feathered. The right waist gunner opened fire on one of the enemy aircraft. Black smoke poured from this Ju.88 before it crashed into the water. This was verified by the tail gunner. The Liberator continued violent evasive action during the whole of the engagement. The Liberator eventually reached cloud and began circling in it. After twenty minutes the pilot inadvertently came out of the cloud and the enemy aircraft were sighted at 1,000 yards on the port beam. The left waist gunner and the top turret gunner opened fire and tracers were seen to enter the enemy. The depth charges could not be jettisoned as the bomb bay had been damaged. This, together with the feathered airscrew, caused the aircraft to lose altitude. The pilot of " V " then decided to head for more cloud. Number one engine was unfeathered and the cloud was reached before further attacks were made. The enemy were not seen again.

Liberator B/4 A/S Squadron U.S.A.A.F., on August 23, intercepted a distress message from V/4 U.S.A.A.F. Squadron. " B " set course for the position and sighted what was thought to be a Beaufighter which was climbing rapidly. A dinghy with three people, apparently in good condition, was sighted. A marine marker was dropped close by and a message sent to base. While he was still circling the dinghy, the co-pilot sighted nine Ju.88's. The Liberator turned immediately into the sun and made cloud cover at 8,000 feet before attacks could be carried out by the enemy. The Ju.88's were firing at the two marine markers when they were first sighted, but they immediately turned and climbed to pursue aircraft " B." Just before sighting the enemy, the dinghy crew fired a red flare and then a green flare. This is now thought to have been a warning that enemy aircraft were approaching.

Liberator E/19 A/S Squadron, U.S.A.A.F., on August 25, was flying on A/S patrol in the Bay of Biscay below 10/10 St. Cu. at 3,000 feet when a Ju.88 was sighted 600 yards on the starboard bow. The enemy aircraft rapidly overhauled the Liberator, flew to the port side, circled round, and came in to attack on the starboard bow, opening fire at 600 yards. Hits were scored on both port engines and the port inner caught fire. The enemy broke away beneath E/19, circled and approached from the starboard quarter. This attack was countered by a sharp turn to starboard. The top turret gunner opened fire, estimating 10 to 15 strikes on the Ju.88. The Liberator now entered 10/10 cloud and the Ju.88 was last seen in the distance approaching astern. No damage was done to the crew and the aircraft returned safely to base.

Liberator M/311 (Czech) while patrolling in the Bay of Biscay on August 30, sighted a single Ju.88, and a combat lasting 15 minutes ensued. The pilot of this lone Ju.88 seemed very much keener than those usually encountered in the Bay, as single-handed he made determined attacks from 500–50 yards, unlike the majority who open fire at 700 yards and close at 400 yards. His aggressive tactics enabled him to score some 20 cannon and machine gun hits on the Liberator,

the beam gunner of which was killed in the first attack. The rear and mid upper gunners of M/311, however, returned steady and accurate fire in the face of his attacks. At the end of the fifth attack they were well rewarded. The Ju.88 broke away at 50 yards with the starboard engine in flames and thick smoke pouring from the port engine. The enemy aircraft passed under M/311, losing height rapidly, and was seen to sideslip and crash into the sea.

Liberator L/86 sighted two Ju.88's approaching from the Spanish coast on August 25. The enemy aircraft closed, one making a direct approach from astern and the other from the port quarter, 300 feet above. The enemy aircraft attacked simultaneously, the port one opening fire at 700 yards and obtaining a hit on the port beam window. The other enemy aircraft was not seen to fire and it broke away at 700 yards. L/86 returned the fire with the four Brownings in the rear turret but no hits were registered. The enemy reformed and carried out two more similar attacks, during one of which no guns were fired. They then made one attack from ahead. "L" turned sharply to starboard and then to port and the enemy fire passed astern. After two or three more spasmodic attacks, the enemy disappeared.

Photographic Reconnaissance

The aircrews on Photographic Reconnaissance have done their great work in secret since the war began and although their photographs have been widely reproduced in the public press, the origin of those photographs and all descriptions of the Unit have been withheld from the public. On August 30 the ban was lifted on this secrecy, to a certain extent, and a party of pressmen were conducted over Benson. The result was a large number of complimentary articles in the national newspapers on the morning of August 31.

In addition to the routine watch on aerodromes and ports, damage assessment sorties were flown over all targets attacked during August, including Genoa, Milan, Turin, Peenemunde, Nurnberg, Regensburg, Schweinfurt, Berlin and several airfields attacked by U.S. Fortresses.

In the case of Regensburg, photographs were obtained only a few hours after the attack, thus providing an assessment of damage long before details were received from the attacking aircraft which landed in North Africa.

With the fall of Sicily, the range of photographic reconnaissance has greatly increased and targets on the German–Polish frontier and far into Austria have been photographed successfully by six aircraft which refuelled in Sicily or Tunis.

Following are three reports by P.R. pilots who flew over enemy country on sorties during August.

540 Squadron. Targets on the German-Polish border. (This sortie entailed refuelling in North Africa, the aircraft returning to England the following day.)

We took off from base at 0730 hours on August 20 and landed at Coltishall to refuel at 0820 hours. We were airborne from Coltishall at 0910 hours, setting course direct to a target which was a few miles short of the Polish border. We reached 25,000 ft. over the Dutch coast. We flew over 10/10ths cloud until about 50 miles inland from the Dutch coast where the cloud broke up, leaving only heavy haze. These conditions continued until we reached the target. When about 15 miles short of the target we sighted a single engine enemy aircraft about 8,000 ft. below, climbing up on a reciprocal course. We turned 10 degs. to port, remaining at cruising revs. for about two minutes, and then continued on course to target, soon losing sight of the enemy.

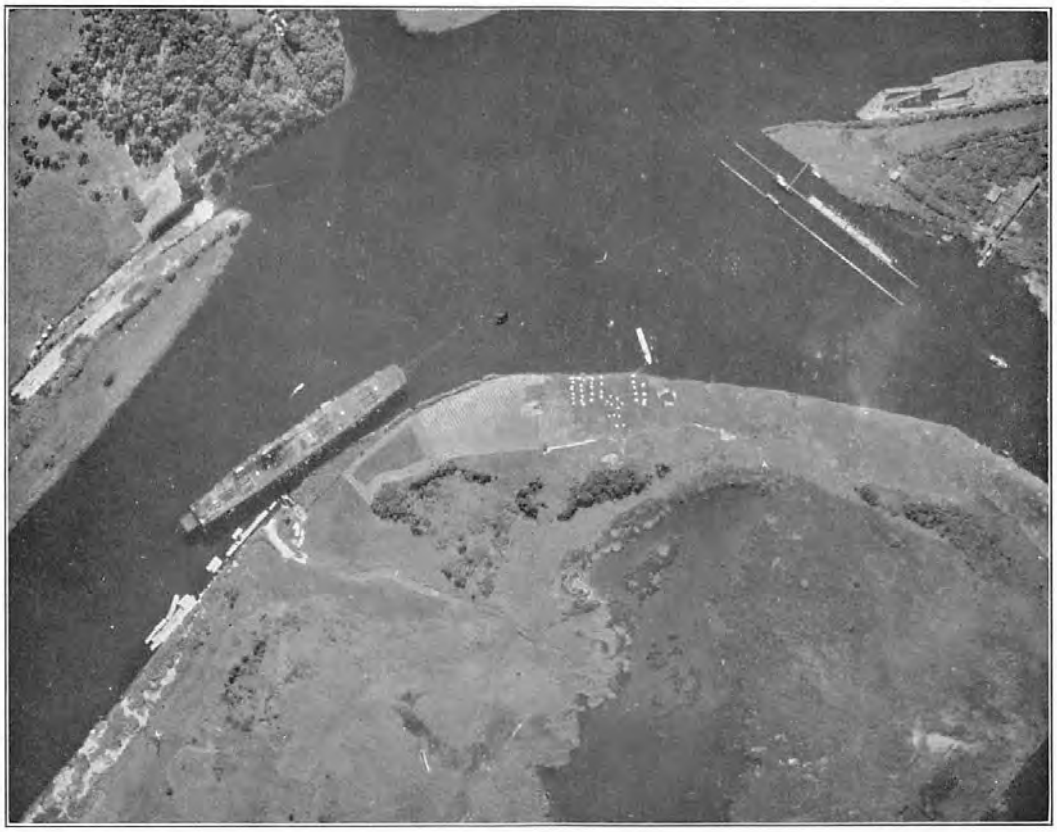
We had no difficulty in locating the targets, which were of such a size,with much constructional work going on, that they stood out very clearly from 26,500 ft. After photographing the target we turned south and set course for Sicily. Hazy conditions continued until we reached the Adriatic, after which visibility became excellent. We landed at Bo Rizzo on the north-west coast of Sicily at 1440 hours, after 5½ hours flying.

On landing in Sicily we had lunch, consisting of standard American "K" type rations (eight dry biscuits, a can of cheese and a stick of gum). Although this was appreciated we felt we should do better elsewhere, so later in the afternoon we took off for Gibraltar. However, after two hours flying we changed course to Maison Blanche aerodrome in Algiers and, owing to failing light, we landed there at 1940 hours after flying a total of 8½ hours during the day. There we had sausages for dinner !

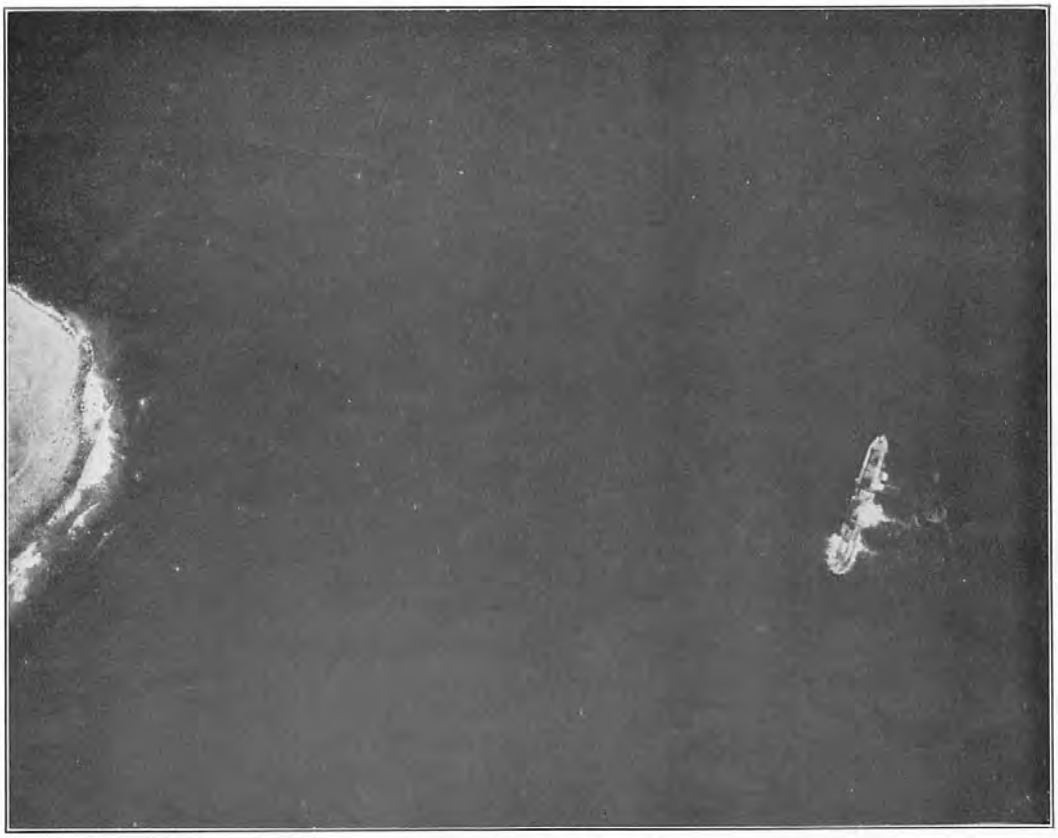
The followmg day we returned to base via Gibraltar. Our photographs turned out to be of excellent quality, covering the target fully, and we understand that the experts were very pleased with them.

540 Squadron. Targets : Friedrichshaven and targets in Northern Italy, Turin and target in Central France. (This sortie entailed refuelling in North Africa and returning to England the same day.)

We were airborne at 0700 hours on August 11, and set course for Friedrichshaven, climbing through a front over the English Channel. We remained at 30,000 ft. over 10/10ths cloud until we made our first pin-point at Freiburg. Lake Constance stood out clearly and we made two runs over the target. On the second run we experienced some flak, about 50 bursts in all. We then set course for other targets. There was 4/10ths cloud over the Alps but we managed to take some photographs of Innsbruck and Gross Glockner. After making other photographic runs in Northern Italy we set course for Venice, where we took photographs of the town and docks (*see* plate opposite page 19). Having completed photography of the targets required we set course for La Marsa aerodrome, in Tunis.



Germany's only aircraft carrier, *Graf Zeppelin*, which has never been completed, photographed by 540 Squadron. She lies moored off a deserted river bank a few miles from Stettin. There is apparently no activity around or on board her. A few months ago there were signs that she would soon be completed, but now it seems that the ship will not see service for the time being. The success of the past few months against the U-Boats and the need for more crews may explain this change of policy. The crews of 25–30 U-Boats could be manned from the ship's company of a vessel of this class.



THE *SABINE HOWALDT*

On May 13, 1943, four Hampdens of 489 Squadron attacked a ship off Lista, South Norway. Torpedoes were observed running towards the target but no results were seen. Photographs taken during the attack identified the ship as being either the German *Sabine Howaldt* or a sister ship. At the end of July a wreck was photographed by 540 Squadron, in almost exactly the position of the attack. The holds were open and the cargo had evidently been removed. A later photograph, taken on August 31, is reproduced above, confirming the previous identification. This evidence has enabled the attack to be reassessed as "M.V. 5,956 tons, Category 1—sunk or total loss." The incident reassures us that damage is often inflicted without the striking aircraft being able to witness it. It also shows that a long interval may elapse before any news of the final result can be obtained.

VENICE, showing the Lagoon, the Grand Canal, St. Mark's, the Campanile and the Doge's Palace.
Photographed by 540 Squadron. (*See* letterpress pages 18–19.)

BERLIN, photographed by 541 Squadron, after the bombing on August 23–24. (*See* letterpress opposite page.)

When in the Florence area, our starboard engine showed falling oil pressure and rising temperature, so we applied the auxiliary oil tanks and the pressure returned to about 80lb. After some 30 minutes flying, the oil pressure fell again and we were compelled to feather the starboard airscrew in order to save the engine. We were then 280 miles north of Cap Zebib, at 27,000 ft. We gradually lost height to 10,000 ft. during the remainder of the trip and crossed in at Cap Zebib at 5,000 ft., effecting a good single engine landing at La Marsa Aerodrome at 1200 hours. The reason for the engine failure turned out to be an oil pipe leak.

That afternoon we took off from La Marsa Aerodrome at 1530 hours and set course for Turin and encountered about 3 to 4/10ths fracto cu. over the Mediterranean. Sardinia and Corsica were visible on our starboard beam for most of the flight. We crossed in over Cap D'Antibes. The Plain of Lombardy was very hazy and there were 4/10ths cloud over Maritime and the Alps. We then made a photographic run over Turin at 27,000 ft. and then set course for the Lyons area, where we took some photographs. Unfortunately, the target itself was cloud covered. After that we set course for base and climbed to 35,000 ft. to get over a " warm front " making very large trails. We took some photographs of Rouen on the way and crossed in over the English coast at Selsey Bill at 14,000 ft. The main tanks were not feeding and we only had 20 gallons left in the outers on landing at base at 2010 hours. No opposition was encountered.

541 Squadron. Target : Berlin

I took off from base at 0611 hours on August 24, the morning after the heavy raid. I landed at Coltishall to refuel, and at 0707 hours I was airborne and on the way to my first sortie over Berlin. I entered trails about 28,000 ft. and, as I thought this was rather low to cover Berlin, I climbed into trails and left them at 38,500 ft. I stopped climbing at 40,000 ft. and crossed the Dutch coast just north of Aekmaar. I saw two trails about five miles south of me heading east at about 28,000 ft., but they made no hostile act so I ignored them. There was about 6/10 cumulus cloud here, developing into 10/10 multilayer cloud (probably a front) with cirrus at about 30,000 ft. This persisted until I reached the Osnabruck area. When I was about 50 miles inside the German frontier—about 50 miles west of Hanover—I could see what appeared to be a large towering cumulus cloud rising to about 20,000 ft.—some 200 miles in front of me : where Berlin lay. From here on the weather was perfect : a clear sky, unlimited visibility with medium haze which made map reading easy. The immense cloud was sharply defined against the blue sky. I passed over the Weser River, a little north of Hanover and then over the Elbe. At 0835 hours I reached the outskirts of Berlin. I knew then that the cloud was the smoke from the city, burning from the bombing of the night before. The chances for photography were poor. The wind was westerly and about 40 m.p.h. The smoke from the fires on the western and southern fringes of the city was so immense, and the smoke shadows so intense, that they obliterated the centre of the city from my view (*see* opposite plate). I had to be content with runs along the edge of the smoke cloud, taking photographs which turned out much better than I expected. I flew back and forth—four runs, for 20 minutes. When I thought that I had all the photographs I could take, I turned for home.

I had constant jamming of my radio all the time from the enemy R.D.F. But I was not menaced by either flak or fighters. I crossed the Dutch coast out at Aekmaar, landed at Coltishall at 1055 hours to refuel, and returned to base.

From a Broadcast to U.S.A.

On the edge of the North Sea is an English town I'd like to tell you about. It is a town with an Anglo-American angle. When American fliers crash into the North Sea, English boys from this town rescue them. I visited there this week.

I was in the uniform of an American correspondent, so they asked me about America. Everyone showed a deep interest when they asked, "Are the American soldiers happy over here?"

The industry of this town has always been the sea. Four years ago it was halibut and mackerel. To-day the ships fish for magnetic and acoustic mines sowed by the Germans. Sometimes at night you can hear the distant boom of an acoustic mine being exploded by a British trawler. On other nights there floats back from the North Sea the sound of sharp gunfire where British motor gunboats are engaged in a running battle with E-boats. German convoys loaded with iron from Narvik try running the British blockade to carry ore to French factories. They are menaced by British submarines and motor torpedo boats. It is the battle of the Atlantic in reverse.

But since war, another industry has sprung up. It is called Air-Sea Rescue, and it began with the Battle of Britain. It was then you could stand on the cliff tops and watch fast launches race out to sea to rescue a British or German pilot who was drifting ocean-wards, beneath a billowing white parachute. To-day they now race out for American airmen as well.

These rescues from the North Sea are a good example of Anglo-American teamwork . . . though that's a phrase only civilians use. Men in the front lines, and the people of that English town " on the edge of the North Sea " just call it " working together." Those who face a common enemy soon learn to appreciate the strength and qualities of the other.

To-night there may be British gunboats in the North Sea. They will move slowly through E-boat alley. They may intercept a German convoy. Then night will become day for brief moments as tracers punctuate the darkness. To-night there will also be Air-Sea Rescue launches standing by. They will be the non-combatants. If the R.A.F. bombs Europe they will wait for the British aircrew who cannot quite make that stretch of English cliff land which is home.

And to-morrow, if the Fortresses head for Germany, Air-Sea Rescue will be waiting for their *return, as well.*

Paul Manning, of the Columbia Broadcasting System.

IV. SPECIALIST AND GENERAL ARTICLES

Bluenose without tears

Iceland in the summer ! At the height of the Tourist Season. Bright sun and crisp winds. White bread and explosive margarine. Grating lava dust under foot. Akureyri tweed. Unbounded hospitality. Cheery company. " Did you hear the one about the . . . . . ?" It was already full day as we drove past the smartly saluting R.A.F. and U.S. Naval guard into Reykjavik and the hay fields along the road seemed a sourer green than usual to our sleep-starved, jaded eyes. The crew had already assembled in the intimate little Ops. Room, with its low ceiling, and the Navigator was busy preparing his chart. Boxes of rations stood ready to hand. A few scratches came from one corner where the clerk was entering details in his log. The pigeons were scarcely more silent than the rest of us, for the usual purposeful hush had fallen on this early morning briefing, as though the night would make a last attempt to claim us.

It isn't always an easy matter to get off on time. Having loaded all our gear into one glistening Liberator, we had laboriously to unpack and go over to the stand-by aircraft, cursing at the misgiving in our hearts that one false start often leads to another. This time, however, we were in luck. The engines leapt into a rich roar, the fire extinguisher was packed away, and, to a high screaming of brakes, the giant aircraft lurched away from its chocks. Now we were calling Control for permission to cross the humped runway that so strongly resembled the spick and span flight deck of a Carrier. Because of the load we carried, we had to taxy over to the fusing point, there to stop and finally to restart our own engines. At last we were away and set our course N.W. for Ondverdharnes, leaving the corrugated tinsel of sleeping Reykjavik behind.

We were running up the West Coast of Iceland, and as the sun slanted across the great shoulders of that rugged coast, our eyes followed over the brink of the cliffs, down to the waves themselves. Coloured by their background these looked no less barren and forbidding than the neighbouring shore. A little farmstead standing out here and there, where the dead lava had weathered into a patch of pasture ; a small trawler pitching into the choppy sea ; a solitary gull skimming the wave-crests ; these were the only noticeable signs of life that the next ten hours were to yield.

Snaefells Jokull, 60 miles along track, makes an impressive sight. The battlements of this volcanic bastion rising sheer out of the sea, are disclosed through veils of cloud. Snowy white slopes, one after the other, lead towards a pyramid of ice 4,774 ft. high ; not at all unlike the better-known Matterhorn.

From Ondverdharnes we set course for Bjartangar, the southernmost promontory of the so-called Claw, the indented tableland on the north-west corner of Iceland, looking on the map so very like the claw of a lobster.

Here we parted from land and set off on a track of 330° T. across the Denmark Strait. Within half an hour we entered intermittent sea fog which proved to be the forerunner of brash ice ; isolated floes like flat crusts of icing sugar in a calm sea. As we went on, the ice increased until it left only three-tenths of the sea surface clear. At the same time the fog lifted and we looked out to a breath-taking scene of pack ice interspersed with larger bergs, many gleaming pale green and blue in the sunshine ; some carrying the dirt of moraine on their backs. Some of these blocks were 100 yards long, rising 100 ft. above the water-line : glacial giants amidst the pigmy floes. But perhaps the finest sight of all lay ahead, where a frieze of jagged mountains rose in a white wall against the blue sky, showing where Greenland began. Visibility was in the order of 100 miles, and the excited traveller in each of us revelled in the vista of 12,000-ft. peaks of the Watkin's Mountains, swathed about by the great glaciers that descend from the mysterious interior.

As we approached the Greenland coast, the pack ice decreased in density although rather more bergs were to be seen. An hour and a quarter after leaving Iceland we turned to starboard and began to follow the outline of the pack ice edge for the Navigator to plot, whilst on our left the Greenland panorama passed by in review, 20 miles away.

About this time the rear gunner came back to thaw out, and we broke into the rations for our elevenses. Air temperatures were actually above freezing, but hot coffee was very welcome after the sight of so much ice.

For an hour and a half we traced the pack ice, noting the occasional open channels where warmer currents had encroached upon the ice. Then we came to the point from which we could plainly see where the frozen fangs of the coast to port opened up into the vast Scoresby Sound, said to be the biggest fjord in the world.

Here the wind suddenly backed 40° and increased from 10 to 35 knots. We set course for Jan Mayen, 240 n. miles away on a track of 065° T. Almost at once we ran into low murky cloud and drizzle, with a base at 200 ft. We climbed to 7,000 ft. without any sign of a break, and reluctantly decided to go down again and under it. This was easier said than done. At times there was no ceiling at all, and at best the forward visibility was a quarter of a mile.

As our E.T.A. approached, our Skipper decided to feel his way forward with his Mark II S.E., and we climbed to 1,500 ft. to get a contact at good range. The sky was a uniform grey, but every now and then a short break between layers of mist encouraged us to peer forward, hoping to see something. At last we found a contact straight ahead at 32 miles and closed the range to 5 miles before considering it wiser to turn away.

Greenland panorama : icebergs and floes. (*See* letterpress p. 20.)

Ice in the Denmark Strait. (*See* letterpress p. 20.)

PLATE 6

GIBRALTAR: Windmill Flats. (86 Squadron.)

GIBRALTAR: The runway, on the North Front, extended into the sea. (86 Squadron.)

Jan Mayen boasts of a mountain of over 8,000 ft. and though a darkening of the greyness ahead indicated the presence of land, we were foiled of our quarry. The meteorologists who lead such a solitary life there were no doubt also deprived of a minor diversion, if not actually of a little A.A. practice.

With the strong wind now on our tail we made rapid progress away to the south-west, and when we saw the sea again it was empty of the least vestige of ice. The wind then dropped to 20 knots, but later it picked up again, so that after only two hours and three quarters, we were again feeling our way round Straumnes, at the northern tip of the snowclad Claw, now jutting playfully in and out of patches of stratus at 1,500 ft.

Thus it was, an hour and a half later, that we came back to the tin roofs of Reykjavik, still bathed in brittle sunshine. With us we brought many fine pictures in our mind's eye and not a few photographs (two of which are reproduced on the opposite plate) to record a memorable day.

Your Engine

The modern aero-engine is a compact, complex piece of mechanism, capable of extremely high power output for its weight and bulk.

The "life," or in other words the number of hours which an aero engine is expected to run between each complete overhaul, is published in *Command Engineer Staff Instructions*. These facts are reviewed periodically, in the light of actual experience gained on each type of engine. Thus, if it is found over a period of overhauls that the condition of a number of any one type of engine is satisfactory, it becomes possible to review the "hours life" and possibly extend the period accordingly.

The "hours life" depends upon the handling by the pilot and the thoroughness of inspection, adjustment and rectification by the maintenance staff, and it is obvious that bad handling and slipshod maintenance will lead to deterioration, a reduced life, and additional work for the repair people. Repairing is not a haphazard affair. It is organized on an economical plan and this is upset by additional commitments. Crashes and failures are allowed for, but reduced life due to bad handling or maintenance is not. Why should it be? War demands the highest degree of efficiency from every one.

It will be appreciated therefore that the repairers cannot be expected to cope with additional unexpected work. When this is forced upon them the economic programme of repair work is upset. There follows a shortage of serviceable engines, and the result of this is that there are aircraft on the ground waiting for engines. The moral is obvious. The pilot or mechanic who shortens the agreed life of an engine is throwing a spanner into the repairing works.

Those of us in the service know full well that the pilot is as dependent on the maintenance staff as a conductor is dependent upon the talent of his orchestra. The job of the maintenance staff is to keep the engine up to a standard of serviceability so that its performance, other than deterioration through fair wear and tear, is comparable to its standard when it left the maker's works. But the maintenance staff must have the co-operation of the pilot in this.

Now to "ground running." As said previously, the engine should run a certain number of hours between each complete overhaul. We know that the ground running times of an engine are not recorded, so these hours—and they are many—do not count against the engine's overhaul life. But ground running does produce deterioration. By the time an engine has completed its allotted span, the hours it has actually run are considerably in excess of the number it should have done.

Let us assume that we can cut out ground running altogether. Then, when the engine goes back for overhaul at the correct time, it will be in a better condition than one which has probably run 50 hours on the ground, plus its full number of running hours. If an engine can run 300 hours in the air, plus 50 on the ground, why can't it run 350 in the air? This would have a considerable effect on the time between engine change and also on the number of engines going back for overhaul. We know it is not possible to eliminate ground running altogether. But it can be reduced.

For instance, is it necessary for the fitter to run the engines after the "daily," to be followed by a run by the Flight Engineer, and then finally for the pilot to have a go. If there were no snags reported after the last trip, and no adjustments or replacements have been made since, well, what are we running the engines for? The crew of an aircraft can do a lot to avoid unnecessary ground running. It's up to them to keep an eye on their particular pet aeroplane and, if necessary, question the necessity for the odd runs. Remember that by cutting down 30 hours ground running during the life of an engine, it may reasonably mean 30 hours added to the air running hours. With all four engines on a large aircraft similarly cut down, these 30 hours would mean a couple more sorties in the life of the engine. These hours are obviously better used in this way. So, before you run the engines on the ground, just think, "Is this ground run really necessary?" And if you have to ground run, don't run longer than necessary. Remember also that considerable wear may occur during starting and initial running, before the coolant and lubricating systems are functioning normally and normal temperatures are attained. Additional care is required when

starting in cold weather. Danger comes from over-doping and washing lubricant from the cylinder walls. Avoid running up on stony ground or loose surfaces, and remember the aircraft behind yours. You may blow grit and dust on to your neighbour—they may enter the intakes with disastrous results.

Careless engine handling when taxying or flying can lead to many troubles. Here also, care is necessary. You will naturally check your engines before you leave dispersal and, if you handle them correctly, they should be satisfactory when you take up position on the runway for take-off. Watch your temperatures, especially when taxying, and avoid using unnecessary power. Try not to give sudden bursts of power and then immediately correct by using brakes. Circumstances vary, but if you handle your engine with care—which it deserves—you should achieve the desired result. If you are taxying a four-engine aircraft and employing two engines only for power, don't forget that on the two idling engines, plugs can become fouled and oiled by slow running. They may become over-heated. So keep a check on these as well as on those you are using.

When you are ready for take-off, check your engines. The ones that have been slow running may require more "clearing" than the others. The operational limitations for your engine are given in the *Pilot's Notes* and in the *Engine Handbook*. These limitations are the maximum permitted. But if your load and prevailing circumstances do not warrant the maximum conditions for the job in hand, well, don't use them. The take-off limitations laid down are those giving maximum power for take-off at full load. But don't use it unnecessarily.

How many Captains know the weight of their aircraft when not fully loaded? Know the weight of your aircraft—tare weight and in operational trim. The C.T.O. can give you the answer. You may then operate your engines to give what is needed for the job in hand. Full power operation considerably affects wear and tear, so lay off it whenever you can. When you are airborne, use the engine conditions best suited for your particular condition of flight, and don't use maximum climbing power if you can climb on less. Don't go straight up if you can take it gradually, and use the lower power to do the latter.

The engine limitations show the maximum permissible temperatures: your engines will be happy if kept within these limits. Avoid drag whenever possible. Cylinder gills create drag, and drag requires power to overcome it. So adjust your cooling gills to maintain temperatures within limits. It is not necessary to have a gill setting to keep cylinder temperatures well below normal. Reduce drag by closing them and maintain the temperatures as near as possible to the optimum. The same applies to all controllable shutters and items likely to produce drag. Keep them in the "less drag" position as long as temperatures are kept slightly below the maximum permitted.

The cruising conditions should also be watched. Run your engines at a power consistent with the job you have to do; conserve petrol by keeping your boost up and r.p.m. down, and use weak mixture when your flight conditions permit it. The correct use of engine controls and particular attention to engine running to give the best petrol consumption, and to the conservation of engine power, may make the difference between ending your flight in the ditch or making your destination.

When you have landed and are taxying-in, you may be lightly loaded. So, if you have four engines, why not switch off two of them? With these, and at any time when you stop engines, allow them to cool down before operating your cut-out or switches. If oil dilution is fitted, use it to the best advantage. It will considerably assist the next start. *A.P. 1464, Vol. I*, will tell you how to use the system correctly.

You may have had a long flight and may not be feeling particularly bright. But, before you pack up and call it a day, try to recollect any engine snags or that "not quite right" feeling you have had during the flight. If you have carried a Flight Engineer, get him on it too, and then record the snags on the 700 and tell the fitter people. You can probably explain better by talking to them. If not attended to, the little snag you experienced may develop into something big during the next trip. In these days of Planned Flying and Maintenance, you may not take the same aircraft on its next flight, and the other crew may have to inherit the snags which had developed through your neglect. It's up to you to save them from this unpleasant legacy.

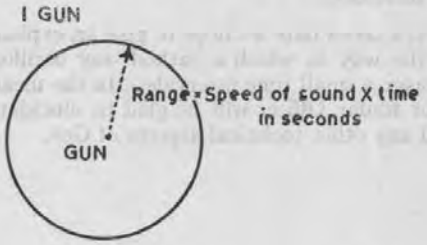
A.M.O. A.172/43 gives very useful tips about running, testing and handling aero-engines on the ground. Get hold of it. It is worth reading.

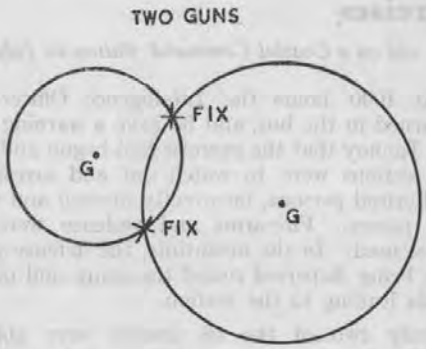
Gee

Gee, a radio navigational aid which has been in general use in Bomber Command, is now being introduced into Coastal Command.

Like all Radar equipment, Gee makes use of the fact that electro-magnetic waves travel at a fixed speed which is the same as light, *i.e.* 186,200 miles per second. This is perhaps a little too fast for us to grasp at first, so we will try to get over the tricky part of our explanation by analogy. Sound is more familiar to us, and its speed of travel is much more comprehensible.

We all remember how we first realized that sound does travel: when we saw our first gun-flash or heard a ship's whistle or saw a man chopping wood a hundred yards away. We also remember the stock question, "You see a gun-flash and 'X' seconds afterwards you hear the report. How far are you from the gun?" And we know the answer: speed of sound multiplied by the number of seconds. That tells us how far we are away from the gun, but it does not tell us where we are. If there were two guns a few miles apart, we could get a fix from the intersection of the two range circles (assuming that we know also the precise positions of the two guns) a diagram or two will amplify this.

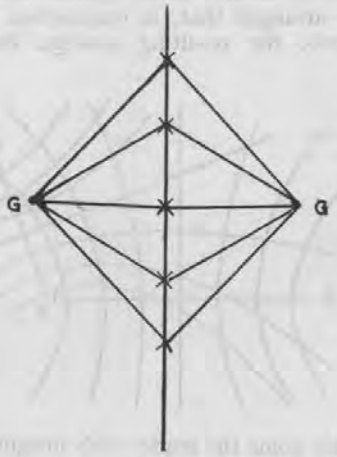




The fact that there are two fixes is not a serious difficulty as it is reasonable to assume that we have a rough idea where we are, and we can reject one of them.

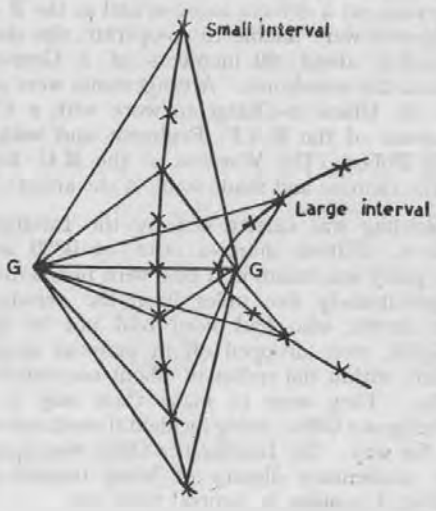
But there are difficulties other than ambiguity, as until now we are hoping that the guns will go off just when we want them. The answer to this is that we arrange for the gunners to go on firing at regular intervals. We have to be careful, however, that we allow a greater interval between shots than the greatest probable interval between flash and sound, otherwise we would not know which bang went with which flash.

So far so good; but what happens if there is a thick fog and the flashes can't be seen? This is where a flash of inspiration is called for—no pun is intended—so we arrange for the guns always to fire at precisely the same instant. Now we know the positions of the guns and we hear two bangs; we may hear them simultaneously, or with an interval between them which we can measure. If the bangs are together, we must be the same distance from each gun, and we can draw a "position line." Another figure will help us here.

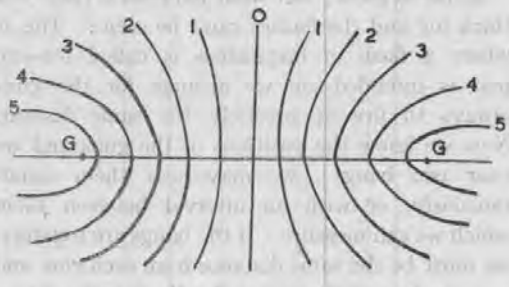


* marks points equi-distant from both guns.

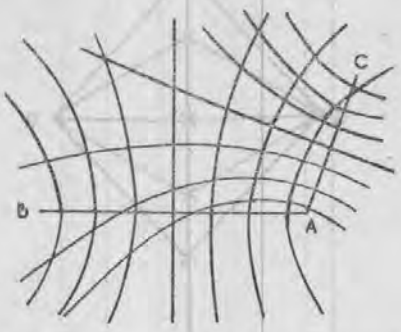
Obviously this position line is perpendicular to a line joining the two gun sites. Still, it is long odds that we will be on this line, and we are more likely to hear one bang before the other, so let us plot what happens when there is an interval between the two bangs. By measuring this interval we find the difference in distance from the two guns, and if we plot a line with a constant difference, we get something like this.



And so we can draw lines for any number of intervals we like; furthermore, we can label these lines in seconds, or any unit we like, and the result will be a chart like this :—



So far we have a position line but we need two intersecting position lines to get a "fix." The answer to this is to organize another gun site so arranged that, in conjunction with the other two, the resulting position lines cross, so :—



At this point the reader with imagination will say "How do I know which gun produces which bang?" A simple answer is to arrange that the guns fire, A and B together, then A and C together, but this time A fires a double bang so that we then know against which two to plot our position line.

All this is very ingenious, but there is a catch: how can we be sure of spotting two bangs which arrive simultaneously? Now the basis of plotting is the measuring of the delay between two bangs; if we deliberately insert a constant built-in delay between gun A which we call the master, and guns B and C which we will call the slaves, and if we allow for this delay when making up our charts, then we have nicely dodged the complication of simultaneous reception of two bangs. Incidentally, it is easier to time an interval than to arrange for simultaneous firing.

Now to recapitulate. To take a fix we listen for A (double bang) and measure the interval between it and the next bang, which will be C, then listen for A again (the next single bang) and measure the interval between it and the last bang which will be B. Look up the two lines corresponding to these two intervals on our chart, note where they cut, and that is our fix.

But, you will ask, where does Gee come in? For guns read Gee stations, firing out regularly spaced spurts of electro-magnetic waves, and for stop watch read cathode ray oscillograph, and we have Gee.

At a latter date we hope to give an explanation of the way in which a cathode-ray oscillograph measures small time intervals. In the meantime your Radar Officer will be glad to elucidate this and any other technical aspects of Gee.

Evasion Exercises

The following is the report of evasion exercises carried out on a Coastal Command station in July.

The crews were briefed and the local Police and Security Police were invited to co-operate in the exercise. The Home Guard were unable to help as their members were already working. The evaders consisted of three Wellington crews, totalling 16 pupils. As the station was not carrying out a defence exercise and as the R.A.F. Regiment were unable to co-operate, the station provided about 60 members of a Course to defend the aerodrome. Arrangements were made for the Officer-in-Charge to work with a Flight Sergeant of the R.A.F. Regiment and with the Civil Police. The Wardens of the M.U. helped in the exercise and made some of the arrests.

Briefing was carried out by the Intelligence Officer. Fifteen minutes later, at 0830 hours, the party was taken in a bus, with blinds drawn, approximately five miles from the aerodrome. The crews, who had been told not to speak English, were dropped off in pairs at stopping points within the radius of about one-and-a-half miles. They were to make their way to the Intelligence Office, doing incidental mock sabotage on the way. The Intelligence Office was to enjoy the momentary dignity of being treated as a British Consulate in neutral territory.

At 1000 hours the Intelligence Officer had returned in the bus, and he gave a warning over the Tannoy that the exercise had begun and that all sections were to watch out and arrest unauthorized persons, incorrectly dressed and without passes. Fire-arms and violence were not to be used. In the meantime, the defence party was being dispersed round the camp and on the roads leading to the station.

Only two of the 16 aircrew were able to reach the Intelligence Office without being challenged or captured. Of the others, one reached the Intelligence Office by using an unloaded Sten gun. Three others were not captured until they were well within the perimeter of the aerodrome. Two of the latter might have been successful if, being late, they had not tried to take a short cut across the aerodrome before the exercise ended. None of the evaders had any difficulty in pin-pointing their approximate position, as there are prominent landmarks visible from any high ground in the neighbourhood.

The most interesting report came from a United States Pilot Officer and an Australian Sergeant The former had been on the station only two days as second Pilot. They both climbed the

nearest hill, from which they could see the direction of the sea because of the haze. They started down the road, where they picked up two other members of the crew. All were wearing white sweaters. A gravel truck passed them and the driver asked if they wished for a lift to S., the town near the station. They grunted and all got on. When they came nearer to the town, they tapped on the roof of the cab and the truck stopped. Just after this, a bus with R.A.F. Police passed them and stopped. But apparently the police were satisfied and they went on again. All four walked to the railway bridge, but from here they saw a policeman on the far side of the goods yards. They therefore broke up and walked over the bridge singly. The U.S. Pilot Officer walked straight down to the beach. Later he met the Australian Sergeant and from there they cut through the woods near the park. The Sergeant took off his sweater, carried it under his arm and, stripped to the waist, he walked casually along the street. By this time they were quite near to the entrance to the station, where three members of the defending party, who seemed to be talking about them, watched them walk down the street. They lit cigarettes and went on casually, without looking back. When no one was looking, they walked through the barbed wire behind a hangar, not far from the entrance to the station. They then went into a Nissen hut, which was empty. The Pilot Officer picked up a Mae West and the Sergeant borrowed a shirt, scarf and officer's overcoat. They then walked together past the sergeants' mess and straight to the Intelligence Office. One of their fellow pupils began to talk to them. For the first time they broke the rules: they told him to "push off," or words to that effect, in English. They were practically home by then. They arrived at 1045 hours.

After crossing the railway bridge alone, the Sergeant had met three defenders near the Y.M.C.A. and he had escaped by running through the back door of a house. He jumped a fence, hid in the tradesman's entrance of a block of flats and watched the party go past. He then went out to the gardens towards the beach. He decided to go through the wood between the beach and the road, and it was here that he again met the U.S. Pilot.

Sergeant B and Sergeant E of the same crew, after getting their bearings, saw an R.A.F. car approaching and hid in a ditch. The car stopped but went on again. They then dashed through a farmhouse and farmyard and reached the outer marker beacon. The building was deserted and the door was loose, without hinges. They could have sabotaged the farmhouse. They then went on the Control D.F. Station, manned by one L.A.C. They went in with sticks and took two Sten guns and two magazine guns (unloaded). They apparently asked for ammunition—presumably in English, which they should not have done—and the airman truthfully said that he had not got any. They got on to the road and immediately held up a car containing the C.I., C.G.I. and I.O., who were watching the exercise. The C.I. pointed out that their guns were not loaded. They then went to the base H/F D/F station. Only one Corporal was there, and they consider that they could have taken over the station. Sergeant E thought that he could have diverted aircraft into the Scottish hills. They mock sabotaged all telephone wires and told the D/F operator, in English, that he could not communicate with base. They went to a farmhouse and, in sign language, they asked for water. They found an airman's oilskin and greatcoat and tried to take them, but the farm people objected, so they left. They then held up a Flying Officer and Service policeman whom they consider they could have killed. They then crossed three lots of barbed wire and the railway line and then crawled in the long grass to the end of the runway from which they watched the road in front of them, which was being patrolled by an armoured car. The occupants of the car spotted them and a chase followed. Sergeant B hid on the elevator of an Anson. From there another chase followed and Sergeant B dashed into the hangar and straight out through the side where he again lay in the long grass, for about five minutes. It was in this hangar that the second Sergeant was caught. Sergeant B reached the Intelligence Officer at 1145 hours, where it was pointed out to him that as an evader he should not have been armed, because he might have been shot as a spy. He had not yet received any instruction on escape.

Of the other evaders, the most successful were F/O B and F/O C who had found their position, by sighting a nearby mountain, and decided to approach the camp by the long route through the undefended side. They avoided all roads and during their journey, which took three hours, they were sighted only by one man who was sitting on the top of a hay-stack. They avoided all houses and farms and passed the main beacon about 1152 hours. They then mock sabotaged four unattended Wellingtons and planned to go to the Intelligence Officer's office by the perimeter track. However, they were a little too late and decided to try going straight across the aerodrome to see what would happen. Unfortunately, they met a Warden from the M.U., who challenged them. As they could not explain why they were there, he arrested them. During their walk they had dived into several ditches when traffic, including twelve motor cyclists, passed them on roads. But they crossed no wire and were not stopped until they were right inside the aerodrome. Nor did anyone challenge them until they were actually arrested.

All the crews considered the exercise interesting and valuable and some expressed the wish to have a shot at another one soon.

A Tragedy of Errors—Learn from the Mistakes of Others

Some time ago an aircraft was detailed to escort an important convoy, and the total flight was scheduled to take about 16 hours. After this, and during the flight, a number of mistakes were made in the aircraft and on the ground which resulted in the loss of the aircraft, but by good fortune, not in the loss of the crew.

As all the crew were saved, it has been possible to examine what happened in the air on this long flight which was also arduous because of the very bad weather. It has been possible also to remedy deficiencies in the ground organization brought to light as a result of this incident; but it is worth setting out the main events, so that others may benefit and similar mistakes be avoided in future.

A large number of mistakes were made by the crew and by the ground organization controlling the aircraft: one of the worst was that the Captain and other officer members of the crew took off about half-past nine in the morning without having had breakfast. The time of take-off had been advanced during the night, and the result was a muddle over the calling of the officers and over their breakfast. In an excess of zeal the Captain decided to take-off on the 16-hour flight without breakfast, and indeed without having had a solid meal since supper at half-past seven the previous evening.

Although the initial mistake was made by the Squadron Duty Officer this was bad judgment on the part of the Captain. Captains of aircraft are appointed partly because they have the ability to decide matters such as this. Had there been cooking facilities in the aircraft, or had the patrol been shorter, with a daylight return, he might have been right. In this case, he should have realized that towards the end of the trip he and three other members of his crew would have gone something like 30 hours without a square meal. This meant that three key men—the Captain, the Navigator and the First Wireless Operator, would be in a weak and exhausted state just when they would require all the energy and vigilance they could muster.

It was undoubtedly of great importance that his aircraft should take-off punctually to escort this important convoy at the time arranged, but the Captain should have asked for permission to postpone the take-off for the short time necessary for breakfast. The crew would then have been able to carry out their duties to the best of their ability. This error on the part of the Duty Officer and the Captain played a big part in the misfortunes that followed.

The aircraft took off and carried out its duties. The crew obeyed their instructions about the W/T frequencies to be used, but not about the times when they were to be changed. The result was that when Group tried to recall the aircraft, they could not make contact for some time. Group tried only the one frequency on which the crew should have been listening. If, when no contact was made, Group had tried the other frequencies or the Wireless Operator had changed frequency at the listening out periods, the recall would probably have been received earlier and the crew might have avoided some of their later difficulties.

When, as is sometimes necessary, the events leading up to the abandoning of an aircraft have to be reconstructed, it is usually found that neither the Wireless Operator nor the Navigator remembered to bring his log away from the aircraft. To have remembered in this case might have enabled more mistakes to be corrected. As it is, the Wireless Operators have had to rely on memory. It is clear from their account that no proper hand-over took place, and in one case some time passed before the Wireless Operator who had taken over realized what frequency he was on. Nor was the Captain informed of the change of watch.

When P.L.E. was reached, course was set for base. It was then the duty of the Wireless Operator to change frequency from Org. 3 to Org. 1, but this was not done. After some time, although Group had been trying to get through for an hour or two, the recall to another station was received. The aircraft proceeded on its way, in weather which made accurate D.R. navigation difficult. Two-and-a-half hours elapsed before any attempt was made to obtain navigational aid by radio. Then a second-class fix was obtained and course was set for land some 60 miles away.

Some minutes before E.T.A. a landfall was made which, on the basis of the one second-class M.F. fix, was assumed to be correct. It was not in fact correct, but was another point of land some 20 miles away. From here the aircraft made for a point from which it could fly a straight course for base and avoid balloons and high ground: a precaution necessary because of the bad visibility. The Navigator passed a course to the Captain which was either incorrect or misunderstood, because he flew for 10 minutes on the reciprocal. It was then estimated that course could be set for base, and the necessary alteration was made.

The Captain was confident that he knew where he was—so was the Navigator—although his confidence was based on two false assumptions:—
(i) that he had correctly identified his landfall;
(ii) that they were thereafter flying the course plotted by the Navigator.

Because of this assumption, no further accurate navigation was done, but the Wireless Operator was told to get in touch with the D.F. station for which they had set course. He tried to do this, but, as he was on the wrong frequency, he failed.

The Captain's confidence in the knowledge of his whereabouts was confirmed by the fact that balloon squeakers were heard. There were balloons in the neighbourhood of the station to which they were flying and he assumed that the squeakers belonged to them. Actually they belonged to a balloon barrage many miles away. This, therefore, was his third false assumption.

When they should have arrived at their destination, the Navigator instructed the Wireless Operator to try to contact another station which he thought to be nearby. On this occasion the Wireless Operator carried out his instructions, and, using the correct frequency, was successful in obtaining Q.D.M.s.

During this time the aircraft was flying in cloud, where it was impossible to take star sights or to identify position on the ground. Nevertheless, thinking that they were near this station, the Navigator asked the Captain to descend through cloud and the aircraft was brought down to 300 ft.

The aircraft was actually 200 miles out of position at this time. In coming down to 300 ft. it was probably only about 10 miles from mountains 3,000 ft. high. It was through the benevolence of Providence rather than their own wisdom that the crew survived to tell their story.

A cardinal principle of flying in cloud is that no attempt should be made to break cloud unless the position of the aircraft is known exactly, or unless the Navigator has enough accurate information to be sure that all high ground is miles away. An aircraft flying on Q.D.M.s can ascertain its exact position only when it passes over the D.F. Station and gets reciprocals.

Until Q.D.M.s were received all navigation was based on a wind which had been found three hours before. No attempt was ever made to obtain a further fix nor to confirm the second-class position obtained hours before.

The aircraft descended to 300 ft. so that the ground was seen through the bad visibility. Efforts were then made to identify their position, still thought to be in the neighbourhood of the station for which they had set course. These efforts failed and, deciding that flying so low in the prevailing conditions was dangerous, the Captain climbed again. Q.D.M.s were still being received but by this time the crew were anxious. Their confusion increased when a message from the ground station was sent in Syko, although the aircraft was already overdue. This was the last straw. The Captain assumed that the message said base was unfit and without bothering to de-cypher it, he decided to fly inland and bale out. It is as well he did not bother, because the Syko message was coded on the card for the wrong day anyway.

This Syko message (subsequently corrected by another, using the right card) was the worst of many mistakes made by the Station. The Flying Control Officer on duty had been on the station only six days. As he was not familiar with local conditions, he should not have been allowed to take a solo watch. He cannot be blamed, because the G.R. Controller (whose duties do not include the safety control of aircraft) usurped his functions and authorized Q.D.M.s and messages to the aircraft, including the message which was sent in Syko. It is not clear on whose authority the message was ensykoed, or who did it.

The Squadron Commander was called to the Ops. Room; too late to be of any help. But he was the first officer on the station to apply any common sense by sending a plain language message to the aircraft, giving its position. Unfortunately, the Captain had then ordered the crew to bale out because he considered the aircraft to be near the end of its endurance as his fuel gauges were reading nought. But it is well known that the gauges on this type of aircraft are not reliable and the Captain should have accurately found his consumption by calculation. In fact, the aircraft flew for an hour and a half after it had been abandoned. It might have succeeded in landing safely at some other aerodrome.

It had been impressed on the crew that they were to use Darky only in extreme emergency. The result was that very little attempt was made to obtain assistance on Coastal Darky, and no attempt was made to use Bomber Darky. One Wireless Operator heard Darky once, but, assuming that it had been heard by the Captain and Navigator, he did not tell them.

No attempt was ever made by the Captain to authorize a distress message, although the Wireless Operator, without the authority of the Captain, did use an emergency priority. During this time each member of the crew was carrying out his own job, and not much effort was made by the Captain to direct the efforts of the other members of his crew. Had the Captain been co-ordinating the efforts of his crew; had he instructed the Wireless Operator to obtain a further M.F. fix; had he checked some of the work that was being done by the members of his crew, the aircraft might have got down safely.

But the ground organization did not help. In spite of the mistakes of the crew, many of which were to be expected after the long period without food and the appalling weather conditions, really good help from ground might have brought the aircraft safely to earth. This help did not materialize quite as it should. The Group Flying Control under which the crew were operating did most things possible to help. But when the aircraft made contact with a station in the next Group, the trouble began. The handing over from Group to Group was not good, because control was handed in error to the G.R. Controller and not to the Flying Controller. The Station Duty Flying Control Officer was never brought into the picture by the G.R. controller, and when he tried to get information, he was told that the G.R. Controller was too busy.

Some of the difficulties of the crew were undoubtedly due to all these mistakes on the ground—of which some were genuine—some due to bad organization, and some to a wrong conception of responsibility. Other difficulties were increased by the poor crew drill and discipline in the aircraft. Better drill would have brushed many of these difficulties aside.

During the whole flight one important point came out clearly; that there was far too much "assumption" on everybody's part, in the air and on the ground. The Captain *assumed* that the crash would make a job of the S.E. and a wireless operator *assumed* that the aircraft would come down in the sea, although he had no idea of how much fuel was left; no steps were therefore taken in accordance with Standing Orders to destroy the S.E. The Navigator *assumed* that the Captain was "well aware of the situation" and therefore thought it unnecessary to advise him to send out an S.O.S. on "emergency" priority. Another operator *assumed* that someone else would tell the captain that he had heard a "Darky" signal. An officer who landed while the aircraft was in distress *assumed* that the G.R. Controller at the Station would advise the Flying Control and Met. Officers of the weather conditions. The

Flying Control Officer at Group H.Q., *assumed* that another Group were taking control of the aircraft. The G.R. Controller at the station *assumed* that the aircraft was not in distress although Flying Control was busy passing it Q.D.M.s. A Flying Control officer *assumed* that the station would pass the message in plain language, while another *assumed* that the G.R. Controller had made sure that the crews were in possession of all relevant information—and so on and so on.

When men's lives and the safety of an aircraft are at stake it is unsafe to make these assumptions. In these circumstances it is not the business of officers to assume that everything is all right. Both in the air and on the ground it is their job to know, or, if they do not know, to find out. There is obviously a line to be drawn somewhere, and in a well-trained unit one has got to assume that every member of the crew knows his job. In an emergency such as this, it was obviously unwise, for instance, to take for granted that someone else had heard a "Darky" signal. One thing above others that must not be assumed is that it is unnecessary to carry out Standing Orders. These orders are written by people who know their business as a result of wide experience. The only assumption they should induce is that they are based on common sense and that they must be carried out.

The points mentioned above are not set out with the idea of administering a rebuke to the men either in the air or on the ground. Although the crew made many mistakes, they kept their heads in very sticky conditions. But they are lucky, and they know that they are lucky, in being able to pass on the lessons from their mistakes, so that others may not make them in future. The ground staff know what might have happened, and what should have been averted. Much has been learned from this accident and appropriate action is being taken to avert similar mistakes in future.

As was said at the beginning, no doubt many of the mistakes of the crew may be attributed to the hunger and fatigue from which they were suffering at the end of their flight. But it is on such occasions that crew drill and crew discipline show themselves to their best advantage. Among other things, it is to meet such emergencies that all captains of aircraft should ensure that the discipline and drill of their crew is of a standard which will meet and overcome such obstacles as those with which this crew had to contend.

Leaves from a Navigator's Log—IX

Man is an optimistic animal. At the first blush you might be tempted to think this is all to the good, but when you realize that the very war itself is largely due to an overdose of Axis optimism, you can begin to see how dangerous optimism may be. What has all this got to do with Navigators? Well, if it can lead a country into self-destructive war, what chance has a mere aircrew against its insidious, undermining influence?

There is a general belief getting around that navigation needs to be taken seriously only over the open sea, and that as long as there's a beacon or other navigational lead, you needn't worry. This idea is most prominently displayed in the last stages of a sortie, when, having picked up the local coast line, or what not, on the S.E., the Navigator sits back and imagines it's only a question of time before he is stuffing his belly with bacon and eggs. The fallacy of this could best be explained by those unfortunates who aren't alive to tell their story. It falls therefore to the penpushers to warn the unwary.

In every case where sorties begin and end, coast-wise or across land—and very few sorties from Coastal Command stations do not—we have been pressed to consider only that part made over the open sea, when assessing the navigation on the sortie. Our answer is a firm refusal, not because we want to "bind" but because we have seen too many disasters arise from this very cause.

We do not yet live in a world so simplified by navigational aids that navigation itself is ever really dispensable. Within the past few months we have lost a Liberator, a Halifax and a Wellington, together with some of their crews, for the sad reason that navigation had been packed up before the wheels were turning on the runway again. This is not to mention the occasions that did not end disastrously but yet were unpleasant enough while they lasted. We might quote here the case of a Liberator (why are so many of our stories about Liberators?) arriving in Northern Ireland after an Atlantic crossing. After making a good landfall at Lough Erne, the Navigator, who knew the terrain almost as well as he knew his Home Town, packed up his Navigation bag and sat back, expecting the S.E. Operator to do the homing. This latter individual thought the Navigator was map-reading and also sat back. The Captain had never been there before and waited for words of wisdom from his Navigator. It was only a short flight to Aldergrove but the country looked so entrancing that it was long past E.T.A. before anyone realized that there was no sign of Lough Neagh. It took a minor panic and a good deal of *dedigitation* to recover the traces. Poor crew co-operation? Not a bit of it—just pure optimism. No harm done, either. But judging by the amount of chaffing that was enjoyed afterwards, that crew had learned its lesson—"Never again."

What a pity it is we don't all have a second chance. We won't go into the more lugubrious and very sanguine details of our latest losses, for the consequences of lightheartedness have probably been sufficiently illustrated for the average intelligent Navigator to recognize the symptoms. It isn't that you don't think on these occasions. The trouble is you think it won't happen to you. And your optimism is aided and abetted by your wish to spare yourself as much as possible at the outset of a long sortie or by your real fatigue at the end of it. What we wish as a minimum is for you to keep a proper record of your progress

along a coast line or up to a beacon, and to avoid slovenly work. For example, no self-respecting Navigator would leave the matter of a Course to a question of trial and error, now would he?

All this may sound heretical to the ears of those who might suppose that an unbounded optimism in an individual is an outward sign of a strong inward morale. Nothing could be further from the truth. To have a strong conviction in our ultimate victory is a logical conclusion to any intelligent appreciation of the strength of our arms. To be sure, this thought is enough to make us all collectively optimistic. But the individual has his own private hazards, and his duty is to see these do not catch him with his guard down.

Unbounded optimism in one's individual fate is unfortunately only a natural phenomenon, not based on reasoning. You'll find it in your most dejected Nazi and in every woeful Wop. This kind of optimism you must constantly justify by your actions and behaviour. It is no more than the beckoning of a Benevolent Fate, to be attained only through your own exertions. By all means contribute what you can to our collective optimism, but never forget that the worst can always happen to you as an individual. What is the worst? Well, as a Navigator you can always get lost.

A Diary from the Bay

The following extracts are from the diary of a Royal Air Force officer who was on board H.M.S. "Woodpecker" during the operations in the Bay of Biscay at the end of July and the beginning of August.

Saturday, July 24

In the twilight a Ju. 88 flies across our bows and escapes before being recognized.

Sunday, July 25

Came across small fishing vessel which has no right to be there at all. Queer looking outfit. The *Antonio Benito* with long spars rigged each side like a giant Y tied to which are the tunny lines. He doesn't want to heave to—much—but we soon fix that. The midshipman takes boarding party in whaler (complete with revolvers and Lanchester) and soon we have seventeen harmless but filthy creatures aboard. Their quarters on the *Antonio* are literally lousy and their effects and rations are carried in a single small bag. A mouldy scone and a gangrenous pork chop are keeping company with last year's handkerchief and a bottle of wine. The quarters stink in no gentle manner. There seem no regrets when a 4-in. brick and a burst of pom-pom puts *Antonio* under the gravy. On the contrary they want to sign on with us there and then.

Tuesday, July 27

We run into a region of whales. See them sporting in the distance and then very near the ship in schools or shoals. A lifeless body in a German lifebelt passes down our starboard side. The number of rubber boats and general flotsam and jetsam which is floating over these seas brings to mind that though this may be a pleasure cruise for me, it is a very grim business in actual fact.

Wednesday, July 28

About midday we overhauled another fisherman, the *Buenos Merandes*. After the crew had been removed she was scuttled and later a third vessel of the same type was intercepted and all our guests transferred to her. The farewell party was quite emotional. They cheered like blazes as they were rowed over to her and waved frantically as she moved off in the general direction of Spain. Not that they wanted to go back particularly—there was much spitting when they spoke of the present Dictators—but because they rather liked us.

Friday, July 30

Went on the bridge at midnight. Left bridge at 4 a.m. and had a few hours' sleep. About 8.30 the fun really started. What a terrific day! A Sunderland and a Catalina were around and they signalled that no less than three U-Boats were on the surface about 10 miles away ahead. The S.N.O. in *Kite* made the signal "General Chase." Off we went at full speed, line abreast—a grand sight—smooth blue sea and blue sky—all ratings and officers at action stations. Soon we saw the aircraft circling low and diving to drop depth charges. Two of the U-Boats were visible by this time and the Sunderland dropped a couple of depth charges plumb on either side of the conning tower of one of them. That broke the U-Boat's back and he disappeared pretty quickly, leaving some survivors and a raft in the water. Simultaneously, all our ships had opened fire with 4-in. on the second U-Boat.* He too left survivors who had to wait until U-Boat No. 3 had been located and dealt with. Not unnaturally, No. 3 dived in some haste and we were now set the task of finding him beneath the surface. It was like great cats stalking an oversized mouse. *Kite* found him first and dropped a pattern of depth charges. Then *Woodpecker* set about him and dropped depth charges. *Kite* got a "fix" and with his direction we proceeded to lay a "plaster" which is rather what the name denotes. *Wild Goose* repeated the dose, but while she was doing so, the first patches of oil were observed and soon it was coming up in great quantities—the sea stank of it. Wood and other wreckage came up, too. This was about 3.30 p.m. We recovered various things. *Wren* found some German clothing. The evidence was decisive and the ships (which had been shielding one another during the action) reformed and made off to pick up survivors. The C.-in-C., Plymouth signalled, "well done." C.-in-C., Western Approaches, sent "Warmest congratulations."

Now for the survivors. We picked up seventeen, including the captain and 1st Officer. The other ships picked up a further 50 or so altogether. Ours were in or clinging to a rubber float, shaped like a big rubber ring. Some were injured. One had a bullet in his stomach and a broken ankle. They were mostly shaking with cold and/or reaction from their experience. Several of them were truculent. Some had never been in a U-Boat before—possibly never to sea before.

* This vessel was already sinking as the result of an attack by a Halifax.

Their lifebelts and equipment are excellent. Other survivors have been reported some miles away. We are making course for them.

Later

Prisoners have been disposed of and are reported happy. Two of our officers have to give up their bunks for the U-Boat officers (International Law!) Two in the sick bay look rather mouldy.

The dinghy with six people has just been picked up. They were Huns and not R.A.F. They had a sail up. One report says that No. 2 submarine contained an R.A.F. officer who had been shot down and was picked up by U-Boat. If so, he went down with the U-Boat.

Sunday, August 1

Rather a rough night. Difficult to remain upright in the cabin and shaving is rather tricky. Up on the bridge there is a fine breeze. She is rolling 25–30°. Sheets of spray coming over bridge and captain wraps a towel (my towel—my *only* towel) round his neck after being deluged with water. *Woodpecker's* bow keeps hitting sea with a hell of a thump, and in the for'd cabin it sounds as though tanks were bouncing about on the keel.

U-Boat reported at periscope depth some distance away. We alter course and pack on full speed ahead. Things are warming up and we forgo lunch and have a sandwich on the bridge. Catalina signals, "No more endurance. Good hunting. Cheerio!" However, two Sunderlands are around and as we approach we see a smoke float and one of the Sunderlands is evidently going in to attack. She dives low and drops depth charges. Immediately after the attack she is in difficulties. She hits the water and there is an appalling explosion and we just catch sight of the Sunderland's tail before it sinks under the waves. No survivors from that, says the captain, and we shake our heads sadly. Then someone shouts, "There's a dinghy!" and sure enough some have managed to get away. *Wild Goose* being nearest collects them. They are six in number and some of them injured. The story goes that both pilots were killed by gun fire. The engines and fuel tanks were shot up by the U-Boat. But the important thing is that they sank the U-Boat. No doubt about that because our sister ships picked up about 20 Huns.

We now have about 100 Germans on the five ships as another small contingent was picked up last night.

Monday, Bank Holiday, August 2

Another U-Boat sunk by R.A.F. but not in our range of vision. Ship has quite a nasty roll. When having breakfast I went clean over backwards in my chair but didn't get hurt—much.

Some abortive U-Boat contacts were pursued during the morning. After lunch the alarm bells sounded. Arrived on the bridge at the double and found things going on apace. The Captain whispered in my ear, "We've had a signal from a spotting aircraft saying that four Narvik destroyers are 12 miles away making converging course on us."

R. figured that if two out of our five ships got home at all we should be lucky. C.-in-C., Plymouth signalled happily that he didn't think they were quite as big as Narviks and that the cruiser would be there to-morrow. To-morrow! Their masts were sighted half-an-hour later!

The U-Boat prisoners weren't so happy, either: they didn't like going down in the hold.

We continued to steer towards the enemy in order to close the range and the tension remained and speculation was rife. Four masts are sighted on the horizon soon to be identified as another escort group. They aren't much good as surface fighting ships but anyhow they are friends and not foes. Reports about the enemy are coming in again. He is changing course away from us. We alter to intercept him but he has superior speed. Two oldish destroyers have also come into the picture and although they go flat out, the Jerries for some reason are running for home like scalded cats. As the light begins to fade we form into a most extraordinary contingent with the destroyers on our port and the others to starboard. The Captain is rampaging about it. Says we are over the ocean like a lot of blue-bottomed flies and if somebody doesn't collide with someone else during the night, he will be in no ordinary way surprised. What a Bank Holiday!

Tuesday, August 3

There has been plenty of aircraft activity to-day and our support has arrived. A cruiser and two destroyers. Came up at 30 knots through our line, turned around like guardsmen and away again. Nice to see them all the same.

Wednesday, August 4

We have turned for home and expect to arrive on Friday. We have done nearly 4,000 miles (sea miles) and it will be well over 4,300 by the time we get back.

Thursday, August 5

Had a good night in spite of being shot out of bunk. We have had a gale warning and the ships are rolling good and plenty.

Life is unbearably unpleasant in the cabin. One is shot from one wall to the other: everything movable moves rapidly all over the place—chairs, books, barograph, drawers, food. We have just tried to have lunch but it's an almost impossible feat. Every now and again the bunk tilts 45° and off we slide to the opposite wall again.

We are somewhere off the Scilly Isles. I hope somebody knows where we really are. It's dark and still very rough.

Friday, August 6

All calm again. Line ahead. Just making the Eddystone Lighthouse. Off old uniforms, flannel trousers, golf jackets, etc., and on with pure white collars and best uniforms. Through the boom. Dress the ships perfectly. In the distance is Plymouth Hoe. Yeoman of signals peering through his telescope says signal by C.-in-C. is "Well done."

C.-in-C. himself takes the salute and the sight of those five, fine ships entering the harbour and passing the saluting base with the leading ship playing "A hunting we will go" on her loud hailers is a thing I will never forget.

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