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COASTAL COMMAND REVIEW

September, 1943

Vol. II, No. 5

**HEADQUARTERS,
COASTAL COMMAND
ROYAL AIR FORCE**

COASTAL COMMAND REVIEW

Vol. II, No. 5—September, 1943

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This book is secret. No quotations may be made without the authority of the Chief Intelligence Officer, Headquarters, Coastal Command.

"While this book is, of necessity, issued as secret, and no part of it must be communicated to anyone outside the Services, it is intended for the information of all officers but principally of all members of aircrews, under conditions of security approved by the Commanding Officer. The whole purpose of producing it would be frustrated if it were relegated to the interior of an official safe."

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

Summary of the Month's Work—September, 1943

1. September has shown a significant development in U-Boat strategy in the form of a return to the pack tactics against North Atlantic convoys, using a new form of torpedo which presents us with certain difficult problems but against which counter-measures are already well advanced. In the course of the attack on O.N. 202 and O.N.S. 18, which lasted from the 19th to the 23rd September, serious losses were inflicted on our escort vessels but only six ships of the large convoy were torpedoed, and the enemy is known to have been severely handled by the escort ships and aircraft—particularly by the Liberators of No. 10 Squadron, R.C.A.F.—and several U-Boats were sunk and others damaged. It may well be, as the Prime Minister has suggested, that the return to these tactics will result in an upward turn in the present low curve of merchant ship losses. But it should also present us with good opportunities for inflicting heavy loss on the U-Boat packs; it seems unlikely that the enemy will pursue threatened convoys very far into a zone of effective air cover, and therefore these opportunities may be relatively fleeting and the fullest advantage must be taken of them.

2. In spite of the attack on O.N.S. 18 and O.N. 202, September was the second best month, since the United States entered the war, for shipping losses—a total of 105,000 G.R.T. by enemy action. This happy state of affairs is unlikely to persist; but—though no one should underestimate the importance of the loss of ships or cargoes—it is worth noting the extraordinary achievement of the shipbuilding industry of America, Canada and Great Britain (particularly of the first) in that, by the time this issue of the *Review* is published, we shall between us just have about replaced by new construction every single ton lost by enemy action since the outbreak of war. We have also just had a welcome addition of over 100,000 G.R.T. to our shipping resources in the form of surrendered Italian vessels. These facts must be singularly depressing to the enemy High Command, whose repeated promises to starve us out and strangle the flow of war material from America to the European theatre of war have done so much in the past to sustain the flagging morale of their unfortunate people.

3. On the other hand, September has been a lean month for U-Boat kills; with only 43 sightings and 23 attacks by Coastal Command the U-Boats have got off more lightly than for many months. This is unfortunate, but provides no grounds for supposing that something has suddenly gone wrong with our tactics or that the U-Boats have been equipped with some new and completely effective early warning device. The shortage of sightings in the Bay is mainly due to two quite simple facts—first, that the enemy has resorted at last (as we have long feared he would) to tactics which make it much more difficult to find and attack him; and secondly, that September has been one of the worst months on record for weather in the Bay. Out of the 30 days and nights we had to cancel on 13 nights and one day and reduce on one night and four days, and this at a time when we know the enemy is as a rule surfacing only by night. In these conditions it would have been surprising if we had sighted more than the 23 U-Boats we did in fact sight in the Bay and its approaches.

4. In the summary of the month's work for April in this *Review* we said:—

"The habit of fighting back may cost us a few more aircraft lost; but if persisted in (which is at least open to doubt) will undoubtedly mean more U-Boats killed. It is up to us to take the fullest advantage of the good opportunities offered before the buzz goes round in the Biscay ports that fighting back is an expensive and unprofitable pastime."

Well—the buzz has gone round and has reached the German Admiralty. The tactics of running through the Bay on the surface and fighting back have cost us a few more aircraft lost; they have certainly meant many more U-Boats killed, and crews have indeed taken the fullest advantage of their opportunities. But it was too good to last; the enemy is now running submerged by day—except when he has been forced under by our night patrols—and, we believe, is surfacing at night only for the minimum time necessary to put in an adequate charge. We are doing all we can to deal with that situation, including putting the heat on the provision of more Leigh Lighters—No. 304 (Polish) Squadron is now converting, and the production of the Leigh Light in the Liberator has been accelerated. For the moment, however, it must be admitted that to some extent the U-Boats are getting away with it in the Bay, a fact which makes it all the more important to kill them round the convoys when they offer us the opportunity. All this means a lot of tedious and apparently unprofitable flying for our crews in the Bay, and in the Northern Transit area. But they must remember that, if nothing else, the result of their efforts is to increase enormously the time it takes the U-Boats to pass into and out of the Bay, and consequently to reduce their effective time on patrol, which in itself saves shipping. So, while we all regret the halcyon days of May to August when hardly a day passed without a little U-Boat appearing conning tower downwards on the big wall map at Coastal Command, we have no cause for despondency and good reason to hope that in due course the rate of kills will rise again.

5. This fact that we now have a more difficult problem to meet obviously puts a premium on training. In the *Review* for June, 1943, special emphasis was laid on the importance of S.E. training, but it still remains true that we could get a good deal more value than we are now getting out of our S.E. if the general standard of proficiency of operators were higher. The increased fighter opposition in the Bay, which inevitably involves more attention being paid to A.A. look-out, enhances the importance of a good S.E. watch. Squadron Radar leaders and captains of aircraft should pay special attention to improving the training of S.E. operators and the general efficiency of the S.E. watch.

6. The resumption of attacks on convoys draws attention to the importance of good training in convoy cover and co-operation with surface escorts. The joint A/S school at Maydown has got under way rather more slowly than we had hoped; but six specially selected and experienced captains were sent on that course in September and at the end were unanimous that it was good value and that they had learnt a lot in spite of their experience. Squadron Commanders will from time to time be called on to send crews on this course and, in spite of the known difficulties, should recognize that on a long view it will pay in increased efficiency throughout the squadron.

7. The enemy long-range fighters have by no means had it all their own way in the Bay in September. We know that already the enemy crews had a wholesome respect for the Beaufighter and the Mosquito, and this respect has no doubt been deepened especially by the activities of No. 307 (Polish) Squadron of Fighter Command. The Mosquitoes had several satisfactory engagements in September, but the 11th in particular was a red letter day when No. 307 got five destroyed, three probable, and three damaged out of 12. We have had some very useful and effective co-operation from H.M. Ships in directing our fighters on to the enemy in the Bay, and this is being pursued with a view to making it a regular standard procedure. There are difficulties, but it is hoped they may be overcome.

8. Strike aircraft of both 16 and 18 Groups have been active in September. Full details will be found elsewhere in this Review. As well as the actual destruction of valuable ships and cargoes these attacks have value in that they force the enemy to tie up substantial resources in the shape of Flak escorts. It is hoped that another and more successful attack on Emden, which has absorbed nearly all the traffic hitherto dealt with by Rotterdam (largely as a result of the activity of the North Coates Wing), may create further difficulties for the enemy by causing Swedish owners to refuse to sail for Emden as they have already refused for Rotterdam. The activities of the Strike Squadrons combine with those of Bomber Command and of the train-busters of Fighter Command to intensify the strain on enemy communications in Occupied Europe.

October 2, 1943.

PLATE 1. (Opposite)

Night mosaic of Bordeaux, photographed by 544 Squadron, showing that night photography now compares very favourably with day reconnaissance. The difference in tone towards the edge of each print composing the mosaic, is due to the proximity of the flash, one of which is seen falling at the top of the plate.



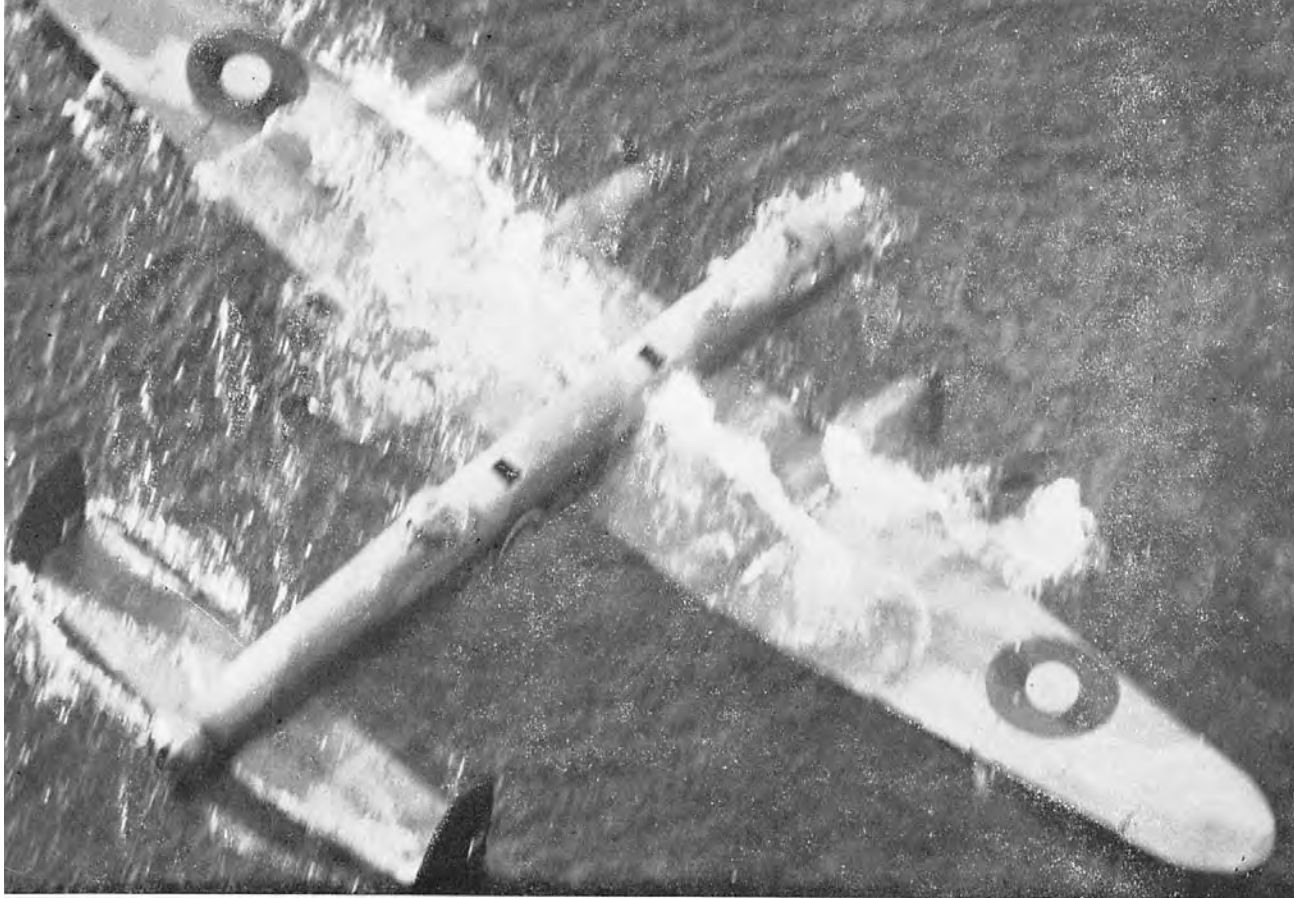
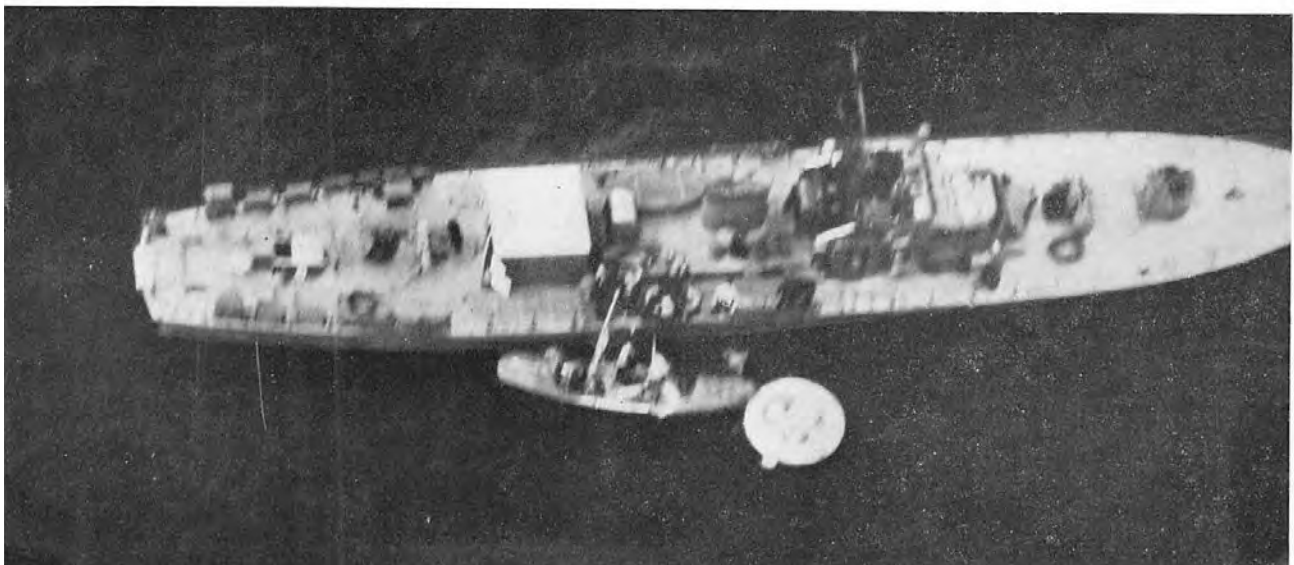


PLATE 2

DITCHED LANCASTER. Photographed by E/279 on September 4, 1943.



ABOVE: Crew in the air-borne lifeboat. BELOW: Crew in the high-speed launch.



I.—ANTI U-BOAT

ANTI U-BOAT SCORES FROM MARCH TO AUGUST, 1943

PERCENTAGE FIGURES OF MERIT
IN BIG NUMERALS

4 Sq. U.S.A.A.F.	10 Sq. R.A.A.F.	19 Sq. U.S.A.A.F.	22 Sq. U.S.A.A.F.	48 Sq.	53 Sq.	58 Sq.	59 Sq.	63 Sq. U.S.N.
$\frac{30}{60} = 50$	$\frac{46}{170} = 27$	$\frac{20}{30} = 66.6$	—	$\frac{46}{90} = 51$	$\frac{33}{60} = 55$	$\frac{108}{210} = 51.4$	$\frac{25}{110} = 22.7$	$\frac{0}{10} = \text{NIL}$
86 Sq.	103 Sq. U.S.N.	120 Sq.	172 Sq.	179 Sq.	190 Sq.	201 Sq.	202 Sq.	206 Sq.
$\frac{104}{350} = 29.8$	—	$\frac{132}{400} = 33$	$\frac{123}{220} = 56$	$\frac{23}{50} = 46$	$\frac{48}{110} = 43.6$	$\frac{25}{70} = 35.7$	$\frac{9}{40} = 22.5$	$\frac{85}{160} = 53.1$
210 Sq.	220 Sq.	224 Sq.	228 Sq.	233 Sq.	236 Sq. R.P.	269 Sq.	304 Sq.	311 Sq.
$\frac{22}{50} = 44$	$\frac{33}{60} = 55$	$\frac{65}{290} = 22.4$	$\frac{50}{60} = 83.3$	$\frac{68}{140} = 48.6$	$\frac{10}{20} = 50$	$\frac{93}{230} = 40.4$	$\frac{19}{40} = 47.5$	$\frac{19}{40} = 47.5$
330 Sq.	407 Sq.	415 Sq.	422 Sq.	423 Sq.	461 Sq.	502 Sq.	547 Sq.	612 Sq.
—	$\frac{26}{50} = 52$	$\frac{0}{10} = \text{NIL}$	—	$\frac{46}{80} = 57.5$	$\frac{46}{80} = 57.5$	$\frac{29}{170} = 17$	$\frac{6}{50} = 12$	$\frac{23}{80} = 28.7$

Attacks on U-Boats

Notes on Table above, showing the Squadron Scores for the Six Months, March to August, 1943

The monthly list of Squadron Scores is now discontinued; instead, a table showing the average for the last six months is to be published monthly commencing in this issue, with the table above, which should give a more representative cross-section of the Anti U-Boat Squadrons' activities.

The scores are compiled in the following manner:—

For each attack assessed as No Damage	0
For each attack assessed as Insufficient Evidence of Damage	3
For each attack assessed as Damaged, or Known Sunk	10

These scores are taken from the provisional assessments made by the Staff at this Headquarters. Accordingly, when the Admiralty Assessments are subsequently found to differ, or if any reassessments are made at a later date by the Admiralty Assessment Committee, the scores will be adjusted.

All types of damage have been awarded "10," because an attack which has been delivered closely enough to inflict even slight damage has obviously been a good one.

In the table above, the points scored by each Squadron out of the maximum possible score for the same number of attacks is shown as a percentage figure of merit.

There have been no outstanding scores during August. Owing to the enemy's tactics for routing U-Boats along the Spanish Coast during the month, the attacks which were carried out were the result of long sorties at a maximum distance from base for 15 and 19 Group Squadrons, mostly in the face of strong enemy long range Fighter opposition.

228 Squadron has gained the best results in August by adding two 10's out of two attacks to the Squadron's score.

SUMMARY OF ANTI U-BOAT OPERATIONS BY COASTAL COMMAND AIRCRAFT

(Including Gibraltar, Iceland, and U.S. Moroccan Sea Frontier Aircraft)

SEPTEMBER, 1943

Duty and Base or Area.	Total Sorties.	Hours Flown.		U-Boats Sighted.		U-Boats Attacked.		Hours per Sighting.		No. of Sorties.		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)	
<i>Convoy Cover</i>												
United Kingdom	89	1,058	364	—	—	—	—	—	—	—	—	—
Iceland	27	324	118	8	—	4	—	40	15	4	4	4
Gibraltar and Moroccan Sea Frontier	335	2,795	1,405	—	—	—	—	—	—	—	—	—
TOTAL CONVOY COVER	451	4,177	1,887	8	—	4	—	522	236	4	4	4
<i>A/U Patrols</i>												
Northern Transit												
United Kingdom	132	1,568	649	—	—	—	—	—	—	—	—	—
Iceland	140	874	363	1	—	1	—	874	363	1	1	1
Northern Convoy												
United Kingdom	10	82	33	—	—	—	—	—	—	—	—	—
Iceland	5	32	11	—	—	—	—	—	—	—	—	—
Bay of Biscay (including adjacent patrols)												
United Kingdom	1,267	12,571	5,252	8	9	3	6	739	309	17	9	7
Gibraltar and Moroccan Sea Frontier	165	1,833	496	2	5	0	3	262	71	7	3	3
Gibraltar and Moroccan Sea Frontier	365	2,831	1,654	6	5	2	5	257	150	13	10	9
TOTAL A/U PATROLS	2,084	19,791	8,458	17	19	6	14	550	235	38	23	20
ADD CONVOY COVER	451	4,177	1,887	8	—	4	—	—	—	4	4	4
TOTAL C.C. A/U EFFORT	2,535	23,968	10,345	25	19	10	14	545	235	42	27	24
				44 U-Boats, Sighted		24 U-Boats Attacked.						

Notes.—1. In addition to the above there were four chance sightings, two by C.C. aircraft and two by transit aircraft.

2. News of one sighting and attack in the Bay approaches which is included above was received after the chart facing page 6 was printed. The aircraft was shot down and six survivors were picked up eleven days later. The U-Boat is considered to have been sunk by this aircraft, subject to final assessment.

SUMMARY (continued).
Analysis of Sightings and Attacks

Details of Incidents.	No. of U-Boats.		No. of Sorties.	
	Sighted.	Attacked.	When U-Boat Sighted.	When U-Boat Attacked.
On 31 occasions 1 U-Boat was sighted by 1 aircraft—16 of the U-Boats were attacked by aircraft.	31	16	31	16
On 2 occasions 1 U-Boat was sighted by 2 aircraft—all aircraft attacked.	2	2	4	4
On 1 occasion 1 U-Boat was sighted by 3 aircraft—all aircraft attacked.	1	1	3	3
On 3 occasions 2 U-Boats were sighted by 1 aircraft—1 aircraft attacked 2 U-Boats—2 aircraft each attacked 1 U-Boat.	6	4	3	3
On 1 occasion 4 U-Boats were sighted by 1 aircraft—1 U-Boat was attacked.	4	1	1	1
Totals for Coastal Command Aircraft ..	44	24	42	27

Assessments

Month.	Known Sunk.	Probably Sunk.	Damaged A.	Damaged B.	Slight Damage.	No Damage.	Insufficient Evidence Damage.	Insufficient Evidence of U.B.
July	11	3	1	4	—	22	17	—
August	5	—	—	2	—	5	1	1
September (Provisional).	2	—	—	1	—	1	7	Unassessed 22

Note.—There were 33 attacks by 27 aircraft. Each of these attacks will be separately assessed, thus accounting for 33 assessments.

Squadron Results—September

			No. of sorties when U-Boat sighted.	No. of sorties when U-Boat attacked.
(i) United Kingdom and Iceland				
103 (U.S.N.)	Liberator	St. Eval	1	0
120	Liberator	Reykjavik	4	4
224	Liberator	St. Eval	1	0
311	Liberator	Beaulieu	3	1 (attacked 2 U/B).
58	Halifax	Holmesley South	1	1
502	Halifax	Holmesley South	1	0
269	Hudson	Reykjavik	1	1
228	Sunderland	Pembroke Dock	1	0
172	S/L Wellington	Chivenor	3 (night)	2 (night)
407	S/L Wellington	Chivenor	3 (night)	2 (night)
612	S/L Wellington	Chivenor	3 (night)	3 (night)
(ii) Gibraltar				
48	Hudson	North Front	1	1 (see Note)
233	Hudson	North Front	2	1 (see Note)
179	S/L Wellington	North Front	13 (12 night)	10 (9 night)
202	Catalina	New Camp	3	0
3 (French)	Maryland	1	1
			42	27
(iii) Chance				
48	Hudson	North Front	1	0
1407	Hudson	Reykjavik	1	0
Others			2	0
			46	27

Note.—In addition to the above, three aircraft of 48 Squadron, two aircraft of 233 Squadron and one aircraft of 833 Squadron (F.A.A.) made attacks on a beached U-Boat.

Attacks by Eastern Air Command

During the month of September, U-Boat pack tactics have been resumed against our North Atlantic shipping. Two convoys, the O.N.S.18 and O.N.202, were attacked, and it was decided that they should combine for mutual support. On September 20 and 21 cover was provided by Liberators of 120 Squadron from Iceland. Many attacks were made and it was clear that the U-Boats were not having matters all their own way. On September 21 the combined convoys came into the area covered by the Eastern Air Command, Canada. Several of the crews and the S.A.S.O., No. 1 Group, Newfoundland, have visited this country and it is possible to give an account of their part in this convoy battle.

On the night of September 21-22, the combined convoy made a major alteration of course but was unable to send a signal that this had been done. As a result the first two aircraft failed to meet the convoy; the range of Procedure B proved insufficient to compensate for so large an error in position. However, the third aircraft, L/10, was given the convoy's new position and intercepted at 1640 hours on September 22. This aircraft carried out its escort without incident and set course for base. When about 45 miles from the convoy, at 1839 hours, a fully surfaced 500-ton U-Boat was sighted visually (the Radar was on but was not working satisfactorily). The aircraft at once turned to starboard and began to lose height from 2,000 ft., intending to attack from 8 o'clock. The U-Boat, however, started turning to port and dived to the "trimmed down" position. Although the aircraft crew did not at any time see any gunners on the U-Boat, she opened fire at 1,500 yards. At 1,000 yards the aircraft opened fire from the top turret, attacking from dead astern, and dropping four 250-lb. depth charges from 50 ft. It is stated that the depth charges were 6 yards off for line and that the plume of the explosion completely obliterated the U-Boat. On the run in a bullet entered the crank case of one engine, where it exploded, causing extensive damage. Another bullet parted the hair above the Navigator's left eye and came to rest protruding half an inch out of one of the instruments in front of the Captain. The U-Boat showed no intention of diving. The aircraft therefore remained in the neighbourhood, circling at 1,500 yards and asking for help. The convoy replied that none could be given, and aircraft X/10, 40 miles away, replied "Have U-Boat of my own."

"L" had by now reached P.L.E. and as no help was forthcoming it set course for base.

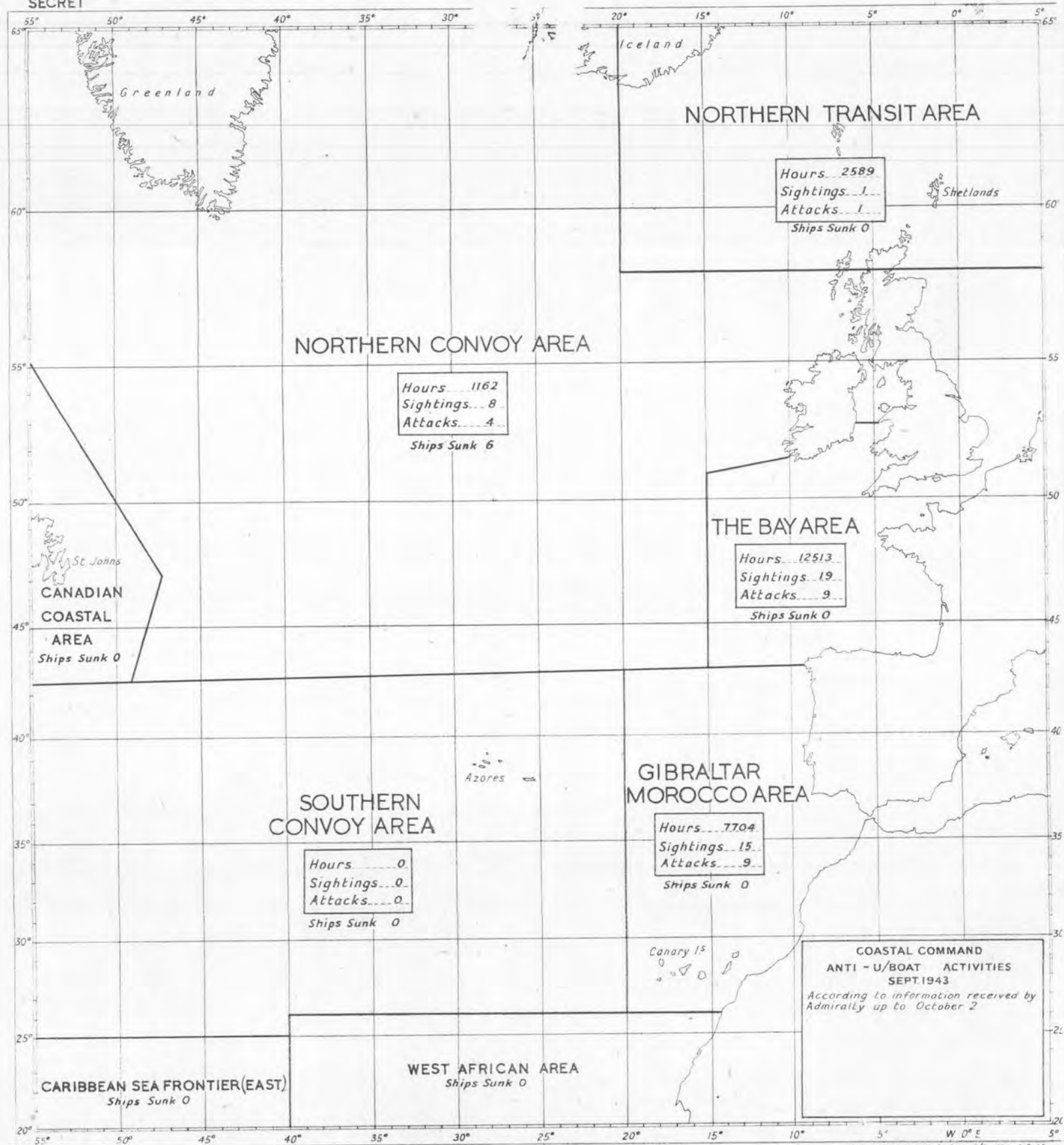
Meanwhile X/10 had been asked by the S.N.O. to investigate a contact 14 miles away, bearing 82°. At 1837 hours a Radar contact was received at 18 miles, which was identified at 7 miles as a U-Boat which bore 245° 20 miles from the convoy. The aircraft closed to 500 yards and dived straight in to attack from dead astern. The U-Boat made a sudden turn to starboard. The aircraft attempted to follow, and four depth charges, released from 50 ft., were seen to explode all the way up the port side from conning tower to bow,

completely obliterating the fore part and rolling the conning tower 45° to starboard. No flak had been met on the run in, but when the aircraft was circling after the attack, with all possible guns firing at 600 yards range, the U-Boat kept turning inside the aircraft and put up such intense flak that the aircraft was forced to retire to a range of 3 miles.

Eight minutes after the first attack, the U-Boat was seen settling without forward speed and the aircraft approached for a second attack. Although only the conning tower was visible, intense flak was suddenly met. As the U-Boat disappeared two depth charges were dropped 20 seconds after the U-Boat had submerged. About 90 seconds later an oily path, 100 ft. by 75 ft., was seen. At the same instant a second fully surfaced U-Boat was sighted 4½ miles away heading towards the scene of attack, as if to offer mutual aid to its friend in need. But X/10 had then expended all depth charge armament. The Captain therefore took avoiding action and opened 5 machine-gun fire from the top, rear and side guns at ranges varying from 75 to 2,000 yards. The U-Boat remained on the surface, cruising at high speed and turning in the same direction as the aircraft. She finally disappeared into a fog bank which completely surrounded the clear area in which both engagements had been fought. At 7 miles the U-Boat had "looked larger than a corvette," with a long black conning tower and large gun forward. The flak was fired in salvos, "coming up in walls," which suggested controlled fire. The aircraft then returned to the convoy and told the S.N.O. "Two U-Boats attacked bearing 260° 20 miles, one still on surface proceeding this way." Before setting course for base "X" attempted to home his relief, N/10.

N/10, however, was unable to home owing to weak signals and atmospheric, but continued on an approximate bearing to the convoy route and flew down the convoy's track. At 2130 hours the aircraft tried Procedure B, but the frequency was being definitely jammed by unintelligible cyphers and other notes. When the operator attempted to contact the convoy by W/T, jamming in a foreign language was heard. This continued for half an hour. During this period R/T messages were received, "Hello Don Baker and Don Charlie; this is Buffalo calling, return to base forthwith," varied with, "return to base immediately." As these call-signs were incorrect the operator was not deceived. Moreover he once distinctly heard voices laughing and talking German at the end of a transmission, as though the microphone had been left on. At 2248 hours a wake was sighted in the darkness and when the aircraft lost height to investigate, intense flak was experienced. The S.N.O. was given the bearing and distance and replied that he had seen the flak; when the aircraft asked permission to drop flares for a night attack, the S.N.O. replied, "Definitely no." While carrying out a patrol round the convoy the aircraft's Radar indicated the convoy and one U-Boat, but no other contacts in the area. Before leaving, the aircraft saw an

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escort vessel leave the convoy and steer for the U-Boat. In view of the position of this U-Boat it is presumed that it was the same one which had been attacked by X/10.

At 0835 hours on September 23, P/10, while on passage to the convoy, got a Radar contact 30° to starboard, 20 miles away. On homing, a U-Boat with its decks awash was sighted dead ahead at 2 miles. The aircraft replied to the U-Boat's flak and ran in to attack, but was unable to drop depth charges because of the darkness. During the second approach the U-Boat was lost in the very poor visibility. After a short, fruitless search, course was set for the convoy which was then 20 miles away. After carrying out the patrols asked for by the S.N.O., the aircraft left the convoy for base at 1502 hours. At 1526 hours a Radar contact 11 miles away was investigated and proved to be a surfaced U-Boat. The aircraft attacked from 160° and released two depth charges from 50 ft. During the run in fire was opened with the front gun. The depth charges exploded close to the U-Boat's starboard quarter, and the force of the explosion threw the U-Boat 30° off its course. As a considerable flak fire was being put up by the U-Boat the aircraft, after the attack, circled at 4,000 ft. Contact was established with B and Y/10, and these two aircraft were homed. Shortly afterwards the U-Boat dived and another attack was made. No results of this were seen. About 15 minutes later the aircraft returned to base having reached P.L.E. The S.N.O. was given the bearing and distance of the U-Boat but replied, "Thank you, too far."

B/10 intercepted P/10's call for help and set course for position. Unfortunately the U-Boat had then submerged. Both before and after this successful interception B/10 received Radar contacts and homed on them but was unable to break through the low ceiling to investigate.

Y/10 also homed on P/10's signals, but also arrived too late. Three hours later, while "Y" was cruising at 250 ft. below 10/10ths cloud at 500 ft., a Radar contact was received 12 miles dead ahead. The Captain climbed into cloud, homed, and on breaking cloud, sighted a 500-ton U-Boat on the surface, one and a half miles away. This position was 20 miles from the convoy on a

bearing of 245°. The U-Boat took no evasive action, neither was any anti-aircraft fire seen. The aircraft had evidently achieved complete surprise. An attack was carried out from the port beam with four 250 lb. depth charges, released from 40 ft. No explosions were seen nor was there any disturbance in the water to indicate that the depth charges had detonated. After the first attack the aircraft turned to starboard and attacked again, immediately after the U-Boat had submerged. Again no oil or bubbles or other evidence of damage was seen. The attack was reported to the S.N.O. and he was asked, "Do you wish us to home you?" He replied, "Yes." Although the aircraft remained on the scene for about an hour, dropping flame floats, no corvette was seen. On the homeward journey several suspicious blips appeared on the screen, but at no time was the aircraft able to investigate because of the darkness and the low ceiling.

Throughout all these engagements the sea was very calm, so that the U-Boat's gunners had a stable gun platform. Also, except for occasional clear patches, visibility was very bad and the ceiling very low, so that many blips had to be left uninvestigated. Co-operation between aircraft by R/T was at all times excellent; but unfortunately in most cases several attacks were going on at the same time and the answer received was usually, "Sorry, can't come—got one of my own."

Several crews reported that no one, or only one person, could be seen in the conning tower. This suggests that the U-Boat's gunners now have very healthy respect for our machine gun fire and crouch low in the conning tower or in the armour shielded quadruple mounting. The theory that the guns were remotely controlled can be almost entirely ruled out because of the size and weight of such equipment. "Walls of anti-aircraft fire" does, however, suggest controlled fire either by voice-pipe or inter-comm.

On September 24, aircraft were double banked over this convoy, but the U-Boats did not regain contact until evening. On the 25th double coverage by Liberators and Catalinas was arranged, and A/U strike aircraft in flights of three were ready, but all bases in Newfoundland were closed by weather.

Other Recent Attacks on U-Boats

U-Boat used for Target Practice

The doom of this U-Boat began with a perfect "copy book" attack by a Gibraltar Wellington. Flying at 1,200 ft. on anti-submarine patrol in the Mediterranean, on the night September 11, P/179 obtained an S/E contact 110° to starboard at 8½ miles. After altering course and homing, the U-Boat was sighted visually at three-quarters of a mile. At half a mile the Leigh Light was switched on, revealing a fully surfaced 500-ton U-Boat proceeding east at 15 knots. The enemy opened fire with light A.A. at ½ mile but their fire was seen to go to starboard and the aircraft was not hit. The pilot attacked from the U-Boat's port beam, releasing six depth charges from 30 ft. The rear gunner saw a perfect straddle, level with the

conning tower. As the aircraft circled, the U-Boat could be seen in the moonlight stopped and apparently unable to submerge. After 15 minutes it began to circle and then set off at slow speed on an irregular course for the Moroccan coast. It left a trail of oil and a large patch at the scene of attack.

Although the aircraft was being fired at, it continued to shadow and it was rewarded a little over two hours later by seeing the relief aircraft, J/179, run in for his attack. It was not possible to assess the relative positions of the explosions. "P" remained long enough to see the U-Boat close the coast to 1 mile, turn parallel to the shore and run herself aground. The aircraft then set course for base, justly proud of an excellent job,

"J" had been flying at 500 ft. when an S/E contact was obtained 50° to starboard, at 3½ miles. On homing the U-Boat was seen at 1½ miles, and on illuminating at half a mile, it was seen well down by the stern. As soon as the Leigh Light was switched on, the U-Boat opened up with heavy and accurate fire. The aircraft was hit in several places and the rear gunner was fatally wounded. Six depth charges were released from 80 ft. The rear gunner said that he could not see the results of the attack, but he did not mention that he had been wounded. Three-quarters of an hour later, when his injuries were discovered, course was set for base; but not before flames and smoke were seen coming from the conning tower of the U-Boat.

At 0735 hours on September 12, contact with the enemy was regained by W/233, which found

the U-Boat lying on its side, down by the stern and awash to the base of the conning tower. But no attack was made. However, at 0749 hours P/48 attacked with eight R.P., claiming six hits. This was followed by W/48 who scored near misses with two 100-lb. bombs and a straddle with four 250-lb. depth charges. There was no sign of life on the U-Boat, but light machine-gun and rifle fire came from the beach where some 35 of the crew could be seen. In quick succession, H/48 claimed two hits and F/233 four hits. Never before had such a practice target presented itself and the opportunity was not wasted. Base received the brief but true signal, "U-Boat destroyed and left burning."

Photographs of the attack and of the abandoned U-Boat are reproduced on Plate 3.

A Promising Attack

Shortly before 0900 hours on September 19 **Liberator A/10** (R.C.A.F.) was on an A/U sweep round Convoy O.N.S.18. In position 58° 40' N., 25° 30' W., a fully surfaced U-Boat was sighted, steering 340° at 8 knots. The U-Boat was probably a 517-tonner. No heavy armament was seen either forward or aft of the conning tower. The aircraft dived to attack but failed to get low enough and tracked over the U-Boat at 500 ft. The captain immediately turned and came in again, this time releasing six depth charges from 50 ft. The U-Boat had remained on the surface and the stick straddled from fine on the quarter, three depth charges falling on either side. Almost immediately an oil slick appeared, the bows were lifted sharply and a small explosion was seen forward. During the approach the U-Boat had

opened fire, but after the explosion of the depth charges the four gunners had disappeared. The U-Boat stopped and began to settle slowly. The Liberator circled and came in a third time, dropping from 50 ft. four more depth charges 12 seconds after the U-Boat had submerged. These charges exploded on the tip of the oil streak and in the centre of the swirl. Oil immediately began to come up faster than before, and 10 minutes after the attack a large air bubble, like a fountain, was seen. Eight minutes later two small objects, which could not be identified, were sighted at the ends of the oil slick. Twenty-five minutes after the attack the Liberator left the scene. By this time the oil patch covered an area 200 yards square.

The U-Boat at Bay

Several recent U-Boat sinkings have provided further proof that aircrews who never even saw the U-Boat materially contributed to the success of the crew that did. Of course, that has been said before and many crews cannot help wondering whether it is not stale, if not "duff gen." Let a few recent U-Boat prisoners speak for themselves.

First, a Petty Officer Telegraphist from "U 523," sunk on August 25, 1943. He has seen four-and-a-half years' service, and was responsible for manning the German Search Receiver. "The Commanding Officer," he said, was "continually on my tail, telling me to report immediately the slightest contact. His nerves communicated themselves to the entire crew. We had had a shake-up before; as we left our base, we were impressed by the sight of another U-Boat arriving in practically sinking condition after aircraft attack. Its Commanding Officer was one of the old hands; he had the Ritterkreuz with Oak Leaves, and a 'gen' crew. The U-Boat was continually diving because of aircraft contacts on the G.S.R., and actual sightings, too, had so got on their nerves that they panicked when surprised by one.

"We were six days out, past 10° west, and thought we were out of immediate trouble, when a searchlight aircraft attacked unexpectedly. There had been no warning on the Search Receiver. The skipper was on the bridge, which means that he was the only one who should officially give the alarm, because he is the man who should decide whether there is time to jump into the 'cellar' (as we call diving), or whether it is wiser to stay up and fight. One of the bridge ratings saw the aircraft and yelled: 'Aircraft alarm.' The engineer promptly uncoupled the surface Diesels to switch over to electric propulsion; in the meantime the skipper cancelled the order, yelling: 'Too late, too late, man the guns.'

"You can imagine the confusion, Herr Hauptmann. We were losing way and had practically stopped when the D.C.s dropped, fortunately out of harm's way, on the port side. The C.O. was white and trembling. I suppose you could not entirely blame him, he had never got over his first aircraft attack, when he was First Lieutenant in another U-Boat. The boat got back, but several of the crew were killed by M.G. fire."



U-Boat used for target practice after attack. (See letterpress page 7.)



KERLIN/BASTARD

Among other measures taken to deal with the Junkers 88's encountered by our anti U-Boat aircraft over the Bay of Biscay, was a heavy attack by aircraft of U.S. Bomber Command on Kerlin/Bastard airfield, one of the bases from which these enemy aircraft most frequently operate. This photograph, taken during the attack on September 23, shows—

- A. At least 100 bursts on the landing ground and part of the south-eastern dispersal area. There are one or more direct hits on the runway and several direct hits on the taxi strip and the assembly tarmac. At the beginning of the attack one medium aircraft was visible in the area of heavy concentration.
- B. At least 46 bursts covering the north-east dispersal area, where six medium aircraft were visible at the beginning of the attack, and the adjacent part of the landing ground. There is at least one direct hit on the runway.
- C. A group of at least 28 bursts on the eastern end of the north dispersal area.
- D. A concentration of at least 25 bursts among buildings along the Lorient/Quimperle highway. There are several probable hits on the highway.
- E. Seven or more bursts in fields and orchards about 1,000 yards from the end of the N.N.E./S.S.W. runway.

The translation has not been written up in any way, beyond giving the gist of the German slang in English slang, and it would be easy to quote scores of similar descriptions from men of all ranks from a dozen U-Boats over the last few months.

Attitudes vary from the colourful—"We felt as if we were being led to the slaughter-house" of a Chief Petty Officer of "U 135" describing his feelings when facing his sixth passage through the Bay of Biscay—to resignation from a prisoner of "U 528" who said: "Our 20 mm. guns were useless against a Sunderland. We prefer to submerge immediately on sighting an aircraft. On our last patrol, although attacked on only two occasions, we crash-dived on twelve."

Another prisoner, from "U 202," said: "We had aircraft alarms fifteen times in the space of ten hours; you've no idea of the unnerving effect repeated alarms have on one's nerves. The loud-speaker begins to sound like the voice of doom."

Another officer, from "U 506," sunk on July 14, 1943, summed up the feelings of his entire crew with the words: "For more than 800 km. you feel constantly harried, anyway until you get to 18° or 19° West. It is no longer any fun to sail in a U-Boat. We don't really mind even a cruiser, and we can face destroyers without turning a hair, but if an aircraft is there, we've had it! It directs surface craft to the spot even if it does not attack itself."

Then the Commanding Officer of "U 506": "The men at the top (of the German Navy) are making desperate efforts, but desperation is not a healthy sign."

The thing which strikes one more and more is the cumulative effect which A/U aircraft are quite obviously having on the nerves of the U-Boat crews. Whatever the aircrew may think after hours of patrol without seeing anything (except maybe a Ju.88), the German submariner has the conviction that the sky is just full of aircraft. Unless he has time to get to 80 metres depth, he does not feel any more comfortable than the civilian in his cellar during an air raid: he has the feeling that every bomb is aimed directly at him personally, and even when the aircraft does not spot him at all, he has to dive.

That means more strain on the Commanding Officer. You still sometimes get a man like Korrvettankapitän Willamowitz-Möllendorf, who was Commanding Officer of "U 459." When she was sunk by an aircraft on July 25, 1943, he ordered his crew overboard, saluted them as they dived to comparative safety, and himself went down with his boat. But it is symptomatic of the terror of our aircraft attack that, in the case of the majority of U-Boats sunk in August, 1943, the C.O.'s were the first men overboard; in one case the Commanding Officer had not even given the order to abandon ship!

The Germans Look Back: and Forward

A copy of the *Volksischer Beobachter* for September 2, which has come into our hands, contains an interesting article, "Reflection on the Battle of the Seas." The writer begins with a summary of the German collapse in the autumn of 1918, and at the end of the article there is a description of the state of U-Boat warfare at the time, when, according to the German writer, the transport situation in the Atlantic "was so bad that the American Army could not have been maintained any longer."

The writer continues: "From 1914-18 our U-Boats sank only about 15 million gross registered tons, that is less than half what the enemy has lost in this war. But in the last war political and military indecision and intrigue resulted in far fewer big U-Boats being built; also, the period of unrestricted U-Boat warfare was far shorter. Therefore the sinkings by the U-Boat crews in 1914-18 represented a success no less great than that achieved by their sons in this war."

"The fact that in 1917 England was already on the edge of the abyss, can to-day be considered as generally well known. Mr. Churchill disclosed this, after it was too late for us, when he said, 'Only a little longer and the U-Boat war against our trade would have forced the country into unconditional surrender.'"

"This 'unconditional surrender,' not demanded by Germany either in 1914-18 or in the present war, has been placed by the two men chiefly responsible for this war, Churchill and Roosevelt, at the top of their programme for the destruction

of Europe. Both of them have persuaded their people that it will not be much longer before this 'unconditional surrender' takes place.

"In the fifty-second month of the last war, as has been said, Germany's fate was sealed. We are now in the forty-ninth month of this war and it has been obvious for some time that the hopes of our enemies lie in a repetition of the events of 1918. This expectation is so widely disseminated among the British people that Churchill denied, at the conference of Quebec—where among other things a new propaganda offensive was worked out—that he had prophesied the end of the war for Christmas, 1943. Actually, this is the belief of the British people to-day. It is a portentous date: not only for us, but also for the British. For both before and after this date—without making any irresponsible prophecy—it will be shown that everything will be quite different at the beginning of the fifty-second month of this war from what it was in the autumn and approaching winter twenty-five years ago.

"But then, as to-day—the enemy maintains—the U-Boat menace was overcome in good time, so that the chief weapon in the German campaign against England proved a failure. Is this calculation by the British, who have miscalculated so often in the past, correct?

"Our U-Boats themselves will answer this question at the right time and, if we may say so, the answer will be a true one.

"When the figure of sinkings by the German U-Boats had reached its lowest level in the year

1918—the antithesis of to-day—the scales of fate on the land front had already been finally weighted against the Central Powers. A new U-Boat programme was coming along, in order to counter-balance the heavy losses which followed the new British counter-measures. But the new boats came too late, just as total U-Boat warfare as a whole came too late. This was not the fault of the men in the U-Boats, for they were ready for action up to the last*.

"During this war, we have constructed our U-Boats in good time and on a really big scale. And we are continuing to build them without pausing. We are not only building U-Boats, but also E-Boats and other war vessels, which all serve the same U-Boat war. This time, the U-Boat Operations Division and the highest military and political leaders of the Reich pull together; they do not work without each other, or against each other. This time we have a global U-Boat strategy, partly due to the technical development of the U-Boat and its equipment, but above all, due to the fact that the U-Boat plan has been thoroughly well thought-out on a grand scale.

"This time, with 33,000,000 gross registered tons sunk, we have gained a start in sinkings which it is impossible for the British to catch up.

This time we are able to reply to the blockade with an effective counter-blockade, for we can use the entire European area and the Ukraine. This time—and this is perhaps the most important fact—the U-Boat war is being carried out elastically. We do not sacrifice our U-Boats merely to maintain sinkings figures at an even level. On the contrary, we make use of the apparent intervals during which work is going on to overcome technically the new anti U-Boat measures of the British, to increase the number of U-Boats, and to train the crews still better and to begin training new ones. For this reason it may seem sometimes that the majority of U-Boats are invisible. But it is because of this that they will operate again, in greater strength, possibly at just the time when they will be least agreeable to the enemy.

"It is then that the enemy, who behaves so insolently to-day, will recognise the weighty difference between the years 1918 and 1943; between then and now. This difference is personified in the Führer, whose fighting spirit fills the front and the homeland. When the gong sounds after the final round—a simile which appeals to the British—it will be seen which of us will deal the last blow in the European Ring."

* The U-Boat crews were the first members of the German armed forces to crack at the end of the last war.

II.—ANTI-SHIPPING

Operations during August and September

No. 236 Squadron carried out a daylight attack on an enemy convoy off Texel on August 23. The convoy was first sighted by an aircraft of No. 236 Squadron off Ameland steering westwards, and was photographed and seen to consist of two small merchant vessels of about 1,000 tons, escorted by two "M" Class minesweepers.

The striking force consisted of twelve aircraft of No. 236 Squadron armed with 8 by 60 lb. R.P.s and four cannons, escorted by two Squadrons of long-range Spitfires provided by No. 12 Group.

It was decided that the striking force should fly up the convoy route after a landfall had been made in search of the target. The main weight of the attack was to be concentrated on the larger of the two merchant vessels by a section of three Beaufighters. Of the remaining three sections, two were to attack the two escorts and the third was to attack the second merchant vessel.

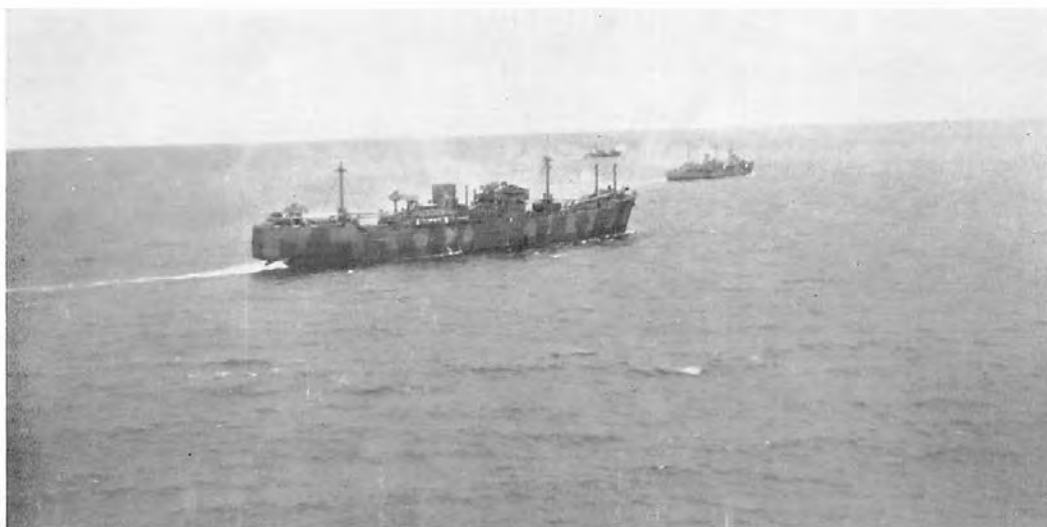
Landfall was made off Texel and the force flew north up the convoy route. Three minutes later four vessels steaming southward were sighted at a range of six miles, in close formation of two staggered pairs. The striking force was deployed for the attack. It was not realised that the four vessels were all trawlers until the attack had developed. Each vessel was attacked by one section of three Beaufighters, but owing

to the fact that the ships were extremely close together and all flying balloons, it was not possible for the attack to be concerted.

The enemy was able to concentrate his fire on each section in turn, making it difficult for pilots to take a steady aim. Numerous cannon strikes were seen on all four vessels and it is possible that the rear vessel in the port line was hit by a pair of rocket projectiles. There was no enemy fighter opposition. No losses were suffered by our force, but three aircraft were damaged, all making safe landings without injuries to the crews.

The No. 16 Group Beaufighter Wing carried out a daylight attack on a small convoy near Den Helder on September 16. The convoy was first sighted by an aircraft of No. 236 Squadron proceeding southwards off Borkum and subsequently by another aircraft off Terschelling. It consisted of two lines of "M" Class minesweepers, three on the land side, and two on the seaward side at intervals of approximately 200 yards, followed by a large and small armed trawler approximately 500 yards astern.

The striking force consisted of eleven aircraft of No. 254 Squadron, armed with cannon, six aircraft of No. 236 Squadron armed with cannon, and six aircraft of No. 236 Squadron armed with



Photographs taken during the attack by 254 and 236 Squadrons on September 25, described on page 11. The top one shows the leader of two large merchant vessels known as "Van Opstel" class, which were the principal ships in this convoy. Of about 7,000 tons, they have been fitting out at Antwerp for over a year, and this was their first voyage. A small *sperrbrecher* is slightly ahead and to port. It was the second of these two sister ships that received two torpedo hits. In the centre photograph she can be seen turning to starboard after the hits, which are seen in the bottom photograph.



PLATE 6 Above :—Photograph taken during the attack by 236 and 254 Squadrons on a group of " M " class minesweepers described on pages 10 and 11. Flame and smoke can be seen from a hit on the after deck of a minesweeper, and several near misses from R.P. are also seen.

Below :—Wreckage of a F.W.200 shot down by a coastal convoy and photographed by 48 Squadron, off the coast of Portugal.



eight 60 lb. rocket projectiles and cannon. Escort was provided by two squadrons of long-range Spitfires of No. 12 Group.

It was decided to strike the enemy convoy route off Den Helder and to sweep northwards in search of the target. Each of the vessels was to be attacked with cannon, fired by a section of three Beaufighters, and the two rear-most vessels were then each to be attacked by a section of three Beaufighters armed with rocket projectiles. The R.P. aircraft were to fire their cannon during the approach.

A landfall was made at Den Helder. The visibility was poor and a somewhat steep turn had to be made in order to position the Wing on the seaward side of the convoy route. Whilst this turn was being executed the target was sighted four miles on the port side of the formation, leaving insufficient time for the Wing to be manoeuvred to the seaward side. The Wing leader therefore re-briefed the force to attack targets as originally indicated, but to do so from land to sea. Numerous cannon strikes were seen on all four minesweepers attacked. In addition hits with R.P. were obtained on the rear-most vessel in each line. The full results claimed are two minesweepers heavily damaged and on fire, and two further vessels damaged. Intense accurate light flak was encountered during the operation and four Me.109's attempted to interfere but it is not known whether any losses were due to them. The fighter escort claim one of these Me.s as damaged. Two aircraft of No. 236 Squadron are missing from this operation and four further aircraft were damaged although they were able to return safely to base.

Hampdens H, Z and D/489, each armed with Mark XVB 18-in. torpedoes, contact pistol, carried out a Rover patrol on the Norwegian Coast on September 16. After sighting land the aircraft, flying in Vic formation, "H" leading, sighted a convoy at three miles, consisting of two merchant vessels of about 3,000 tons in line abreast, escorted by three flak ships astern. They were on a north-westerly course and their speed was about six knots. All the aircraft turned 90 degrees to port, flying parallel to the convoy and on the seaward side. Aircraft "H" and "D" turned in to attack from good sectors on the port bow of the merchant vessel, breaking away to the northwest. Meanwhile aircraft "Z" was forced into a fine sector on the same bow by the vessels' avoiding action and it broke away over the bow. The enemy vessel was hit on the bow by one torpedo. Heavy and light flak was encountered from the escort vessels and from ground defences during the attack; also from the merchant vessel during the getaway. Aircraft "Z" was hit in the boom and aileron by light flak but it was able to return to base safely, along with the other aircraft.

Norwegian Coast R.P. Attack

Beaufighters **Z, B, A, Q, H, N/404** on their first Norwegian Coast patrol after equipping and training with the R.P. weapon, reached Statlandet at 1755 hours on September 30. The weather was perfect for roving, 10/10 cloud at 1,500 ft., but cloud base was too low to manoeuvre a

formation of six aircraft inside the leads. The formation set a northerly course outside the leads, flying just below cloud base for better visibility and for security against single-engined fighters.

At 1753 an unescorted merchant vessel of 2,000 tons was sighted four miles away on the starboard bow. She was steering a southerly course at 6 knots. The Beaufighters manoeuvred inshore and three attacked in quick succession from the ship's port quarter, two from the port bow and one from the port beam. The three from the port quarter were attacking upwind, the remainder across wind, the wind being a strong one of 25 knots. All aircraft released eight 60 lb. R.P.s, except "A," which only fired two. "Z" fired two pairs in the first attack and made a second attack with the remaining two pairs. The ranges of attack were 1,000-400 yards and a quick succession of pairs was fired in a 10 degrees dive from 1,500 feet.

The results were most encouraging and speak well of the training which the crews of No. 404 received at Tain and in the Squadron. Of 42 R.P.s fired, 25 hits and four possible hits are claimed—this in a first attack with a strong wind. Slight flak was encountered from ship and shore, but not one of our aircraft was damaged.

Under this weight of attack the whole superstructure of the target burst into flames which reached mast height. When last seen she was burning fiercely and heading for the shore. Photographs were taken.

On October 1 a Beaufighter of 404 Squadron on reconnaissance off the Norwegian coast found and photographed the ship which had been attacked on September 30. She was lying inshore of the scene of the attack and was beached. Waves were breaking over the decks and there was no sign of life aboard.

North Coates Beaufighter Wing Strike— September 25

On September 25, after a period of inactivity from a torpedo point of view, the North Coates Wing launched another successful torpedo attack in the face of strong flak opposition from a well defended convoy.

On the morning of the 25th two convoys were sighted. **D/236** found a large westbound merchant vessel with eleven escorts off Terschelling, and Mustangs of **613 Squadron** sighted a northbound convoy of four merchant vessels and 10-14 escort vessels off Ijmuiden.

It was decided to strike the former convoy before it could reach Den Helder, as it was considered that the Ijmuiden convoy would be sheltering in Den Helder before the strike could reach it. The Wing therefore consisted of only five Torbeaus of **254 Squadron**, which were to attack the single merchant vessel, and of eight Beaufighters of **254** and eleven of **236 Squadron** in the anti-flak rôle.

The Wing took off at about 1045 and, after picking up its escort, set course for Den Helder, intending to turn north and meet the southbound convoy from ahead. On arrival at Den Helder however, the northbound convoy, which should have reached Den Helder two hours previously, was sighted due south and the Wing leader decided to turn south and attack it.

The Wing had not been briefed for an attack on this convoy, whose composition and disposition was very different from that of the southbound one. It appeared to have been reinforced since the original Mustang recon., and consisted of five armed trawlers and a small Sperrbrecher ahead, four merchant vessels in line ahead (two large 400-ft. merchant vessels leading), with one minesweeper and three armed trawlers on each flank and two armed trawlers in the rear. About twelve balloons were being flown and, taken all round, it presented a very formidable array of flak.

Owing to the sudden turn southwards and the unexpected disposition and composition of the convoy, the Wing became slightly unharmonized. The cannon aircraft, using their initiative in choosing their targets (and using it very well) had completed their attack while the torpedo aircraft were still some distance away. This left the torpedo aircraft, and the cannon aircraft also, in for far more concentrated flak than usual, as some flakships escaped attention and the rest had recovered from their hammering before the torpedoes were in the water.

The torpedo target selected for attack was the second large merchant vessel in the line, for it was further away from the mass of leading escort vessels and an equally valuable target. Four torpedo aircraft dropped at this target at ranges of 1,000-1,200 yards, and the fifth, presumably squeezed out of sector, dropped his torpedo at the smaller merchant vessel, third in the line. The C.O. of No. 254 Squadron was seen to go in to the attack with his port engine on fire but dropped his torpedo successfully before his

aircraft turned to port losing height and crashed in the sea. Of the five torpedoes dropped two hits were seen on the main target and one on the third merchant vessel in the line (attacked by a single aircraft). Thus 60 per cent. of the torpedoes—over double the average percentage of hits in torpedo operations—found their mark.

The flak-busters had previously got busy with their attack. The leading armed trawlers, the Sperrbrecher and the trawlers and minesweeper in the port line as well as the large trawler astern, were all raked with cannon fire. Many hits were claimed on all these vessels with the result that one of the leading trawlers, the leading port line trawler, and the rear trawler were on fire, and the Sperrbrecher was damaged. This is confirmed by photographs and there was probably much more damage to other trawlers which the camera does not show.

This splendid success was unfortunately not achieved without loss. The flak, both heavy and light, was fiercer than has previously been encountered and, according to reports, took the form of a curtain barrage which has not so far been met. Two aircraft, L/236 and A/254, were seen to crash into the sea, and of the others, all four torpedo and seven anti-flak aircraft were damaged in varying degrees. Perhaps the luckiest escape was that of one navigator who, while taking photographs, had his camera hit by a shell and at least one bullet, but escaped with serious face injuries. Nevertheless the enemy was hit hard and North Coates have proved that, despite adverse circumstances, a courageous and well pressed home attack will cause immense damage to the enemy.

III.—OTHER OPERATIONAL FLYING

Liberator meets two F.W.s

On August 18, a **Liberator**, L/1480, was sent from Port Lyautey to escort a convoy in position 39° 12' N., 14° 30' W. The aircraft was flying at 1,500 ft. below cloud base when the top turret gunner thought he saw an aircraft ahead. Immediately afterwards a radar contact was picked up 130° to port and 12-15 miles away. After turning towards the contact, another appeared 5° to port, 8 miles away. The Liberator climbed to 2,300 ft. in cloud. At a range of four miles the aircraft descended through the cloud and soon after sighted two F.W.200's about four miles apart. The enemy aircraft seemed to be making parallel bombing runs on the convoy. When the range was about three-quarters of a mile the nearer F.W. fired a sighting burst and banked to port. The Liberator followed slightly above and on its tail, while the second F.W. closed in on the tail of the Liberator. The three aircraft were then in line, with the Americans playing the meat in the sandwich.

The first German dived from 1,000 feet to 50 feet with the others following, and all three aircraft opened fire. The enemy's fire was believed to be 20 mm. After about a minute the Liberator had its two starboard engines put out of action, the starboard wing was on fire, and the wings and

fuselage were shot full of holes. But the nose and top turret gunners were plastering the Germans inner wing panel, fuselage and port engines. The Liberator captain with two useless engines, his right wing on fire and most of his crew wounded, decided to try to ram the leading German. At the last second the co-pilot pulled back the throttles just as the enemy aircraft burst into flames and crashed.

During this exchange of fire with the leader the Liberator's tail gunner and starboard beam gunner had been returning the fire of the second F.W. which was attacking from astern. Many hits were scored on the German's wings and engines. But the Liberator was almost out of control. The crew realized that a crash was inevitable and took up ditching stations on their own initiative. Their positions at the moment of impact were as follows: Pilot and Co-Pilot strapped in their seats; Bombardier strapped in the seat at the radar set control panel; Radio Operator lying prone on the flight deck; Engineer, Assistant Engineer, Radar Operator, and Assistant Radio Operator lying on the floor between the waist windows, braced against the spare lifeboat which was against the radar spinner; Tail Gunner in his turret; and Navigator



DEN HELDER

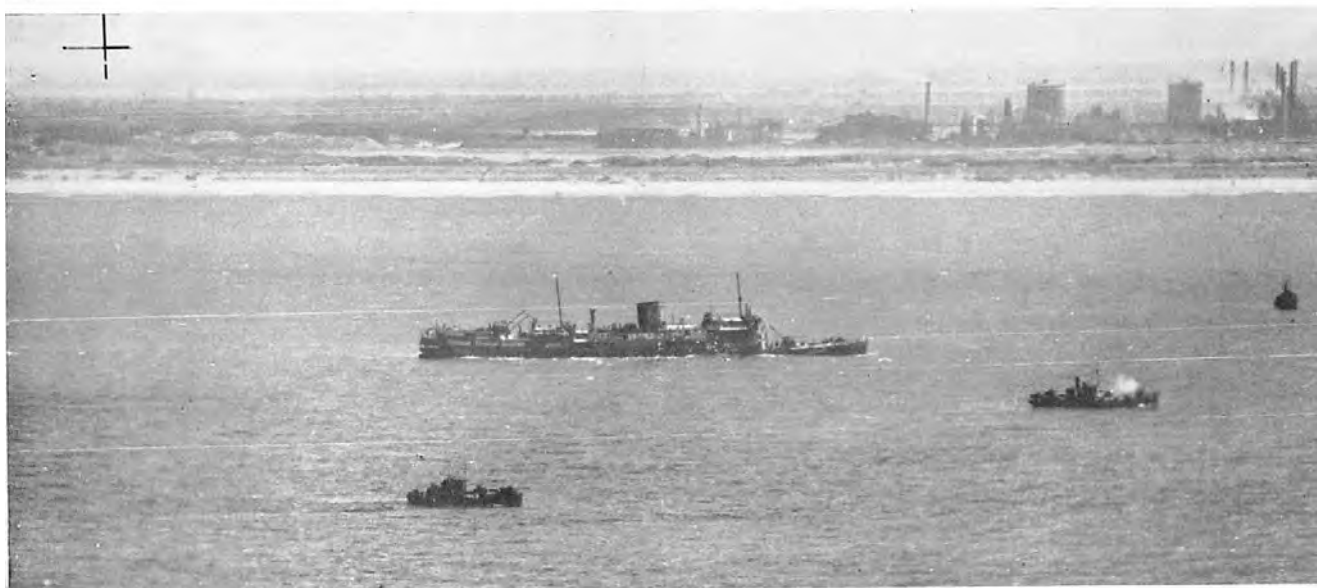
PLATE 7

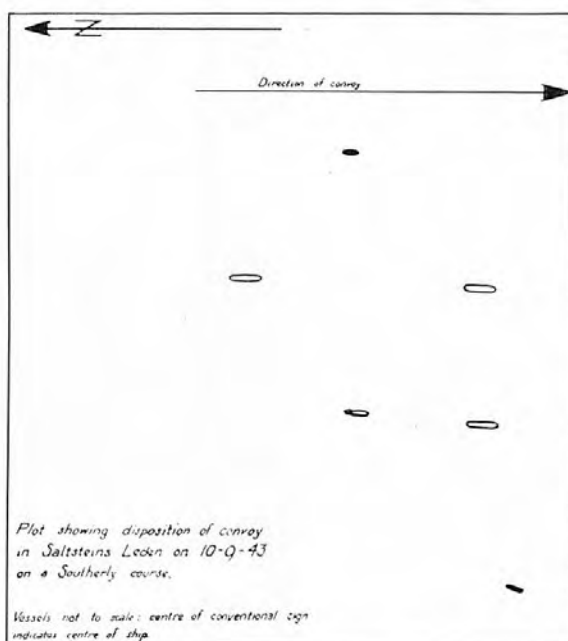
Photographs, above and below, taken by a Mustang of No. 613 Squadron, Fighter Command, during reconnaissance on behalf of Coastal Command's anti-shipping operations. The top and centre photographs are of Den Helder, the Dutch port and naval base, a well-known landmark to our anti-shipping squadrons.



DEN HELDER

The lower photograph shows the Dutch liner *Baloeran*, seized by the Germans and converted into the hospital ship *Strassburg*. After lying in Rotterdam for many months, she set sail for Germany early in September, but met with a mishap, perhaps a mine. She has been stranded off IJmuiden ever since, where she is likely to become a well-known landmark, if spared by the weather.





This photograph, by 540 Squadron, shows a convoy typical of those that sail in southern Norwegian waters. It consists of four merchant ships of between 190 ft. and 240 ft., and is accompanied by two small escorts. The much looser formation, smallness of escort, and absence of minesweepers, distinguish it from those found in the southern North Sea off the coasts of Holland and Germany. Saltsteins Leden is between Aalesund and Kristiansund N.

still standing, as he did not have time to lie down on the flight deck. On impact he was thrown to the floor, but suffered only minor bruises.

The aircraft hit the water in a skidding right turn at roughly 140 m.p.h., flaps up, on a relatively calm sea with a slight swell. After impact the aircraft continued to the right through a tight 180 degrees and broke into three pieces, the breaks being at the waist windows and the trailing edge of the wing. The two aft sections sank almost immediately, while the section containing nose and wing floated for about one and a half minutes.

The Pilot and Co-Pilot went out through the windshields, the glass having been knocked out by the impact; the Navigator, followed by the Radio Operator, through the top escape hatch, which had not been opened before hitting and was difficult to operate; two men got out through a split in the top of the fuselage near the waist position; the glass was knocked out of the tail turret and the Tail Gunner crawled out through this opening.

It is believed that the Bombardier was pinned in his seat by the radar set. In a normal crash landing, straight ahead, the aircraft would decelerate suddenly and the inertia of equipment such as the radar control set would be straight ahead. But in this case, where the right wing hit first and the aircraft went into a right turn of 180 degrees, it is possible that there was an increase in acceleration on the left side of the aircraft. This may have caused the radar set to jump its mounting to the rear and pin the

Bombardier under it. Of the other two men in the waist, who did not survive, it is presumed that various items of equipment in the rear crashed through the aircraft and either injured or killed them.

The port life raft was released by the Navigator and inflated properly. The starboard raft did not release, possibly owing to the stress on the right wing caused by the crash. The spare life raft from amidships was carried out by one of the crew who escaped from waist positions. All life-vests functioned properly, but there was some difficulty in loosening the cords that release the CO₂. It was the practice to wrap these cords around the cylinder tube to insure their not being pulled accidentally. Flares were not used as the crash was fairly close to an escort vessel which picked up the crew fifteen minutes later.

Several minutes afterwards four men from the first F.W. were picked up by the same vessel. The second F.W. was seen by the crew, while in their dinghies, mashing along at 50 feet above water, tail heavy and with No. 3 engine out. Seamen from two naval vessels said that they saw the second F.W. crash at the same moment as the indication on the S.N.O.'s Radar screen disappeared at 8 miles. Seven of the survivors of "L" were wounded (none seriously) by splinters. The Captain, at interrogation, stressed the fact that each member of the crew conducted himself heroically. They continued the combat until the last possible moment and when the pilot was unable to give orders, carried out their respective assignments under accurate and heavy fire.

Other Combats

Liberator N/224 was on anti U-Boat patrol on July 18 when three Ju.88's were sighted, overtaking on the port quarter at 2,000 yards, trying to get up sun. Shortly after, two more Ju.88's were seen following the other three. The enemy aircraft then positioned themselves, one on the starboard beam, one on the port beam and one astern. The remaining two flew ahead and disappeared momentarily in cloud. Simultaneous quarter attacks were then attempted by the enemy aircraft, but these were avoided by weaving and corkscrew evasive action. Single quarter attacks were then made by the Ju.88's, fire being opened at 1,000 yards, closing to 400 yards, and breaking away in climbing turns astern. The Liberator replied with port and starboard beam guns, rear and top turret guns. This concentrated fire made the enemy aircraft reluctant to come in to close range. Twelve of these attacks were made with the Liberator maintaining a mean westerly course at 240 m.p.h. to 280 m.p.h. There was material damage. Only three enemy aircraft were now seen and these began attacks on the bow, opening fire with cannon and machine gun at 1,000 yards, closing to 250 yards, and breaking away above. During one of these attacks, fire from the mid-upper and rear turrets was seen hitting the enemy aircraft. Quantities of white smoke from the starboard engine were seen, and the Ju.88 was last seen diving towards the sea

in a controlled dive. Two Ju.88's now remained; one carried out two more attacks on the port bow and the other three quarter attacks. The Liberator then entered cloud and the enemy aircraft were not seen again. The attack had lasted for nearly an hour, and the only damage to "N" were strikes on the starboard wing tip and tailplane.

Sunderland S/201 was flying on anti U-Boat patrol on August 6, when a Ju.88 was sighted flying on a parallel course to "S" on the starboard beam. It kept this station for a short time. It was then seen that the tracks of the aircraft were converging. The enemy aircraft opened fire about 600 to 700 yards range on the starboard quarter. S/201 evaded by a steep diving turn to starboard. As the enemy aircraft broke away, the rear gunner, who had anticipated that the enemy aircraft might break to port and who therefore had his guns in that direction, opened fire with four or five bursts as the enemy aircraft came into the sights. It was estimated that the enemy aircraft had been hit. It continued dead astern on a reciprocal course for about a mile and then turned to starboard, remaining outside the range of the Sunderland's guns. The Sunderland then entered cloud and there was no further action.

Liberator Z/86, while engaged on anti U-Boat patrol to a convoy on August 14, was informed by the S.N.O. that a F.W.200 was shadowing the convoy on the starboard beam. While flying at 500 feet on a course of 120° (T.), Z/86 sighted the enemy aircraft flying on a course of 280° (T.) on the port bow, about 14 miles away. "Z" increased speed and set course to intercept. The F.W. apparently sighted the Liberator at the same time for it turned to starboard and made off towards cloud, where it skirted the edge without entering. As Z/86 closed the range, the F.W. disappeared into cloud.

The Liberator flew at cloud base, expecting the enemy aircraft to break cloud and make for the convoy, but as this did not happen, "Z" climbed through the cloud and sighted the enemy aircraft about 5 miles ahead. The Liberator did not immediately give chase, but, by keeping at the same range, it was hoped that the enemy pilot would be misled into thinking that the Liberator could not overtake. When the F.W. was clear of the cloud bank, the Liberator increased speed and rapidly closed the range, carrying out an attack with the single belt-fed .5 nose gun on the starboard beam. At 800 yards the enemy aircraft opened fire from the dorsal gun position with self-destroying cannon. The front gunner of "Z" replied at 600 yards, no hits being registered. The enemy aircraft then carried out evasive action, and as the only other armament of the Liberator was the rear turret, further fire could not be brought to bear. The F.W. then made a steep turn to starboard to regain cloud cover, with Z/86 in pursuit. At 350 yards the nose gunner of "Z" again opened fire and hits were seen on the starboard inner engine of the enemy aircraft, causing quantities of grey smoke to come from the engine and trail some distance behind the enemy aircraft. The F.W. appeared to be under full control and it succeeded in reaching cloud cover. The Liberator then reported back to the convoy, escorting it for 40 minutes after P.L.E. The F.W. was not seen again.

Liberator G/19, A/S Squadron, U.S.A.A.F., on August 18, flying on anti-U-Boat patrol, sighted two aircraft on the starboard bow at 7 miles. These aircraft were later identified as Ju.88's. G/19 immediately turned west to gain light cloud cover in the distance and increased speed to 200 m.p.h. in a climb to 12,000 feet. A total of 10 Ju.88's were now seen and they took up station five on the port side, three on the starboard and two astern. The two enemy aircraft astern did not attack at any time. "G" jettisoned the bomb load and sent out O-A. The leader of the enemy aircraft drew ahead and 500 feet above the Liberator and then peeled off and made a port bow attack, opening fire at 1,000 yards. Hits were made on the port outer engine of the Liberator and the starboard inner engine; the left rudder was also hit, making control difficult. The enemy aircraft broke away at 200 yards above. The remaining aircraft then attacked on the port and starboard. From this time on a general mêlée ensued, during which each of the enemy aircraft attacked singly, except the two astern which remained inactive. Owing to the damage to the engines and airframe, the Liberator could evade only by climbing and

diving. The leader of the enemy aircraft seemed to be experienced and capable. He was the only one who scored hits. In the second attack he hit the port wing and the bomb bay. In his third and last attack, he hit the rudder which began to break up and to give bad vibration. It became obvious to the captain of the Liberator that he would have to ditch. Height was therefore lost to 2,000 feet. He tried then to get into cloud, but the air speed dropped. The aircraft became uncontrollable and, hitting the water at 130 m.p.h., it broke in two. It did not seem that the enemy aircraft had been hit. Some members of the crew were lost in the ditching, but the remainder were later rescued from their dinghy.

Hudsons H and R/279 (A.S.R.) were circling an airborne lifeboat (dropped by R/279) on August 24, when two Me.110's were sighted. H/279 turned to port in the hope of forming with R/279, to obtain supporting fire power. The rear gunner of "H" reported the presence of another aircraft about 2½ miles on the port beam. This was also identified as a 110. The enemy aircraft now attacked both Hudsons, opening fire at 1,000 yards, both "H" and "R" turning in to the attack. The enemy aircraft attacking "H" carried out a second attack on the starboard quarter, opening fire at 700 yards. "H" countered with a diving turn to starboard, corkscrewing, undulating, and throttling back. The rear gunner fired whenever possible. The third attack was made at 1,000 yards, dead astern, the rear gunner instructing the pilot to undulate. He returned the fire with a number of short bursts. During the sixth attack, also made from astern, the rear gunner of "H" saw a pall of smoke 3 miles away, assumed to be aircraft "R," which failed to return to base. He also saw four Me.110's crossing the bows. He reported these enemy aircraft to the pilot who replied that they were four of seven enemy aircraft, three of which had peeled off in the direction of the Hudson, but had passed on the port beam. None of these aircraft attacked. Meanwhile, the remaining Me.110 carried out three or four more attacks before breaking off the engagement. The only damage received by the Hudson were one or two strikes in the starboard aileron.

On August 27, **Wellington B/304 (Polish)** sighted a Ju.88 which immediately attacked on the starboard quarter, opening fire at 800 yards, closing to 150 yards. "B" countered with a turn to starboard and the rear gunner returned the fire at 400 yards, giving the enemy aircraft a long burst of 150 rounds from each machine gun. The Ju.88 broke away to port and disappeared into cloud. A few seconds later it appeared on the port bow at 2,000 yards. The Wellington turned towards the enemy aircraft which immediately turned to port and again went into cloud. The enemy aircraft re-appeared but did not close within 2,000 yards. No further attacks were made by the enemy aircraft.

On August 31, **Liberator Q/53** sighted five Ju.88's in close formation, 800 yards on the starboard bow and diving out of sun and cloud. The leader broke formation to port and swept round astern. The mid-upper gunner opened fire and

strikes were seen. There was return fire from the enemy aircraft. The remaining enemy aircraft now formed line astern and attacked on the starboard bow, opening fire from 400 yards to 300 yards, and scoring hits on the starboard wing tips and bomb door. "Q" countered by a diving turn to starboard, the nose, beam and rear gunners firing their guns as and when necessary. Several more attacks were made before "Q" reached cloud and contact with the enemy aircraft was lost.

Liberator B/103, A/S Squadron, U.S.N., was on anti U-Boat patrol on September 2, when six Ju.88's were sighted. The enemy aircraft closed with B/103 and took station three in echelon on the starboard beam and three in line abreast, on the port quarter. The leader of the starboard formation made a determined starboard beam attack, opening fire at 600 yards, closing to point-blank range, and breaking away just above the Liberator. The mid-upper starboard waist gunner returned the fire. Tracer was seen entering the enemy aircraft which immediately went into a steep dive after breaking away. It was smoking badly, but no flames were seen. B/103 was hit and the Navigator was wounded. All the instruments, except the altimeter, were wrecked. During the next attacks on the port quarter, the Liberator was seriously damaged. The port main petrol tank was set on fire and the rudder and aileron became ineffectual. "B" went into a steep dive but managed to recover at 100 feet. Two engines were then blazing and one was smoking. A fire had also started in the bomb bay, which was extinguished later by the Radio Operator. The Liberator lost flying speed and had to be ditched. The crew boarded their dinghy and were afterwards rescued by a fishing vessel.

Halifax Y/502 was flying on anti U-Boat patrol on September 2 in the Bay of Biscay, when the Navigator and 2nd Pilot sighted two unidentified aircraft, 3 to 4 miles ahead. Y/502 immediately climbed for cloud 3,000 feet above. As the range closed, the aircraft were identified as F.W.190's. They positioned themselves one on each quarter.

The first attack came from the port quarter, the enemy aircraft opening fire at 600 yards closing to 400 yards. Y/502 evaded by corkscrew evasive action and the rear gunner returned the fire with a long burst at 600 yards. A few moments later, Y gained cloud cover, and altered course 90° to port. Twenty seconds later, it emerged from the cloud to find the F.W.'s, one on the starboard beam and one on the starboard quarter, 1,000 feet above. The enemy aircraft on the beam made a beam attack, followed by the other enemy aircraft. Y/502 evaded by a diving turn to starboard. Cloud cover was again reached, but the enemy aircraft were resighted when Y/502 passed into clear patches. They were able to make another attack, before contact was finally lost. Neither the crew nor the Halifax suffered any hurt.

Wellington M/304 (Polish) was on anti U-Boat patrol on September 6, and was flying at 5,500 feet, in 7/10 cumulus cloud, when, in a large gap between clouds, the 1st pilot noticed a long burst of tracer emerging from cloud on the port bow. M/304 was hit. M/304 immediately took evasive action by climbing to starboard and then

diving steeply to port. The hydraulic system was damaged, the air speed was made unserviceable, and the undercarriage fell down. A few seconds later the front gunner saw a Ju.88 200 ft. above. It again attacked on the port bow. The enemy aircraft opened fire and the front turret of the Wellington was hit. The front gunner returned the fire. The Ju.88 then attacked on the starboard quarter, but it did not fire. The rear gunner of "M" opened fire and observed hits on the cockpit and engines. The enemy aircraft broke away, with its starboard engine on fire. The rear gunner then saw red and blue tracer emerging from cloud, slightly below the Wellington on the starboard quarter. It hit the starboard wing and engine of the Wellington. The Wellington now reached a large cloud, and contact with the enemy aircraft was lost. The aircraft returned safely to base.

Hudson J/48 was on anti U-Boat escort to a convoy on September 7, when a F.W.200 was sighted, flying at 500 ft. The Hudson immediately dived to attack the enemy aircraft from 3,000 ft., and after closing the range to 800 yards, opened fire with a pair of R.P. which missed astern. The second pair also missed. The remaining two pairs were then fired in a salvo, but no hits were made. Fire was then opened with the front guns, from 500 yards. At this moment the F.W. returned the fire with cannon, which wounded the rear gunner and considerably damaged the Hudson. It was then difficult to control. The Navigator of J/48 put in some good work with the V.G.O. and the enemy aircraft was hit and at least one of its gun positions put out of action. As the diving speed of the Hudson was lost the F.W. drew away and finally disappeared.

Beaufighter D/233 was on anti-aircraft escort to a convoy on September 7, when a F.W.200 was sighted and attacked. "D" opened fire at 500 yards with cannon and machine gun and the F.W. was hit. The enemy aircraft returned fire with cannon, from the top dorsal position. The Beaufighter made three attacks before the bulb in the reflector sight fused. Action had to be broken off while the Navigator came forward and tried the spare bulbs. It was then discovered that the fuze had blown. D/233 resumed the attack, using the tracer as an aid to sighting, until the ammunition was exhausted. The F.W. was last seen flying northwards in a shallow dive, with quantities of smoke coming from the port inner engine.

Liberator D/53 was flying on anti U-Boat patrol at 3,500 feet on September 11, when the mid-upper gunner sighted three Ju.88's 500 feet below and at 500 yards range on the starboard bow. The pilot could not be warned as the intercom. was unserviceable. The enemy aircraft climbed and passed above D/53. The mid-upper gunner opened fire on the centre enemy aircraft. Hits were seen on the leading aircraft which broke away astern with smoke coming from the port engine. No further attacks were made by this aircraft. It was now seen that a Me.410 had joined the formation. The two Ju.88's positioned themselves on either beam, and it was noticed that the one on the starboard made only dummy attacks. When an enemy aircraft appeared to be committed to its attack, D/53

evaded by turning in towards the attack. The Me.410 carried out three determined attacks on the port beam at great speed, but the Liberator was not damaged. The mid-upper and rear gunners opened fire at 600 yards on the Ju.88's and at 300 yards on the 410. D/53 had been climbing during this time at 215 knots, and after making 40 miles, it entered cloud. One of the remaining Ju.88's appeared to have been hit, as white vapour was coming from behind the port engine. But it continued to attack. After three minutes the Liberator broke cloud and the enemy aircraft appeared 500 feet above and 100 yards on the beam. The Liberator immediately turned and re-entered cloud and the enemy aircraft were not seen again. It was now seen that smoke and oil were pouring from the port inner engine. None of the crew was injured.

Liberator K/22, A/S Squadron, U.S.A.A.F., was flying on anti U-Boat patrol on September 19, when it was attacked by eight Ju.88's. The first attack damaged the rudders and the perspex of the top turret. "K" turned to make for cloud cover, 5 miles away, and a running fight followed. The

enemy aircraft attacked singly, and from all angles, usually in a dive. The gunners of the Liberator returned the fire whenever possible and it was estimated that some of the enemy were hit. Smoke was seen issuing from two Ju.88's as "K" finally made cloud cover and got away.

Beaufighters D, F, N, Q, B, P/235 were on interceptor patrol in the Bay of Biscay on September 22, when the leader of the formation in aircraft "D" sighted a single Ju.88 dead ahead at 2,000 yards. "D" increased speed and closed range. At 500 yards, the rear gunner of the Ju.88 opened fire on the Beaufighter, but tracer was seen to pass over D/235. D/235 began a starboard quarter attack and opened fire on the enemy aircraft, which began to climb for cloud. The rear gunner of the Ju.88 returned the fire and "D" was hit in the front perspex, a piece of which flew in the pilot's eye. No strikes were seen on the enemy aircraft, but members of the crews of the accompanying Beaufighters confirm that a large fragment fell off the Ju.88 as it entered cloud. The combat lasted four and a half minutes.

Operations by Fighter Command Mosquitos in the Bay

The problem of Fighter interception in the Bay of Biscay is extremely difficult. The enemy is well aware that our anti-U-Boat aircraft, by virtue of maintaining "an unclimbable fence" in the Bay of Biscay, must inevitably pass through certain areas throughout the hours of daylight. He can therefore send his Ju.88 fighters to patrol these areas, and, though they may be on patrol for only 2-3 hours, they have a good chance of sighting our aircraft. On the other hand our own Beaufighters and Mosquitos of Fighter Command which operate with us in the Bay, have a much more difficult task. Their targets may patrol any part of our anti U-Boat area in the Bay at any time in the day. Our aircraft have a limited endurance and can stay on patrol for only 1-2½ hours (depending on the area), so that for them to arrive at the same part of the Bay as the enemy, and at the same time, is almost equivalent to putting one's hand on the proverbial needle in the haystack with the needle moving. A study of the enemy has reduced the size of the haystack and our recent patrols have managed to make contact with the needle on several occasions.

It is here that the help of Fighter Command's Mosquitos has proved a great factor in the Battle of the Bay. In clear weather conditions our own Beaufighters can and have brought the Ju.88s to decisive action, and have inspired in them a healthy respect and fear. But their closing speed over the Ju.88 is not great, and, in cloud conditions, the enemy is unwilling to fight and may make cloud cover before he can be brought to action.

The Mosquito, however, with its relatively high closing speed, can much more easily bring the enemy to action. Because of the small number of interceptions we can get, this is immensely important. The good shooting of our anti-U-Boat

aircraft and the casualties they cause keep the enemy's tail down to some extent, but successes against them are inevitable with the large Ju.88s formations employed, and the enemy's tail goes up accordingly. An indecisive combat with Beaufighters, in which the enemy escapes in cloud, will not lower his morale, but when he is well and truly bounced by a faster and more manoeuvrable aircraft, losing three-quarters of his formation, his morale will go down with a rush: he will lose his feeling of security in the Bay, and his attacks against our anti-U-Boat aircraft will deteriorate accordingly. During the month of September the enemy has been bounced on several occasions. On September 11, four Mosquitos of 307 (Polish) Squadron attacked six Ju.88s, of which they destroyed four and damaged one. The same day four other Mosquitos of the same squadron engaged six M.E.110s, of which they destroyed one, got two probables, and damaged the remaining three. On September 21, four Mosquitos of No. 456 (R.A.A.F.) Squadron met eight Ju.88's which immediately made for cloud. Before they could escape, however, one Ju.88 was destroyed, one probably destroyed and one damaged. On September 25, 307 (Polish) Squadron's patrol of four Mosquitos again found and hit the enemy. Seven or eight Ju.88s were sighted and, before they could reach cloud, two Ju.88s were claimed as destroyed, one probably destroyed, and three damaged. Thus, during September the enemy has been hit hard on four occasions, and "Achtung Mosquito" must now be words which the Ju.88 pilot has learned to fear. He will not chase single anti-U-Boat aircraft with quite the same feeling of security (and, from a fighter point of view he has never been very good at it, as a number of single anti-U-Boat aircraft have proved), knowing that Mosquitos as well as Beaufighters may bring him to action.

Air/Sea Rescue

September was a record month for the Air/Sea Rescue Service. Two-hundred and eighty-four members of aircrews were rescued out of a total of 533 suspected or known to have been lost over the sea. Ninety-six more than in the previous record month of July. The high-light of the month was September 6 when 131 members of the Allied Services were saved. Of these, 118 were Americans, one a Hurricane pilot, and 12 were the crew of Sunderland P/422 Squadron who had been missing since September 3.

Sunderland P/422 was forced to ditch in position 44° 30' N., 13° 50' W., owing to the loss of power on the starboard inner engine, and complete loss of the starboard outer engine, which fell out of the airframe. For three and a half days the crew drifted in their dinghies. They were rescued by Sunderland R/228 Squadron which alighted on the sea and took them on board in position 44° 05' N., 10° 30' W.

The crew were first sighted by Liberator of 6 Squadron, U.S.A.A.F., which, after sending a sighting report to base, eventually homed Sunderland R/228 to the dinghies. A short time after taking off with the 12 survivors aboard, a further message was received from R/228 that another dinghy had been sighted in position 44° 00' N., 10° 57' W. Y/228 was diverted from patrol, and almost immediately found the dinghy. Owing to P.L.E. Y/228 had to return to base and the dinghy was not located again until the next day. From then until 1000 hours on the 9th the dinghy was kept covered and a surface craft was eventually homed to it by K/10 Squadron. The dinghy contained six survivors of the crew of Liberator P/224 Squadron, also missing since September 3.

While R/228 Squadron was carrying out its rescue on September 6, reports were received of various Fortresses ditching on their return from bombing Stuttgart and other targets in South-west Germany. Air/Sea Rescue Hudsons, high-speed launches of Coastal Command, together with Spitfires, Typhoons and Walrus aircraft of Fighter Command, rescue motor launches of the Royal Navy and fishing vessels, all co-operated in rescuing the total of 118 Americans from their dinghies. An airborne lifeboat was dropped to one Fortress crew, but they were unable to reach it. They were rescued later that night by

H.M.S. *Bleasdale*. It was then found that only one dinghy had inflated and that five of the crew were hanging on the side, thus preventing those aboard from paddling to the lifeboat.

The same night a Lancaster of 1 Group was returning with engine trouble. It was instructed by its base to jettison its bombs out to sea before landing. Nothing further was heard from this aircraft so at first light an extensive search was laid on. At 1220 hours a message was received from Hudson Y/279 that it was over a dinghy with five occupants. An H.S.L. from Humber was immediately despatched; in the meantime M/279 had been sent to relieve Y/279 and an Air/Sea Rescue Anson of 280 Squadron, which had also located the dinghy, guided the H.S.L. to the scene. At 1616 hours a message was received "Rescue completed." Five members of the crew were saved.

On September 9, at 1132 hours, Catalina H/63, U.S.A., sighted a dinghy containing three occupants in position 48° 05' N., 14° 25' W. Surface craft were diverted to the position, but contact was lost by the aircraft. Sunderland P/10 was airborne at dawn next morning but it failed to find the dinghy. Later in the day it was again located by Sunderland E/461 and Liberator C/53. Contact was again lost until next morning when it was again found by Sunderland B/10 in position 48° 22' N., 13° 27' W. From then until a sloop picked up the survivors later in the day the dinghy was kept covered, the sloop eventually being homed on to the dinghy by Sunderland E/228. The rescued airmen were three survivors of a Liberator B/4, U.S., which had been missing since September 8.

On September 18, a message was received that a Halifax on the way to Gibraltar towing a Horsa Glider had been attacked by enemy aircraft and forced to release the glider in position 45° 50' N., 10° 50' W. The Halifax managed to reach Gibraltar. Surface craft in the area were informed and operational aircraft were diverted to search. At 1911 hours a message was received from Sunderland L/10 that they were over a dinghy containing three survivors, in position 45° 50' N., 11° 00' W. An escort vessel raced to the spot and before dark the crew were safely on board, none the worse for their adventure.

Ditching and Rescue in the Bay

First day : July 9

After completing an attack on a U-Boat at 1345 hours on July 9, in position 38° 30' N., 14° 12' W., approximately 250 miles from Lisbon, Catalina F/210 was in a bad state. Both the Navigators' and Engineers' compartments were a mass of flames; the port engine was on fire and coughing badly. The hull was holed in several places and there was a gaping hole in the port leading edge, just inside the pitot head. This was presumably responsible for the A.S.I. not registering, and for the three depth charges on the port side not releasing.

The Captain feathered the port airscrew. The second pilot attacked the fire with extinguishers, but it was too fierce for them to do much good. Futile attempts were made to jettison depth charges. The fire was obviously gaining, as the pilot's cockpit was filling with smoke, so the Captain decided to alight while this was still possible. The wind was blowing at about 20 knots, with a long 6-8 foot swell running, and as the aircraft turned into wind under the influence of the starboard engine, the pilot stalled her in, landing with the floats up. She bounced only once and then settled nicely, with the port wing tip in the water.

Four of the crew were in the bow cockpit, completely cut off by fire from the rest, and the dinghies were in the blister compartment. Petrol was pouring on to the water on the port side, igniting as it went. As this showed signs of spreading to the starboard side, those forward had little alternative but to take to the sea as quickly as possible.

Meanwhile, the rest of the crew had been trying to get out the emergency packs, wireless and other safety equipment which had unfortunately been stowed in the bunk compartment. But they failed as everything forward of the blister compartment was afire. Attempts were made to keep the blisters closed, but this was impossible owing to the heat. As it was dangerous to inflate the dinghies alongside the aircraft, they were pushed out through the blisters and the remainder of the crew followed them. There was a chance of the remaining depth charges exploding.

The Captain, who had jumped into the sea from the bow, came to the surface by the starboard blister beside one of the dinghies and he managed to tell the rest of the crew swimming in his vicinity. After a few minutes struggling they managed to get the dinghy "H" type out of its valise and inflated it by turning the cock on the air bottle. Seven men managed to scramble in without a great deal of trouble. Meanwhile, the Rigger was seen swimming away from the dinghy and a minute or two later he secured the second dinghy and inflated it. This one was an American Air Cruiser, complete with oars with which he rowed back to the first dinghy. Three members of the crew from the first dinghy then transferred, so that there were four in each. Everyone used their shoes to bail until both dinghies were tolerably dry. They were then secured together.

The remains of the aircraft had sunk and only a smoking patch of burning petrol remained. An attempt was now made to see if anything useful could be salvaged from the few bits of wreckage seen floating about 200 yards up wind. But it was impossible to row the Air Cruiser up wind with the other dinghy in tow. Subsequent experience tended to show that there would have been little danger of permanent separation if the Air Cruiser had been detached for a short while, as it drifted down wind very much faster than the "H" type, and would have soon caught up again.

The dinghy contained a pair of topping up bellows, three blocks of Fluorescine and a knife. The Air Cruiser yielded a richer haul: two pairs of oars, a wireless mast, a length of copper wire, a topping-up pump, and a bag containing pliers, clasp knife, helio mirror, and patching outfit. The crew's pockets yielded three 2-ounce bars of chocolate, an orange and a couple of polished metal shaving mirrors.

The Captain realized he was some 250 miles west of the Tagus, but to counteract this depressing fact he also knew that a fairly concentrated air effort was in progress in the area, and further, that he was not far off a shipping route. The wind was North-North East, which was not very helpful, but although they knew that there was a "high" over the Atlantic, there was always hope that it would go round to the west. It was

reckoned that they could last a week without aid, ten days for the fitter ones with a little extra will power. If it rained, this might be prolonged to a fortnight, and if they could catch some fish there was no reason why they should not survive indefinitely.

It was not known whether the sighting report had gone out as the wireless operator on the set at the time had been wounded. He had been helped into the water, complete with Mae West, but neither he nor the Navigator made the dinghy.

Fortunately, none of the remainder were wounded severely, although the Flight Engineer had a tiny sliver of metal in his thigh and the Captain's hands were slightly burned across the knuckles. All except the Captain and Rigger were violently seasick after the first half hour. The sickness did not last and, although it became rougher, everyone was feeling more comfortable by nightfall.

The remainder of the afternoon was spent endeavouring to dry some clothes. Some of the luckier members of the crew had battle dress over their tropical kit. Only one had nothing but shirt, shorts and stockings so he wore a Mae West at night to help keep himself warm. The sun was hot while it was out, but as there was some 6/10 cumulus cloud, this was not as often as could have been wished. However, by the evening everyone was tolerably dry, although the wind at sea does not help in this as much as on land.

All watches had stopped, so all times had to be by estimation. At about 2000 hours a look-out reported an aircraft approaching from the East at about 3,000 ft. It was seen at about 15 miles, heard shortly afterwards, and soon recognized as a Catalina. It crossed the dinghy's track about 5 miles to the North, disappearing behind a cloud-bank to the West. The sun was unfortunately obscured, so that the helio was useless. Although everything available was waved at it, it was obvious early on that the dinghies were not going to be seen. It is an interesting observation that everyone was shouting at the top of his voice. F/210 had not been due back at base till 0200 hours on July 10, so there were bright hopes of a search aircraft on the morrow.

Just before dark, one small square of chocolate was issued to each member of the crew. The rations were kept in the patching outfit waterproof bag and placed in a zip pocket on the side wall of the Air Cruiser. Unfortunately they were leant against from time to time and suffered accordingly.

As darkness fell, the cold began to be felt because of the wind. Shelter for one and a half persons was obtained by rigging up the dinghy valise at the up wind end of the Air Cruiser.

The four in the "H" type dinghy obtained a little shelter by keeping low, but they had to keep to the down wind side of their dinghy in order to keep dry. The sea got up slightly during the night, and the occasional wave crest entered both dinghies. One pair of oars had been set up on the Air Cruiser, and the crew took turns at these, partly for exercise to keep warm, partly as it was found that suitable manipulation kept the Air Cruiser much dryer. As it was down wind of the "H" type and drifting the faster, it tended

to be pulled through rather than over the crest of a breaking wave, and also swung about and took some of the waves slightly sideways. This unpleasant action was considerably modified by rowing up wind, or rather up sea (though in this case they were coincident throughout) and keeping the connection between the dinghies slack throughout.

Second day : July 10

The dawn was very welcome. No one had slept much, and as the sun got up and shed some warmth, the majority dozed off, to be awakened by the sound of an aircraft. It was spotted about 8 miles to the south-east, flying west at about 4,000 ft. and keeping just in and out of the cloud base. It proved to be a Liberator. Helio was of no avail and it disappeared. Some three or four hours later it was again seen approaching from the west, but the cloud had thickened up and the sun was in. One of the Fluorescine blocks was streamed as soon as the Liberator was seen, but although it flew directly overhead, it was up above the clouds and was seen only very intermittently. Later on that day, towards nightfall, what appeared to be a Catalina was seen some 20 miles away to the south-west, but it never came any nearer. Although it was extremely disappointing to see these aircraft and have no means of attracting their attention, it was reassuring to know that air effort was still being laid on in the area. A further issue of chocolate was made towards nightfall.

Third day : July 11

It was very rough during the second night and the dinghies parted. But after much shouting and blowing of whistles, the Air Cruiser was manoeuvred back and secured again.

The whistles were blown at intervals throughout the hours of darkness, in case any ships should happen along. This must have set up some train of wishful thought as, in the half light of early dawn, no less than three imaginary convoys were seen.

Everyone was cold and wet by daylight, but spirits rose with the sun, especially as the wind dropped off slightly. Another attempt to row the dinghies across wind to the east was made, but it had to be abandoned as the Air Cruiser tended to swamp when lying across wind.

Those who were wearing shorts began to suffer from sunburned knees. This made the job of transferring from one dinghy to another a painful business. Otherwise, the general health and spirits were good.

A further Catalina was sighted in the afternoon and a block of Fluorescine was immediately trailed. The aircraft was flying west between 3,000 and 4,000 ft., just in and out of the cloud base. It was in sight some little while and flew past some 7 miles to the northward. Although there was a vivid green streak stretching back some 300 yards from the dinghy, it failed to attract attention. Once again the sun was in so that the helio was useless. From the experience with the Liberator on the previous day, and from a knowledge of the usual patrols, it was assumed that the same aircraft would pass somewhere near the dinghy on its return journey, so the

Fluorescine block was left in the water for short periods at estimated ten-minute intervals. The dinghies were still drifting under the influence of a wind of some 25 knots from the N.N.E. The aircraft returned some two hours later, but farther to the northward, making even more use of cloud cover and heading eastward. It was not seen again.

Over 48 hours had passed since any member of the crew had had anything to drink, but strangely enough, nobody felt thirsty in the normal way. Mouths were very dry and legs began to feel uncomfortable. But throats were not parched as they would be after a hot and dusty hill climb. It was decided, however, to divide the orange for the evening meal. Nearly all the juice had already escaped and there was a peculiar smell coming from it; it was cut into eight pieces with some ease by the Captain. One of the crew was so unaffected by his experiences that he threw away the peel; the remainder of the crew had eaten theirs.

During the third night the wind dropped very slightly, and the Captain estimated that if it held there was hope of landing at Madeira. But it was a long way to a small island.

As something had to be done about provisions, an effort was made to catch some fish; small fish resembling sardines could be plainly seen swimming along under the dinghy. A line, complete with hook and spinner, was fashioned out of the stay lines of the wireless mast. A bent pin with a piece of yellow fabric was tried next, but without success. Other efforts were equally unsuccessful. The only other attempt to stock the larder also ended ignominiously. Just as it was getting dark on the third evening, a sea bird of unknown species swooped low over the dinghies two or three times. Attempts to interrupt its flight with an oar failed.

Fourth day : July 12

The wind had dropped sufficiently to enable the Air Cruiser to be rowed across wind to the eastward. Trailing the Fluorescine block revealed that progress was actually being made in the right direction, so everyone was heartened. Each man did approximately one hour at the oars and then rested. There was no apparent serious diminution of strength, though one or two individuals were more listless than the others and had to be encouraged to take their turn.

About six in the evening the man at the oars let out a startled exclamation: "There's a ship!" The dinghy went down into a trough, and nobody else saw it. When the next sea lifted the dinghy, all saw two ships, an escort vessel and a merchant vessel, on a parallel course some seven miles away and already nearly level.

The helio and shaving mirrors were brought into play immediately. As the ships were fortunately between the sun and the dinghies, it was comparatively easy to get the sight line by getting the sun's reflection on the side of the dinghy and then elevating the mirror to the horizon. This attracted the attention of the escort vessel, although a 63 year old Quartermaster on the Merchant vessel, S.S. *Port Fairy*, had already seen the dinghies with his naked eye. The continued provision of helios in dinghies is

essential. Meanwhile, the Air Cruiser had been cut adrift with instructions to make full speed to intercept. No Oxford rowing blue ever made a greater effort than the rigger, who was at the oars. Everything possible was being waved and whistles blown. The suspense was very difficult to bear until the ships held their course. When there was no doubt that the party had been seen, the reaction was equally strong.

H.M. Frigate *Swale* halted 100 yards away and the rigger calmly rowed alongside the

boarding net. Everyone succeeded in climbing unaided to the deck where they were very surprised to find that they couldn't walk. After effects were not severe, apart from considerable breathlessness with any exertion for the first 24 hours, rashes due to sitting in damp clothes, sunburn, and the individual injuries sustained in the action.

Burns proved to be worsened only because of sunburn which followed. The sea water and Fluorescine seemed to have kept them clean.

Photographic Reconnaissance

During September photographic reconnaissance from this country reached a new peak of activity and went further afield than in any previous month. The area under investigation extended from Narvik to the Spanish border and from Brest to Budapest and Belgrade, the latter two being covered on shuttle flights to Sicily.

Bomb damage assessment flights included two successful sorties to Antheor Viaduct on the Riviera, one of which is described in detail below, and three sorties to Modane marshalling yards in the Alps. On one of the unsuccessful sorties to Modane the pilot descended through cloud to 3,000 ft. in the valley but in spite of 30 minutes' search did not manage to get closer than about 20 miles from the target. Mannheim and Berlin proved difficult to photograph the day after the attacks because of heavy smoke from fires. Satisfactory cover was not obtained until the following day in the case of Mannheim and several days later in the case of Berlin after many attempts had failed owing to cloud over the target.

Night photography was also very successful during the month, and among other targets produced excellent photographs of Bordeaux. This opens up great possibilities of watching blockade runners during the winter months.

In addition to these normal activities a great number of sorties covering Channel ports, airfields and marshalling yards were flown in support of the combined exercise in the early part of the month.

An idea of the scope of photographic reconnaissance can be gained from the fact that some 50,000 exposures were made covering well over 1,000 individual targets.

540 Squadron. Target: ANTHEOR VIADUCT (10 miles S.W. of Cannes)

On the night of September 16/17 aircraft of Bomber Command attacked the railway viaduct at Antheor which carries a double track of the Marseille-Genoa railway. The viaduct is some 540 ft. long and 85 ft. high, and consists of nine arches each having a span of 29 ft. The importance of the viaduct as a target lies in the fact that it is on a section of the Riviera route for which there is no alternative route, and over which it is estimated that 15,000 tons of military supplies can enter Italy each day.

On September 18 high level vertical photographs revealed three near misses but no apparent damage to the viaduct. It was, therefore, decided that low oblique photographs were the only means of determining accurately whether the structure had been damaged.

The following is the story of the Pilot and Observer who set out to take these photographs:—

We were airborne at base on the 20th at 1200 hours and set course for the target, climbing through the rain into 10/10th cloud at 18,000 ft. At 1220 we crossed the English coast at 16,000 ft. with 9/10th medium cloud below and 5/10th cirro stratus above at 24,000 ft. We were unable to pinpoint ourselves on the French coast but we levelled out at 26,000 ft. above the cirro stratus making large condensation trails. At 1325 the cloud began to break and through 8/10th fracto-cumulus, we pinpointed ourselves over Chalons-sur-Saone. At 1330 hours we altered course for the target. Away to port could be seen Mont Blanc towering above the other Alpine peaks and to the south the blue haze of the Mediterranean. We arrived over the target at 1400 hours and did one vertical photographic run at 24,000 ft. before descending in a turn to port. We passed over the town of Cannes and disappeared behind the hills to approach the viaduct from the west around the shoulder of the cape. We flew across the bay at 1,000 ft. for our first photographic run and then turning steeply to port we photographed the target from the inland side at about 800 ft. A group of workmen were clearly visible around the bomb crater in the road immediately below the viaduct but the viaduct itself seemed intact. Our third and final run was across the bay about 800 yards away at 1,800 ft. By this time they had realised we were hostile and we could see tracer fire immediately below the aircraft's nose as we disappeared behind Cape Rouse and climbed away to the north over the Maritime Alps. Because we had seen enemy aircraft on our descent flying near Frejus, we had to keep a keen look-out whilst climbing as we were well below our best operational height if intercepted.

After photographing some pinpoints to the south of Geneva from 28,000 ft., we set course at 1515 hours from Chalons-sur-Saone to D.R. position 49N. 01E. At 1520 hours we were over 10/10ths medium cloud and had climbed to 33,000 ft. making large trails. We altered course for base on E.T.A. at D.R. position 49N., 01E., and 17 minutes before E.T.A. base we decided to descend through the cloud before reaching the English coast. We broke medium cloud at 13,000 ft., and through 8/10ths low cloud we pinpointed ourselves over the Seine east of Le Havre, so at 1626 hours we set course 330° for base at 11,000 ft. Because of our fast descent our main fuel tank failed to function correctly and our engines kept cutting across the Channel. We were given a QDM of 331 at 1645 hours and through a break we could see Selsey Bill. We landed at base at 1706 hours.



ANTHEOR VIADUCT: A high-level photograph showing bomb craters near the target. (540 Squadron.)
(See letterpress, page 20.)



ANTHEOR VIADUCT: Photographed by 540 Squadron from 1,800 ft. (See letterpress page 20.)



HANOVER: Photographed by 542 Squadron on September 23, 1943. Fires may be seen burning at the Wollwascherei, the second biggest wool combing plant in Germany. The photograph, referred to in the letterpress on page 22, was taken after the attack made by Bomber Command on the night of September 22/23.

540 Squadron. Targets: MUNICH and STUTTGART

On September 7 we were briefed to photograph Munich and Stuttgart. Munich had been heavily bombed the night before, and we were to make three runs over the city to cover the damage. The weather was not promising, but Bomber Command were anxious that the job should be done immediately, and we were as anxious to satisfy them. In consultation with the Met. forecaster, we aimed at being over Munich shortly before 1730 which was last photographic light.

We were airborne at 1508 in a Mosquito and set course for Lake Konstanz. With a last sight of West London we entered 10/10ths cloud at 18,000 ft. and continued climbing to 33,000 ft. still in cloud the top of which appeared to be about 34,000 ft. At 20,000 ft the petrol feed from outer tanks began to falter and consequently the engines were cutting. Furthermore, the feed from the jettison wing tanks was very slow and at the time of going over to main tanks there must have been about 35 to 40 gallons in each jettison tank.

The first sight of ground over the continent was at Verdun where the cloud began to break up. At Metz and beyond there was "10/10ths blue sky" and I flew at 26,000 ft. to avoid making trails. From here on to the Northern Alps trails pressed down steadily to 22,000 ft., an uncomfortable height, but I was hoping and expecting it to lift considerably before the target area. There was some promise of this, for at Lake Konstanz we found it to be 23,000 ft. Course was set for Munich at 1653, but it became apparent that the area ahead was at least partially covered by high cloud, while the sun slanting on ground haze and traces of low cloud made it impossible to verify any pinpoints other than water. It was depressing to see, as I pin-pointed Ammer See Lake, that Munich must be covered by a plate-like layer of cirro-stratus at about 21,000 ft. To avoid this I turned east and began a wide circle to the northward. The cloud formations were most indefinite and irregular. At heights varying from low and medium up to 25,000 ft. there were strips and layers of fairly light cloud, obviously increasing to the eastward. Worse than this, we again began making trails which pressed us down to 21,500 ft. Seeing Ismaning Marsh, which lies north-west of the town, I decided to make at least one run and turned on to 225°, descending to 20,500 immediately under the cirro-stratus with cameras on. Photographic conditions were pretty poor, as results show.

In approaching and skirting Munich a most careful search had been made for signs of enemy aircraft, but none had been seen. However, when we were in the middle of the run over the town I saw through a break in the cloud directly overhead, three freshly made trails at 24,000 ft., which were left by three enemy aircraft in formation on a course parallel or reciprocal to our own. At the same time that I told the Observer, who was kneeling in the nose of the aircraft; he complained of flak bursting slightly below. Recalling him to his seat I turned sharply to the west, opened up the engine and climbed into the layer of cloud.

I realised that if we were sighted by F.W.190s at this height we would be well and truly caught with our pants down, and if a straight race was

to be run we needed a height of at least 26,000 ft. For extra speed it was advisable to jettison the drop tanks, but these contained 70-80 gallons which might be most valuable if the engines were to be belted for any length of time. So it was decided not to jettison.

On emerging from cloud we saw a further layer of cirro-stratus, rather thicker and with top perhaps at 26,000 ft. Two trails circled this twice, and the offending aircraft were seen as specks about 8-10 miles on the port, height 28,000 ft. I opened revs. fully and pushed the throttles through the gate. We were now making trails steadily at 22,000 ft. and I aimed at using all possible cloud cover while climbing slowly (300 ft. to 500 ft. a minute) so as to get high speed and avoid over-heating.

We lost sight of the two aircraft owing to the patches of cirrus which I used as much as possible. When at 22,500 ft., however, the Observer pointed out a fighter about 4 miles starboard and astern on a parallel course and diving slightly at an incredible speed. We were not happy, but he could not have seen us yet as he was not converging. I turned about 30° port directly into the sun which was pretty blinding and made instrument reading difficult unless I buried my head in the cockpit for half a minute or so. The fighter saw us when he was almost dead astern and "coming up like hell," according to the Observer. There was a distinctly cold draught in the cockpit and both Observer and I experienced slight stomach trouble.

It was notable that whereas our aircraft had behaved rather temperamentally on the outward journey, in the matter of petrol feed and throttles creeping back, she was now running more smoothly than any other machine I have known.

The Observer concentrated on looking for "the other" which we were expecting to show up. Fortunately he did not. At 25,000 ft. the F.W.190 was slightly starboard of astern. He edged over to port—the Pilot's side—where apparently they prefer to attack. Each time he crossed the tail I was able to see him fairly easily by pressing my head into the blister, and each time I turned slightly to starboard keeping him astern. He crept up to 1,000 yards and might have tried a long shot; instead he swung across to port and climbed slightly as if preparing to attack, but his excess speed was gone. In fact, he gave us a further lead, for by turning 40° starboard I had him astern at about 1,500 yards and on reaching 26,500 ft. I put the nose down to 26,000 ft. and held that height on a course of 320°. He never recovered the lost ground.

It had been possible to see that he was all-black, but with the sun shining on his far side no markings were visible. It is difficult to see why he threw away his initial advantage by diving quickly. Also in the latter part of the chase he seemed unnecessarily anxious (a) to hide behind the tail unit and (b) to attack on the port side. He must have under-estimated the speed of our aircraft. We drew away from him slowly, correcting course gradually to 280°. About 15 miles east of Mannheim (later identified) he gave up and disappeared. I reduced revs. and "ungated" the throttle after 22 or 23 minutes of excellent performance at full power. Two minutes later

I noted a town, unfortunately not Stuttgart, which we thought to be Karlsruhe. It was Mannheim, still smouldering from the raid of two nights before. Fortunately we were not making trails at 26,000 ft. in this area, so we deviated and began a run with cameras, heading 300°. The quantity of flak which appeared was 300 yards away and somewhat low. The bulk was behind.

As we were still feeling rather fed up and far from home, we set course for bacon and egg and chips. Five miles west of Mannheim there was some more flak. Again, it was behind and low, probably thanks to German lack of imagination.

Shortly afterwards, west of Metz, we climbed in thickening cloud to 28,500 ft. from which we emerged at 1900, and at 1902 saw the Thames Estuary and Kent coast. The "White Cliffs" were more beautiful in shadow and haze than they have ever been in sunshine. The rest of the trip was uneventful. Landed base 1733, with apologies for Bomber Command.

542 Squadron. Target: HANOVER

Our Flight was up early on the morning of September 23 to get a sortie off to Hanover which our Bombers had attacked the night before. Airborne at sunrise, I climbed over misty England en route to the target. Over the North Sea the weather was clear except for considerable cirrus above 31,000 ft. Holland and Germany, looking very peaceful at that fresh hour, were foggy in places; yet I could see the cities, rivers and fields stretched below in the early sunlight, finally merging into an indefinite haze.

As I flew towards the target I saw fires burning to the south of it while the smoke was blowing to the north-east. The great city lying beneath after a headaching night was soon on my camera film. When the task was finished, I headed homeward, my engine working normally.

East of the Zuider Zee when the aircraft was running on the auxiliary petrol tanks, the feed suddenly stopped and the engine coughed, spluttered once or twice and then stopped altogether. Switching on the main tanks had no effect and the aircraft lost height rapidly. Over East Holland with no motor was a decidedly unhealthy situation. At 25,000 ft. I began pumping the Ki-gas primer in an attempt to make the engine pick up. A few minutes passed before the primer seemed to help the engine give occasional bursts of power. Reducing the speed to gliding I crossed over the Dutch coast at 16,000 ft. As soon as I was clear of Holland I called on the radio for the Air-Sea Rescue. Determined to get within reach of these people, I staggered the aircraft through the air by constantly pumping the primer with legs, arms and blistered hands and in this way reduced the rate of descent to 500 ft. every four minutes. At 11,000 ft. I managed to keep the altitude reasonably constant, forcing my way across the North Sea.

I was a little more relieved to see two friendly fighters which Air-Sea Rescue had sent out to escort me in. The situation was slowly improving. Ten miles from England my engine suddenly burst into action and we dived in formation towards the coast.

Seventy-three hours in the Pacific

Some suggestions from a Pilot

In Swimming with a life-jacket on, the breast stroke with a scissor kick is the easiest and most effective. During rough periods the swimmer ought to keep paddling in order to hold his own against any current. It is very important for the swimmer to take cognizance of the wind, currents and progress he is making. The sun and stars must be used as auxiliary aids in addition to any land falls. The swimmer should keep on as much of his clothing as is possible, as it is believed that sharks are more apt to attack a naked body. Moreover, the clothing will keep the swimmer warm at night, while without clothing he is apt to be very uncomfortable in the water after sundown. Pilots should carry on their trouser belt a knife and canteen, and in the neck of the rubber life preserver, a small pencil flashlight. Whenever possible, shoes should be kept on as protection for feet when rescued, or when land is reached.

Air Operations Memorandum 1-43, January 7, 1943.

SPECIALIST AND GENERAL ARTICLES

Anti-Fifth Column Training in the Australian Army

This article is reprinted from "Military Reports of the United Nations," a publication of the Military Intelligence Service, War Department.

In order to test the effectiveness of troop training in security against espionage and fifth column activity, the Australian First Army carried out an interesting and revealing experiment during recent five-day manoeuvres in Australia. The results clearly indicate the value of periodic security training of a practical nature.

The manoeuvres were carried out by a large body of seasoned troops, who had had a long period of camp life following their return from the Middle East. Before the manoeuvres the troops were warned that fifth columnists and parachutists were active within their area. Normal security measures, including the issue of code words and passwords, were taken.

The six Intelligence personnel who acted the part of fifth columnists laid their plans with care. However, they did not have at their disposal methods of disguise and deceit that would be available to well organized enemy agents. They had to improvise, crudely at times, and limitations were placed by the directing staff upon the extent of the disruption that they could cause. Roles allotted to the Intelligence personnel (for whom a new word "Fiffo" was quickly coined by the troops) were an "M.P." who later metamorphosed into a "War Correspondent," a "Chaplain," a "General Staff Major," a "Dispatch Rider" and two "Civilians."

On the night before the first day of the manoeuvres, the bogus "M.P." went into action on an important cross-road as the motor column was moving up to the area. He waved the column off the main road on to a side road. The column stopped, and the senior officer leading it asked why the vehicles were being diverted. The "M.P." told him that, half an hour before, an officer in a staff car had stopped him at that junction and ordered him to wait there until the column came along, and then to divert it down the side road; he had not been told, however, the reason why it was to be diverted. This story was accepted and the "M.P." was not asked to identify himself. After the officer thanked the "M.P." and asked him to wait and direct the whole of the convoy, the head of the column moved down the wrong road for two miles before it was stopped and redirected along the right route.

Next day this "M.P." borrowed an officer's cap, put on a dark service shirt, and fastened on his shoulders epaulette tabs of green velvet on which "Accredited War Correspondent" was printed by hand in white ink. Unchallenged, he rode an Army motor vehicle right up to forward positions. On the way, he was hailed with requests from the troops to put their names in the paper and take pictures of them with the large camera that he was ostentatiously carrying. He also had a simple form of Army headquarters pass which he had filled in and signed himself; it bore no rubber stamp.

While he was chatting with the forward troops and taking a picture of a new type of vehicle,

a senior officer came up. This officer was the same one whom the "War Correspondent," while posing as an "M.P.," had misdirected on the previous night. The "War Correspondent" congratulated the officer on the fine showing his troops were making. Without asking the "War Correspondent" to identify himself, the officer then invited him to make a round of the forward positions. On the way the officer pointed out a regimental headquarters and a signal centre, and explained the general scheme of the manoeuvres. At one subordinate headquarters, a captain asked the "War Correspondent" whether he had a pass. The reply was "Yes! I have checked in with . . .," indicating the senior officer. The captain asked no further questions. Subsequently, the senior officer detailed another captain to look after the "War Correspondent."

Later, another officer took the "War Correspondent" to the unit's office, where he was shown the message files and a marked map, and was given the unit's war diaries to read. While he was reading them, another officer came in and said, "Have you sent out the code word to-night?" The first officer replied "No! I'd better do that, its . . . isn't it?"—mentioning the code word. By then, the "War Correspondent" had all the information that an enemy could possibly require, and he left the headquarters.

He returned to the "fifth column" bivouac in an empty house next to the ammunition dump just as a number of soldiers from the ammunition point were about to raid the house, because they rightly suspected that fifth columnists were centred there. They were discussing their plans for the raid within the hearing of those inside. The "War Correspondent" asked them what was in the wind, and when he was told, he volunteered to go in first and then let them know whether their suspicions were correct or not. After a few minutes inside the house, he came back to the soldiers and said, "They are not fifth columnists, they are men from an advanced survey unit." The soldiers accepted this story and went away.

On the third day of the manoeuvres, this "War Correspondent" became a driver, changed his shirt, put on dark glasses, and mixed and talked with scores of men whom he had "interviewed" the previous day. He was not recognized.

The "Chaplain's" disguise was almost as thin. He merely put on a captain's "pips" and outlined his shoulder straps with black tape. He wore the insignia of combat troops in his hat instead of a Maltese cross (a distinguishing insignia worn only by chaplains); and he carried no paybook or identification except a forged letter which contained lofty religious sentiments and was signed by the "Chaplain-in-Chief." He, too, was riding an Army motor cycle and made his first contact with troops at a broken-down communications truck, which the crew were profanely trying to repair. Full of apologies for using bad language within the hearing of a

padre, "they directed him to forward positions. He stopped at many groups of men, chatting on a hail-fellow-well-met basis with them all, and without being questioned he was directed in turn to anti-aircraft positions, the bivouac area for the night, and supply and ammunition points.

At the unit headquarters he was well received. The question of a sermon for the morning was mentioned to him; shortly afterward, however, the real chaplain arrived. Feeling himself unequal to a theological test, the bogus "Chaplain" brought some suspicion on himself by the abruptness with which he made a getaway. As he was leaving he was stopped by a sentry who asked him whether he was a fifth columnist. When the "Chaplain" pointed out his black epaulettes, the sentry shamefacedly apologized, and said, "You would not be one of them. It would be pretty stiff if you couldn't trust a padre."

On the second day the "Major" had astounding success as a spy. He was in a staff car and correctly dressed in all details down to a "G" (General Staff) armband and a horsehair fly whisk (an informal item of personal equipment adopted in the Middle East—similar to a swagger stick). He had secured a correct Army identification pass form which he had filled in himself and signed with the name of a non-existent major-general; the signature was quite legible. He found that his job was almost too easy and that his main difficulty was to induce awe-struck soldiers to talk freely in the presence of the armband. In many places, every question he asked was answered without hesitation. He questioned an N.C.O. in an ammunition dump as to how the N.C.O. would distinguish any false orders that might be given him by fifth columnists suspected to be in the vicinity. The N.C.O. stated that he had written orders containing the code word for the day, and unless messages or orders contained that code word, they were not to be acted upon. Upon demand, he showed the orders setting forth the code word to the "Major." The N.C.O. then supplied full details of locations of all other ammunition dumps, gun positions, and forward positions, as well as other information.

Afterwards the "Major" went for a long tour of the forward areas in a utility truck. He met many officers and men, none of whom asked him for a pass, what he was doing at the manoeuvres, or what his appointment was at Army headquarters, or made inquiry about other personalities at Army headquarters. In the course of the afternoon, the "Major" made notes of the number of vehicles engaged in the manoeuvres; the names of the units; the positions of forward troops, guns, anti-aircraft defences, and O.P.s; the types of shells used; and the projected moves and location of ammunition reserves. Armed with this information, he and the others, using the code word, went into the main ammunition dump that night and technically blew it up.

The following day he again drove right through the forward areas, where the only conversation between him and the sentries were warnings by the latter that his truck speed was not to exceed five miles per hour.

It was not until the third day that he was asked to produce his pass. By this time the

misdirection of the column, the blowing up of the ammunition dump, and the theoretical losses inflicted on the troops as the result of information gathered by the "fifth columnists" on the first two days of the manoeuvres were known to every officer and man. All were keenly on the alert, but on no occasion when the bogus "Major's" pass was examined did anyone notice that it bore a forged signature and was wrongly stamped.

The "Dispatch Rider," who was without the usual armbands worn by messengers and was differentiated from other soldiers only by a crash helmet, went at will everywhere in the forward areas on his motor cycle. He was completely unchallenged for the first two days.

On the third day, when all sentries had been instructed to keep a watch for a "phony" padre and dispatch rider, the "Dispatch Rider" was at first unable to enter the forward areas. Later in the day he was stopped by a captain whose motor cycle had broken down. After he had temporarily repaired the motor cycle, he volunteered to go with the captain to a L.A.D. (light aid detachment), and rode alongside him past all the sentries. The sentries challenged the captain and scrutinized his pass very carefully, but not once did they ask the "Dispatch Rider" to prove his identity also. They took it for granted that because the officer's "bona fides" were beyond question, his companion's "bona fides" were also genuine. In that manner the "Dispatch Rider" got to a L.A.D., had lunch with the other ranks attached to it, plied them with questions about troop dispositions, and got as far as regimental headquarters before suspicion was aroused. He left for the "Fiffo" rendezvous before he could be checked.

The first "Civilian" wore blue trousers and shirt, and rode a bicycle for 22 miles through forward areas on the second day. This was his initial appearance in the area. He spoke to troops who discussed details of their weapons and equipment with absolute freedom. He did not once offer any explanations as to who he was or what he was doing, and the only comments made by troops and sentries were slighting references regarding husky civilians like him who would look better in uniform. On the following day, while still pushing his bicycle around forward positions in remote areas where civilians would not normally be expected, was aroused, he was excluded by sentries, and his value as a "spy" ceased.

The second "Civilian" was held in reserve until the fourth day when security was so good that all others except the "Major" were unable to penetrate the lines. This "Civilian" found a horse tied to a fence near a forward position, and borrowed it from its farmer owner, together with a pair of blue dungaree trousers and a battered straw hat. He mounted the animal removing his false teeth, and ambled up to a sentry, with whom he started to talk about crops and pigs. His imitation of a mumbling yokel was apparently so convincing that after the first few remarks the sentry said to him, "If you want to go on down the road you can come through. You don't look like one of those fifth columnists." On the way through the area, he was the butt of many jokes, but in the course of backchat with the troops he gleaned a lot of

If plate "A" is positively charged, the beam will be deflected upward and, conversely, if plate "B" is positively charged, the beam will be deflected downward. Similarly the beam can be deflected sideways by varying the charges on plates "C" and "D". In fact, by various combinations of charges on the plates, we can make the beam move in any way we wish.

Unfortunately the beam is invisible, but if it is directed on to a layer of fluorescent material, the material will glow in the form of a spot wherever the beam of electrons strikes it. Obviously the best place for this screen is in the Cathode Ray Tube itself.

It only remains to provide a means of controlling the intensity (or brightness) of the beam. Variations in the current in the cathode or of the voltage on the anode will obviously have an effect on the density of electrons in the beam, but these methods are not sufficiently precise in practice and large changes in current or voltage are necessary to produce appreciable variations in brightness. A simple form of control is provided by interposing in the electron stream a "stop-cock" in the form of a wire mesh or grid. Variations of voltage on this grid will either repel or assist the electrons depending upon whether the voltage is negative or positive. Quite small variations of grid voltage have a large effect on the density of the beam. See Fig 5.

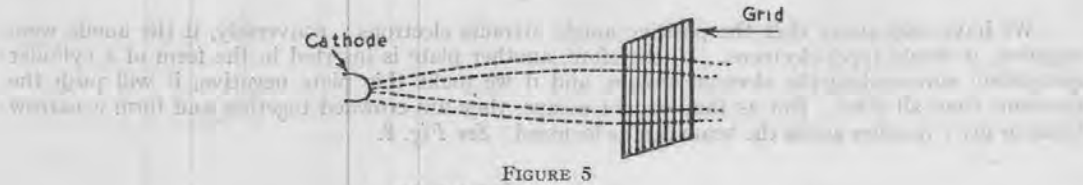


FIGURE 5

We now have all the essentials for a C.R.T. which can be shown diagrammatically as in Figure 6.

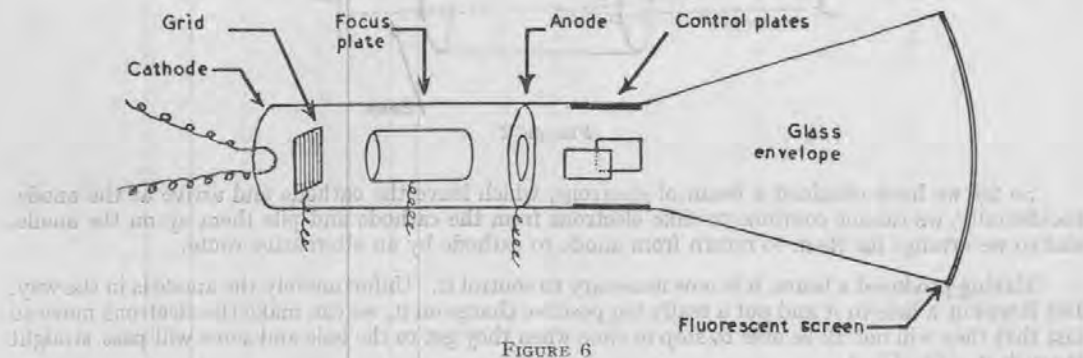


FIGURE 6

The electron beam is practically without inertia and responds instantaneously to changes of voltage on the "X" and "Y" plates even though these changes may occur at the speed of light. This property is invaluable in Radar devices, which depend on precise measurement of the distances travelled by radio waves and which, in practice, involve time intervals of the order of a few millionths of a second.

The next article will deal with Radar principles and will describe how the Cathode Ray Tube is used in Radar search equipment.

Leaves from a Navigator's Log Book—X

What is navigation? There certainly seems to be some doubt in the highest quarters, judging by the opening gambit in each volume of the official manual: In one it is said to be an Art, in the other a science. Is it Bird, or Beast, or a Crawling Thing? (*Track crawling?*—Ed.). It certainly isn't Fresh Red Herring—it so often stinks! Elsewhere we hear navigation described as the "toil and tears" that assure the attainment of the AIM. Whatever it is, you can depend on its being occasionally misunderstood by High and Low alike and often horribly mutilated by some of its devotees.

One or two gems have cropped up in the past few weeks which give one food for thought. There was the case of a couple of aircraft—a Sunderland and a Liberator—which both within

an hour sighted a dinghy in the outer Bay of Biscay. The positions disagreed by a mere 85 n. miles and for some time it was hoped that the reports concerned two different dinghies. No such luck! In answer to a query from Group, the Liberator admitted the presence of the Sunderland. It was an incidental that the report was sent in the wrong code.

Another display of note was given by a Halifax, which, weighed down as it was by a D.R. compass, S.E. aids of all description, and what-you-will, made a neat landfall on the Brest peninsula and tried to coast-crawl up to base. Two wireless operators, who were silent, albeit later rather unwilling, spectators, thought they didn't recognise the scenery; but who were they to complain? They had a Navigator on board, and he and the

that the information was given willingly or even maliciously; quite possibly it was obtained by indirect methods such as the use of microphones or "stooges"; but the fact remains that although all operational crews have been warned of such methods, the warning has been disregarded. The following examples from the summary show the result.

A Stirling was shot down in February, 1943, and the crew baled out safely. The aircraft was completely destroyed, and yet Dulag Luft were given an exact description of the target at Hamburg, bomb-load (20 containers of incendiaries), altitude flown (20,000 ft.), and found out that the aircraft had no detection apparatus for night fighters.

A Wellington crew shot down on the same night disclosed that the target was the dock installation in Hamburg, and gave the outward course as slightly north of Amsterdam, north of Osnabruck, south of Bremen and the north of Hanover, turning in to the target. The return course was to be the same. The height of the attack was also given, as well as the exact bomb load.

A third crew, from a Halifax, on the same night confirmed other prisoners' statements about the target, and gave the time of take-off and a detailed description of the bomb-load. One of the prisoners said that the course prescribed at the briefing and the method of attack were new to him. To avoid the mouth of the Elbe, which had powerful Flak defences, and the coastal area between Bremen and Hamburg, the aircraft was to fly round this area and attack from the south. Information was also given that Pathfinders were to be employed, together with an exact description of the flares to be dropped near Hoya to mark the point at which the bombers were to turn north-east for the target. Then followed a description of British Pathfinder procedure from which not a single detail was missing.

It might be pointed out that this summary referred to one night's operations only, and that

all the aircraft mentioned above were completely destroyed.

Also included in this document were complete technical details of several American and British aircraft. The names of the informants were given.

It is not suggested that this information was given voluntarily, but the thing that matters is that it was given. The tragedy is that it could, and should, have been withheld. The intelligence of Royal Air Force crews is high, but woe betide the man who will pit his wits against those of a skilled interrogator. These men have spent four years learning the job, and are highly proficient in its various tricks.

To give your name, rank and number, AND NOTHING ELSE, is still the one and only maxim for air crews. It should, however, be remembered that much depends upon a P/W's behaviour and attitude under interrogation. In the first place he should be dignified, for he represents the finest air force the world has yet seen. His discipline should be beyond reproach and, although it may hurt like hell, the entry of a German officer is a signal for him to stand up. Moreover an officer of senior rank is entitled to a salute.

The P/W should be polite, with a pleasant smile, and not be arrogant or facetious. Once try to be funny, or to pull a fast one over the Interrogation Officers, and they will take considerable umbrage, and your troubles will really begin. If you find yourself being kept at Dulag Luft longer than a few days, ask yourself "WHY?" There will be a reason—you are not kept there for nothing.

If you rightly observe all the rules and appreciate the danger of microphones and "stooges"; and if you carefully choose every word, the Interrogation Officers will soon give you up as a bad job and send you off to an ordinary P/W camp. Your few days at Dulag Luft will be trying, but you will get a lot of satisfaction, from having resisted "German hospitality."

Signal Service

In this issue we publish, under the heading "Signal Service," the second of a series of articles on Signals matters written with the object of explaining in non-technical terms the principles of operation of various kinds of Signals equipment. Other articles will deal with Signals organization and the operational and tactical application of Signals devices.

All who are concerned with the operation of aircraft must know something of the principles of flight and of the internal combustion engine. But the principles of radio, which plays such a large part in Coastal Command operations, are something of a closed book to the average pilot or staff officer. There is no inherent reason for this. We feel that a more general knowledge of what is behind the several hundred pounds weight of radio equipment with which our aircraft are fitted, and of the principles of Signals organization, will result in increased operational efficiency.

Cathode Ray Tube

In our article on "GEE" last month we referred to the use of the Cathode Ray oscilloscope for measuring small time intervals. This device is in common use in Radar equipment and without a knowledge of the principles on which it works it is impossible to understand many of our Radar gadgets.

The heart of the oscilloscope is the Cathode Ray Tube, C.R.T. for short. This is a large glass bulb from which the air has been evacuated and in which various wires and plates of metal are fixed. The purpose of these wires and plates (electrodes) is to produce and control a beam of electrons.

Any metal which is heated emits electrons, which are small negative charges of electricity. In the normal way the electrons do not get very far and are re-absorbed by the metal. We can, however, by a combination of brute force and gentle persuasion collect them, draw them out, twist them around and make them serve our own ends.

The first essential then, is heated metal. For this purpose a piece of wire (cathode) is heated by passing an electric current through it, as in an ordinary electric light bulb. We put the cathode inside a tube, clear the way for the electrons by removing the air, and heat the cathode; the electrons will then shoot off in all directions. If a plate of metal (anode) is put in the tube and made positive with reference to the filament, then some of the electrons will be attracted to the anode and, so long as the anode remains positive, there will be a steady flow of electrons from cathode to anode. See Fig. 1.

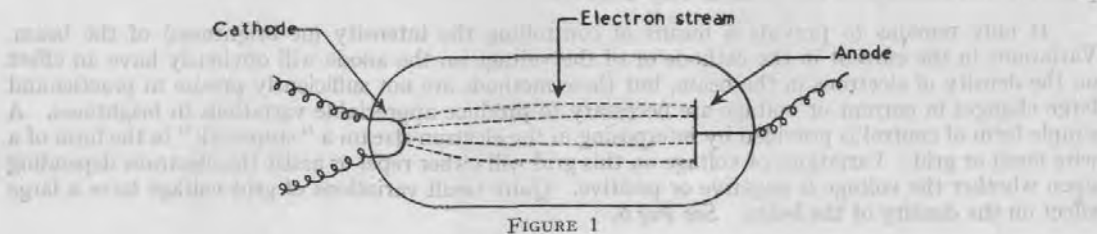


FIGURE 1

We have said above that the positive anode attracts electrons; conversely, if the anode were negative, it would repel electrons. If, therefore, another plate is inserted in the form of a cylinder completely surrounding the electron stream, and if we make this plate negative, it will push the electrons from all sides. But as they cannot escape, they are crowded together and form a narrow beam or ray; in other words the beam can be focussed. See Fig. 2.

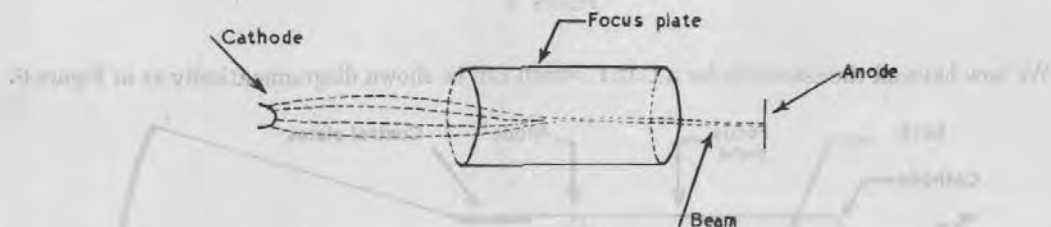


FIGURE 2

So far we have obtained a beam of electrons, which leave the cathode and arrive at the anode. Incidentally, we cannot continue to take electrons from the cathode and pile them up on the anode, and so we arrange for them to return from anode to cathode by an alternative route.

Having produced a beam, it is now necessary to control it. Unfortunately the anode is in the way. But if we cut a hole in it and put a really big positive charge on it, we can make the electrons move so fast that they will not all be able to stop in time when they get to the hole and some will pass straight through it. See Fig 3.

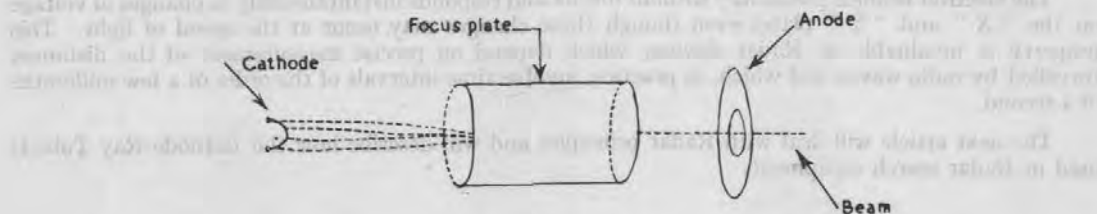


FIGURE 3

We now have a length of beam which we can get at fairly easily. From the foregoing we know that the beam is attracted by a positive charge and repelled by a negative charge. Therefore, by applying positive or negative charges to control plates on either side of, and above and below the beam, we can move it upwards, downwards or sideways. See Fig. 4.

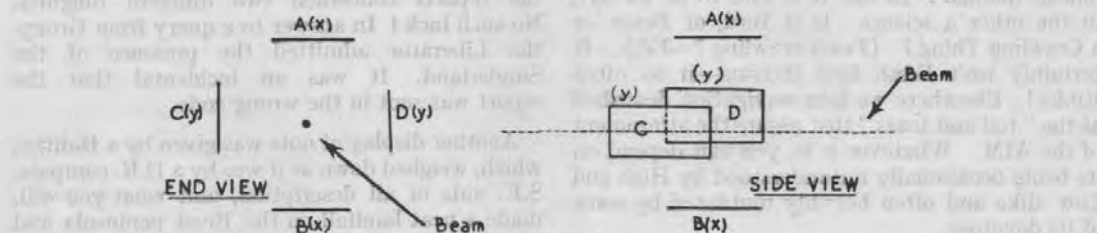


FIGURE 4

The side plates are called the "Y" plates and the top and bottom plates the "X" plates. It is well to make a note of these as we will be referring to them in later articles.

useful information. While in the midst of a circle of troops with whom he was talking about some bad crops, a warrant officer came up to the group and said to the men, "There are fifth columnists about here, lads, so keep a sharp look-out for them, especially a phony padre on a motor-bike." Before the "Civilian" left the area, he stopped at regimental headquarters and chatted with the troops there for several minutes.

On the fourth and fifth days the troops had become so security minded through the activities of the "fifth columnists" that security measures swung to the opposite extreme. Bona fide dispatch riders, car drivers and other personnel on duty who had lost their passes or were not carrying paybooks found it almost impossible to move about the area. Two drivers were stranded because suspicious personnel at a D.D. (detail issue depot) refused to issue gasoline to them.

Lessons from the Exercise

A report on the exercise issued by the Australian First Army emphasizes the following security lessons:—

- (1) The astounding ease with which "fifth columnists" penetrated the lines on very flimsy excuses and gathered vital information from well disciplined and well led troops revealed a serious deficiency in security instruction.
- (2) The revolutionary change in the attitude of the troops toward security after they had been deceived a few times by fifth columnists indicates that security exercises like this should be included in all unit manoeuvres.

German Hospitality

In the years before the war Germany was quickly making for herself a great reputation as a country anxious to extend a warm welcome and hospitality to all comers. Although this movement was undoubtedly sponsored by the propaganda authorities, it was to some extent spontaneous and sincere. During this war the hospitable strain in the German character has been developed for rather less genuine purposes. The Allied visitor to Germany to-day arrives as a prisoner of war, but the standard of hospitality has not changed, though its sincerity must be questioned. Unfortunately this hospitality has not been unappreciated, and it is to be regretted that so many Allied prisoners of war have not seen through the many favours showered upon them at Dulag Luft.

Dulag Luft is, of course, the centre for German interrogation of Allied Air Force prisoners of war. There hospitality of all kinds is very much in evidence, and in return for some considerable expenditure on whisky, English cigarettes, chocolates and roses—yes roses!—a great deal of information has been obtained. The following letter which arrived only a few days ago from a R.A.F. officer P/W will illustrate this point:—

"I am convalescent at the moment, having fallen from my scooter. The place here is beautiful, not a prison camp, but just like a beautiful country house. The food we are getting is wonderful, provided by the Red Cross mostly, I believe, God bless 'em. I am in fact having a nice holiday and I'm not

(3) The success of the deceptions showed that spasmodic talks by unit officers are not enough to maintain a safe standard of security mindedness among troops. Lectures and illustrations must be planned on a continuous schedule and periodically tested by practical exercises.

(4) Specific weaknesses brought out included the following:—

- (a) Readiness of officers and other ranks to accept, without question, all persons in uniform at their face value, and to give whatever information was asked of them.
- (b) Ignorance of the forms of passes, methods of identification, and distinguishing badges usually carried or worn by officers, war correspondents, and chaplains.
- (c) Uncritical acceptance of documents and passes carried and stories told, when these passes were and stories were obviously forgeries and concoctions.
- (d) Lack of instruction to guards, sentries and personnel manning dumps and headquarters on the danger of fifth column activities, the presence of fifth columnists in the area, what to look for among visitors, and how to act if their suspicions were roused.
- (e) Complacency toward security matters and forgetfulness of normal safeguards in conversation with civilians, brought about by a long period of association with a friendly home civilian population.

kidding you. I shall eventually go to the prison camp for officers, which is I understand very comfortable—we even get pocket money there. I had a good laugh to-day. A Luftwaffe officer, an awfully nice chap, walked in and gave me my Flight Commander's regards. He was shot down two days after I got out at the wrong station, so Flight Commanders make mistakes too. . . I had a lovely birthday—a big vase of roses brought into my bedroom and a half-pound block of Rowntrees Plain York from my friend—we are being treated wonderfully here."

The Flight Commander's remarks on being rung up at his station—of course he had not been shot down—can be left to the imagination.

Interrogators in peace time were probably pleasant members of society with a fair quota of decent feelings. In war the same man must forget any spark of decency he ever possessed and be prepared to perjure his soul and sink to unplumbed depths of deceit in order to make a success of his job. He has only one object—to make his prisoner talk. Here the old tag "all is fair in love and war" was never more true.

An interesting document captured in Sicily has shown how much Allied P/W have been talking. This document, a periodical summary distributed from Dulag Luft to all operational commands, gave important details of matters which should never have been discussed. It is not suggested

Captain had the map and seemed happy enough—that is, until St. Eval sent a Q.D.M. of 360°! It certainly is an ill wind that blows nobody any good. Who knows that, but for the timely arrival of a couple of F.W.190's, there might not have been a forced landing on the Dutch coast if the petrol had lasted that long?

The Men of Ushant must have witnessed so many similar escapades in the past as to have become convinced that their little island was an integral part of the Coastal Command Flight Plan. They would certainly have seen a Beau-fighter one day in late 1942, just before its Navigator noticed the local pub signs which all bore the word "*Auberge*." He was fast enough to get home. Not so the white stickle-backed Whitley, whose crew spent a night on D.R., patrolling off Brest, and failed to notice what a strong north wind was blowing. Setting course for Lands End from somewhere in the Bay, they arrived, more or less on E.T.A., but at Ushant. They now know enough French to call it by its proper name, for they had breakfast in Brittany after meeting a Ju.88.

We are more subtle in these advanced days. We pick up the S.E. beacon at such vast ranges as to be almost always sure of getting home safely and on time. The extent to which we can rely on blind homing measures our temptation to dispense with legitimate navigation. In the case of the Halifax described above, the results were no more than hair raising. But there was another Halifax which didn't quite get home. Having kept a reasonable log going, up to the arrival on the Cornish coast, the Navigator dropped everything except a map, and changed places with the Second Pilot who tried inexpertly and unsuccessfully to get Gee fixes. It was dark and the aircraft flew over 10/10ths and set course for Holmesley South from a rather vague S.E. fix. No concern was felt when a pundit and an occult were seen, though these were not on the schedule, being in fact about 20 miles north of the intended track. The rear gunner must have been mistaken! A little later some pyrotechnics,

fired off in the Salisbury Plain, were imagined to be flak from Southampton, though needless to say D.R. would have dispelled this belief, had it been kept up to date. To cut a long story short, as well as this flight, a D.T.C. was partially executed over a valley in the Salisbury Plain which was taken to be Southampton water. That crew will never fly again.

To so many navigators navigation stands for "My D.R., right or wrong." They seem unable to conceive that the magnificent efforts they put into their plotting, wind finding and wind checking are all subject to error. You will hear on all sides how small are the Navigators' analysed errors; how consistent their final landfalls. To conclude this tale of woe, let us then tell you of a Sunderland that flew for 6 hours and 20 minutes on D.R. navigation. A U-Boat was sighted, successfully "baited" and finally attacked; and the aircraft then returned jubilant to base, *where it arrived on E.T.A.* Subsequent enquiries, following complaints from the Admiralty, disclosed that the attack took place inside a T.B.R. area on one of H.M. submarines. No allowance had been made for possible errors of D.R. (Only 1 per cent. error was enough to put the Navigator's D.R. position on the wrong side of the line.) To make matters worse the loop had not been swung and the airspeed indicator, which fluctuated all the time, was under-read by some 5 knots. Nevertheless the Sun was in the West (indeed the Captain flew up-sun for baiting) and would have given an accurate Longitude shot; while even the unswung loop would have given a reasonably accurate Latitude, using Corunna, which was only 60 miles away to the East.

The more one sees of modern navigational problems and practices, the harder it is to describe navigation accurately. Navigation has long since been reduced in its elements to a science, and is now largely treated mechanically and greatly simplified by all the resources of our modern age. Yet the underlying difficulties of its application remain completely untouched. The *Art* of navigation is more than ever dominant to-day.

Allied Strength in Shipping

A Message from Washington

Washington, October 6

Allied plans for a decisive attack on Europe have been advanced by six months because of an improvement in the allied shipping position, according to a report issued to-night by the Senate sub-committee on war mobilization.

The allies have now enough shipping "to deliver a decisive blow to Europe this year," the report states, and the plans to send an American army of 5,000,000 men oversea—at least 2,500,000 of them before Christmas—can be achieved six months ahead of schedule as the result of a shipping "windfall" which has exceeded the hopes of the allied command by 3,000,000 tons.

The sub-committee estimated the total shipping available to the United Nations, including tankers and coastal vessels, at more than 50,000,000 tons. With this imposing armada, it declared, we can plan, place, and coordinate a mature and successful offensive, concentrating our striking power on Europe.

The sharp cut in submarine sinkings, added to the record-breaking output of new ships, puts at our command 3,000,000 more tons than entered into the military planning for 1943—3,000,000 tons of shipping means in a year 9,000,000 tons of cargo, enough to equip 1,500,000 more troops

for the European theatre. The collapse of Italy probably adds another 500,000 tons, possibly more.

"Early in the year the War Department announced that it planned to ship a total of nearly 5,000,000 men overseas and that 1,000,000 American troops had been sent abroad by December, 1942. The plans called for moving an additional 1,500,000 fully equipped troops abroad by December this year, bringing our overseas strength this year to between 2,500,000 and 2,700,000 men.

"Partly because of the scarcity of ships, troop movements were short of the announced goals during the first quarter, but in recent months, making use of the additional shipping available,

shipments of soldiers and supplies exceeded the schedules set at the beginning of this year."

The report gives a warning against spreading the shipping over many fronts, pointing out that it is too late to change the "Germany first" plan, and adds: "While there is sufficient to maintain limited offensives in several theatres, there are not enough ships to support supreme offensives in all. Concentrating our new shipping strength in the Atlantic is inevitable, and follows from the success of our mounting offensive in Europe."

After citing the greater distances in the Pacific war zone, the report concludes: "In short, concentrating shipping in the Atlantic is three times as effective as in the Pacific."

The report also states that the Navy Department is planning to ship a total of 1,000,000 men overseas by December this year, bringing our overseas strength this year to between 2,500,000 and 2,700,000 men. The report also states that the Navy Department is planning to ship a total of 1,000,000 men overseas by December this year, bringing our overseas strength this year to between 2,500,000 and 2,700,000 men.

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Allied Strength in Shipping

A Message from Washington

The subcommittee announced the total shipping available to the United Nations, including tankers and coastal vessels, at more than 50,000,000 tons. With this enormous tonnage it declared, we can plan, build, and maintain a modern and successful offensive, concentrating our striking power on Europe.

The sharp cut in submarine sinkings, added to the record-high output of new ships, plus a cut in losses, has made it possible to build up our shipping strength to more than 50,000,000 tons. The subcommittee announced that the total tonnage of shipping available to the United Nations is now more than 50,000,000 tons, a record for the world.

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