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COASTAL COMMAND REVIEW

March 1945

Vol. IV, No. 3

HEADQUARTERS,
COASTAL COMMAND
ROYAL AIR FORCE

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

COASTAL COMMAND REVIEW

Vol. IV, No. 3—March 1945

CONTENTS

The Month's Work—March, 1945

A Record

March, 1945, has provided a record of flying hours for Coastal Command. During the month a total of 75,724 operational and non-operational hours was flown. The previous record was in June, 1944, when 74,809 hours were flown.

The Anti U-Boat Effort

During March the U-Boats have continued their inshore tactics, but we have countered this by the allocation of more sorties to harry the transit routes. These additional sorties were made possible by judicious thinning out of the effort previously centred over inshore waters. The patrolling of the transit routes has been given preference because U-Boats already on patrol can remain inconspicuous by sitting on the bottom between their rare attacks on shipping, and are less likely to be spotted by aircraft than when on passage, where they have to schnorkel for upwards of five hours in the 24 in order to keep moving. A large increase in sightings and attacks has been the result of this policy.

2. The tit-for-tat engagements by the naval escort groups patrolling inshore waters have resulted in similar figures to last month. Some 13 or 14 ship targets have been torpedoed, while eight U-Boats have been sunk, probably sunk or possibly sunk. In addition a very satisfactory attack was made by Liberator N/103 of the U.S. Navy on a U-Boat which was discovered off the Scillies. The U-Boat was sighted on the surface and apparently she was unable to dive. The subsequent attack resulted in a kill and survivors were picked up. (*See* letterpress, p. 10, and plate 3.)

3. Aircraft have sighted and attacked many more U-Boat targets this month. The full score is 51 sightings (32 Grade A, 19 Grade B), of which 33 were attacked. In addition, attacks were made on 11 Sono buoy contacts. A further 10 sightings were obtained by aircraft on unarmed transit, training and anti-shipping sorties.

4. Night sweeps into the U-Boat training and working up areas in the western Baltic were again made by Nos. 311 (Czech) and 547 Squadrons. Two such sweeps in force were made, and they provided the majority of surfaced U-Boats sightings. Fifteen U-Boats were sighted, of which 11 were attacked. Several of these attacks were promising, but positive after evidence of sinkings was impossible to obtain. Whatever the results may have been, these attacks must have had a depressing effect on the enemy's morale.

5. Attacks on a visible part of a U-Boat at the time of release remain very scarce. During the month, Grade A sightings provided only a single instance apart from the attacks on surfaced U-Boats in the Baltic, one off Cape Wrath and the successful encounter off the Scillies by N/103. This instance was an attack by O/224 on March 29, and the indications from the preliminary report are very promising. In all other cases the U-Boat presumably observed the approach of our aircraft some miles away through the periscope and, being at periscope or schnorkel depth, was able to get well under before the aircraft arrived, leaving only a very stale wake mark or no mark at all.

6. The aircraft obtaining Grade B sightings are in a still more unsatisfactory position. Their only indication as to when the U-Boat actually has dipped during the approach is the approximate estimate of when the smoke ceases at the source, or when the wake apparently is no longer moving. On arrival at the release point only a wisp of drifting and rapidly vanishing smoke or a faint indeterminate wake mark is seen, and sometimes no indication at all is left to attack. The U-Boat may be on any course and at any depth down to 300 feet. While it certainly is correct to attack, it is futile for the assessors to buoy up hopes by rosy promises of damage to be expected unless some concrete after evidence is reported. The use of the Sono buoy to provide evidence of after effects is still in its infancy, and its value can be over-emphasized. Months and months of intensive practice and experience is required to interpret correctly the output of this valuable but very tricky aid—the hydrophone—with all its background of non-sub noises. For the time being it should be sufficient to strive to attain a clear knowledge and discriminating report of an underwater explosion and of genuine cavitation swish, together with the ability to discard non-sub noises however attractive they may sound.

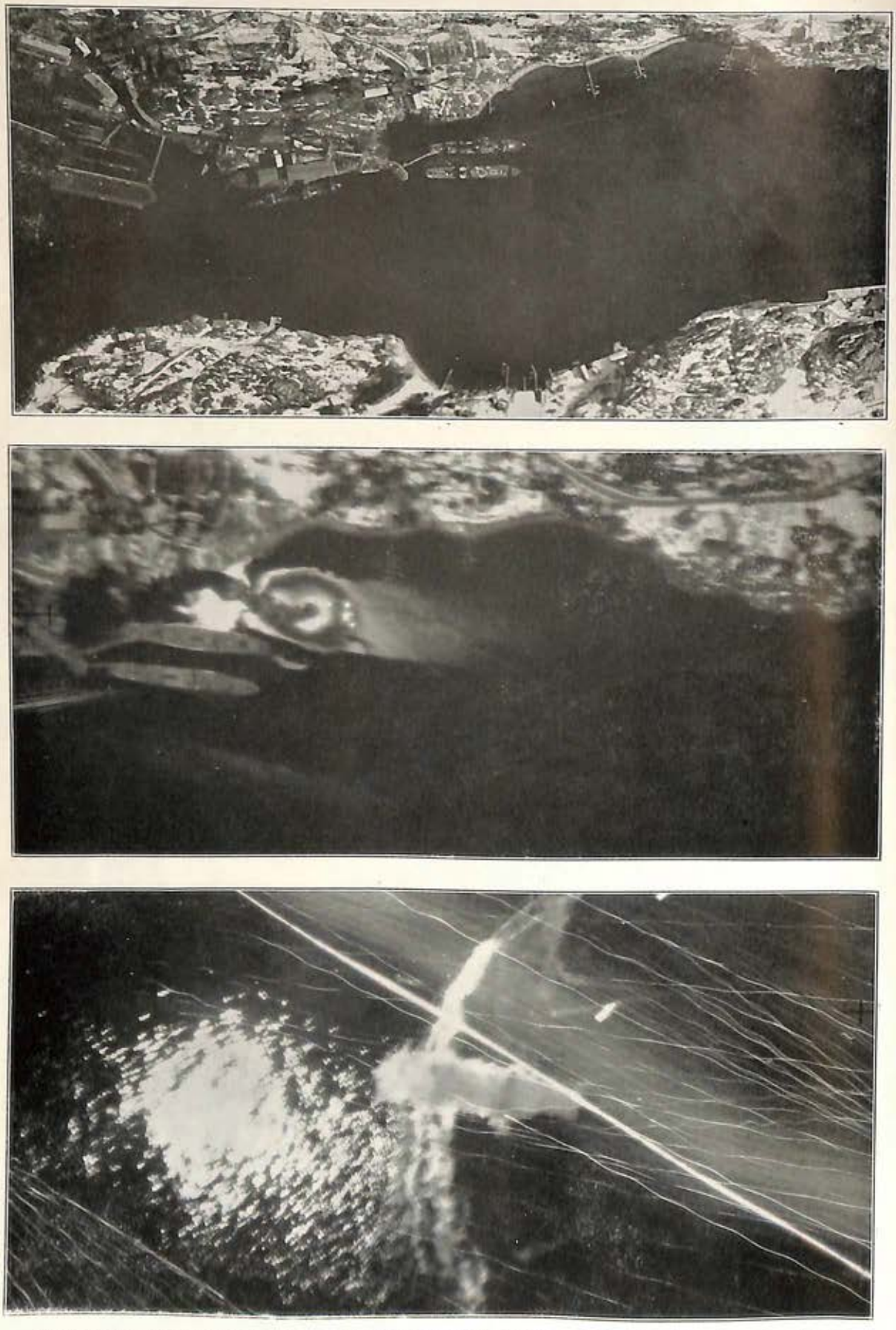
7. In spite of the great successes in the Allied land offensive we must remember that the majority of U-Boats now at sea have fuel, torpedoes and provisions for two or three months. The Norwegian U-Boat bases are still not directly threatened. In whatever way the end of the large-scale land fighting may occur, the very nature of U-Boat operations makes it likely that Coastal Command will have its task prolonged beyond the end of organized resistance by the German army.

Anti-Shipping

8. Excellent flying weather and an abundance of targets have given the strike wings one of the most successful months on record.

9. In the north the Mosquito squadrons increased their range and flew into the Skagerrak and Kattegat to attack shipping at sea and in anchorages on the east coast of Norway near Oslo Fjord. 16 Group aircraft were able to intensify their efforts in the south and were very successful against midget U-Boats and E-Boats. No less than 201 sorties were made against midget U-Boats operating from the Dutch coast by Swordfish and Beaufighters, resulting in 18 attacks. In spite of the difficulty of attacking such small targets, five of these midgets were claimed as sunk by depth charges and a further three by cannon fire and R.P.

Continued and unrelenting pressure by the Banff and Dallachy Wings has caused the enemy to become more and more cautious. One of the few measures left to him is to anchor his ships as close to the steep cliffs of the fjords as depth of water will allow. These photographs taken by Dallachy Beaufighters on March 8 in Vindspol (Midtgulen) illustrate this development very clearly. Nevertheless the valuable car ferry "Heimdal," 980 tons, seen in the lower photograph, was gutted as the result of this attack and another vessel of some 3,700 tons damaged. Two escorts and a tug were also damaged.



A recent development in night photography now enables the Halifaxes of 58 and 502 Squadrons to photograph their attacks. It will be remembered that these squadrons have kept up a constant pressure at night on enemy shipping in transit from Norway to Denmark and in ports of southern Norway. The top photograph was taken in daylight on March 5 by P.R. aircraft and shows shipping lying in Sandefjord. The middle one, taken on the night of 6/7th, shows the same shipping under attack, a very near miss being scored on the "Espana," 7,465 tons, by K/502 Squadron. The bottom photograph, also taken by this aircraft 4 days later, shows a vessel in the Skagerrak of some 6,000 tons, flying two balloons under attack. The bombs have fallen about 150 yards astern across the ship's wake. A considerable amount of flak is visible.

(C 55229)

10. During the night of March 21, three Beaufighters of 236 Squadron made a successful R.P. and cannon attack against three E-Boats, one of which blew up, the other two being left in flames. Wellingtons also continued their E-Boat shadowing patrols and co-operated with our light coastal forces to bring about several interceptions in which the use of a newly developed V.H.F. procedure played an important part.

11. On March 24, the North Coates Beaufighter Wing, whilst on a diversionary sweep to cover the Allied airborne operation over the Rhine, sunk a 200-ton coaster. Torpedo and R.P. hits were scored and the vessel blew up.

12. Off the Norwegian coast the Banff Wing made six strikes and the Dallachy Wing two. The most outstanding Mosquito strike of the month took place on the 17th, when 33 Mosquitos attacked six merchant vessels lying in the heavily defended anchorages at Aalsund. Many R.P. strikes were scored, and it is known that three of the merchant vessels subsequently sank and the remainder were damaged. The Banff Wing struck at Porgsgrund anchorage near the entrance to Oslo Fjord on the 30th and severely damaged four merchant vessels lying alongside the quays. All the ships were seen to be either smoking or in flames. Among the other Mosquito Wing strikes was an attack by 34 Mosquitos against a convoy of eight T.L.C. making the passage across the Kattegat southwards from Norway. Five of these vessels were sunk and two set on fire.

13. At the beginning of the month the Dallachy Wing made a successful attack against shipping in Midtgulen, and followed up with a daring strike on three merchant vessels and three escort vessels in Egersund Harbour on March 24. The formation met intense accurate flak and poor visibility hampered the strike leader. Nevertheless the attack was very successful. Large explosions were seen on two of the merchant vessels and the remainder were left smoking or in flames.

14. In order to dislocate coastal traffic moving by night, the Mosquitos and Beaufighters have made a number of successful attacks against lighthouses situated on the Norwegian coast.

15. The wing strikes have not been made without casualties, and during the month 18 aircraft were lost from the two 18 Group Wings. Three of these casualties were due to enemy fighters, which have been increasingly active and would have been more successful had it not been for the efficient fighter cover provided by the Mustang squadrons of Fighter Command.

16. The Halifax squadrons continued their offensive against night traffic in the Skagerrak and made a record number of 99 attacks. Although the majority of results were unobserved, two merchant vessels were hit and assessed as sunk, and a further eight merchant vessels, one destroyer and one floating dock were damaged. The most conclusive attack was made on the night of the 2nd when K/502 scored two direct hits on the stern of a merchant vessel and set it ablaze. The flames of the burning ship, which proved to be the "Isar" of 9,026 tons, were visible 15 miles away. The details of successful individual attacks will be found under the shipping strikes summary on page 13.

17. Liberator aircraft of the anti U-Boat squadrons attacked a variety of shipping with depth charges whilst on anti U-Boat patrol in the Baltic. Again the results were difficult to assess, but the attacks must have surprised the ships' crews who hitherto had considered themselves safe in these waters.

18. The results claimed for March are interesting for the diversity of targets and extent of the areas covered by our patrols. Apart from small types of vessels attacked, 10,000 tons of merchant shipping was sunk, 15,000 tons seriously damaged, and 46,000 tons damaged.

I.—ANTI U-BOAT

SUMMARY OF ANTI-U-BOAT OPERATIONS BY COASTAL COMMAND AIRCRAFT

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

MARCH, 1945

Duty and Base or Area.	Total Sorties. (1)	Hours Flown. Base to Base. (2)	Hours Flown. On Patrol. (3)	U-Boats Sighted. Day. (4)	U-Boats Sighted. Night. (5)	U-Boats Attacked. Day. (6)	U-Boats Attacked. Night. (7)	Hours per A and B Sighting. Base to Base. (8)	Hours per A and B Sighting. On Patrol. (9)	No. of Sorties. When U-Boat Sighted. (10)	No. of Sorties. When U-Boat Attacked. (11)
Convoy Cover											
United Kingdom	204	2,410	1,673	1	—	—	—	2,410	1,673	1	—
Iceland	57	579	416	—	—	—	—	—	—	—	—
Gibraltar and Moroccan Sea Frontier	256	1,749	1,160	—	—	—	—	—	—	—	—
TOTAL CONVOY EFFORT	517	4,738	3,249	1	—	—	—	4,738	3,249	1	—
A/U Patrols											
Baltic-Skagerrak											
United Kingdom	57	629	159	—	15	—	11	42	11	12	10
Northern Transit											
United Kingdom	503	5,128	3,259	6(4)	2	4(2)	2	427	271	8(4)	6(2)
Iceland	46	509	250	—	—	—	—	—	—	—	—
Northern Convoy (including Irish Sea—*See* Note 4)											
United Kingdom	732	7,279	5,533	4(8)	—	3(6)	—	606	461	4(8)	3(6)
Iceland	79	776	588	—	—	—	—	—	—	—	—
Azores	5	62	37	—	—	—	—	—	—	—	—
Bay of Biscay and Channel Approaches (*See* Note 4)											
United Kingdom	1,093	8,766	7,185	3(7)	1	2(3)	—	797	653	4(7)	2(3)
Central Convoy											
Gibraltar and Moroccan Sea Frontier	195	1,083	765	—	—	—	—	—	—	—	—
Azores	82	957	471	—	—	—	—	—	—	—	—
TOTAL A/U PATROLS	2,792	25,189	18,247	13(19)	18	9(11)	13	504	365	28(19)	21(11)
ADD CONVOY EFFORT	517	4,738	3,249	1	—	—	—			1	—
TOTAL A/U EFFORT	3,309	29,927	21,496	14(19)	18	9(11)	13	587	421	29(19)	21(11)
				32+(19) U/B. Sighted.		22+(11) U/B. Attacked.					

Notes.—(1) Grade "B" Sightings and Attacks (*i.e.*, swirls, wakes or smoke believed caused by a U-Boat) are shown separately in brackets and are NOT included in the main totals.

(2) The above figures do not include 10 Chance Sightings (3 Grade "A" and 7 Grade "B") made by Coastal aircraft not carrying major weapons. Also not included are 11 attacks on Contacts indicating the possible presence of U-Boats.

(3) Hours per sighting under columns (8) and (9) include both Grade "A" and Grade "B" Sightings.

(4) During the month a considerable proportion of the operations in the Northern Convoy Area by home-based aircraft was concentrated in the Irish Sea and its North-West Approaches. Similarly, flying in the Bay Area was almost restricted to the Channel and South-West Approaches. For further details of these inshore operations in the Home approaches, *see* chart facing page 8.

Squadron Results—March, 1945

SIGHTINGS BY A/U AIRCRAFT

			Sorties when U-Boat Sighted.	*Sorties when U-Boat Attacked.*
810 (F.A.A.)	Barracuda	Thorney Island	— (2)	— (2)
815 (F.A.A.)	Barracuda	Mullaghmore	— (1)	— (1)
210	Catalina L.L.	Sullom Voe	1	1
86	Liberator L.L.	Tain	2	1
103 (U.S.N.)	Liberator	Dunkeswell	1	1
105 (U.S.N.)	Liberator	Dunkeswell	— (1)	—
107 (U.S.N.)	Liberator	Upottery	1 (1)	1
110 (U.S.N.)	Liberator	Dunkeswell	1 (1)	1 (1)
120	Liberator L.L.	Ballykelly	1	1
224	Liberator L.L.	Milltown	3 (2)	3 (1)
311 (Czech)	Liberator L.L.	Tain	5	5
547	Liberator L.L.	Leuchars	9 (2)	6 (1)
10 (R.A.A.F.)	Sunderland	Mount Batten	1	—
201	Sunderland	Castle Archdale	— (2)	— (1)
422 (R.C.A.F.)	Sunderland	Pembroke Dock	1 (3)	1 (2)
423 (R.C.A.F.)	Sunderland	Castle Archdale	— (1)	— (1)
461 (R.A.A.F.)	Sunderland	Pembroke Dock	— (2)	— (1)
179	Warwick L.L.	St. Eval	1	—
172	Wellington L.L.	Limavady	1 (1)	—
304 (Polish)	Wellington L.L.	St. Eval	1	—
			29 (19)	21 (11)

Notes.—(1) In addition to the above 11 attacks were carried out on contacts (indicating the possible presence of U-Boats) by the following squadrons : 53 ; 59 (two attacks) ; 86 (two attacks) ; 103 U.S.N. (two attacks) ; 105 U.S.N. ; 120 (two attacks) and 224.

(2) Grade " B " targets are shown separately in brackets.

CHANCE SIGHTINGS BY AIRCRAFT ON OTHER DUTIES

		Number of Targets Sighted.
3 S. of G.R.	Anson	— (1)
489 (R.N.Z.A.F.)	Beaufighter	— (1)
58	Halifax	2
143	Mosquito	— (1)
235	Mosquito	— (1)
248	Mosquito	1 (1)
4 O.T.U.	Sunderland	— (1)
461 (R.A.A.F.)	Sunderland	— (1)
		3 (7)

Assessments

(Received up to 16th April, 1945)

Month.	Known Sunk.	Probably Sunk.	Damaged, "A."	Damaged, "B."	Slight Damage.	Insufficient evidence of Damage.	No Damage.	Insufficient evidence of U-Boat.	Un-assessed.
January ..	—	—	—	—	1	4	1	5	—
February ..	—	—	—	—	1	11	3	—	2
March ..	—	—	—	—	—	—	—	—	22(11)

U-BOATS SUNK AND DAMAGED BY COASTAL COMMAND AIRCRAFT

3rd SEPTEMBER, 1939, to 31st DECEMBER, 1944

Notes.—(1) Assessments shared with Naval Forces are shown separately in brackets, and are not included in the main totals.

(2) This table covers both German and Italian U-Boats. Sightings and Attacks by U.S. aircraft, aircraft of the Fleet Air Arm and Bomber Command while operating from Coastal Command bases under its control are included in the figures.

(3) This table does not include 16 attacks by 53 Squadron while operating from Trinidad in the Autumn of 1942. These attacks resulted in assessments of 1 Damaged B and 5 Slight Damage. Sightings and Attacks by U.S. Moroccan Sea Frontier Aircraft are also excluded.

Date.	Known Sunk.	Probably Sunk.	Damaged A.	Damaged B.	Slight Damage	U-Boats Sighted.	U-Boats Attacked.
1939 September	—	—	—	2	2	35	27
October	—	—	(1) (1)	— 2	2 6	14	10
November	—	—	—	—	1	6	6
December	—	—	—	—	1	9	6
1940 January	(1)	—	—	—	—	6	3
February	—	—	(1)	—	1	19	12
March	—	—	—	—	—	8	6
April	—	—	—	—	1	19	12
May	—	—	—	—	—	13	4
June	—	—	— 1 (1)	— 2	1 4 (1)	19	15
July	(1) (2)	0	—	—	—	9	8
August	—	—	1	1	— (1)	15	14
September	—	—	—	—	—	9	8
October	—	—	—	1	1	9	7
November	—	—	—	—	—	5	3
December	—	—	—	—	—	4	4
1941 January	—	1	—	(1)	—	4	2
February	—	—	—	1	—	4	3
March	—	—	—	—	1	7	4
April	—	—	—	—	3	7	4
May	—	—	—	1	2	12	8
June	—	—	1 1	— 18 (1)	— 26	25	17
July	— 2 (2)	1	—	—	4	13	8
August	1 (1)	—	—	2	8	37	29
September	—	—	—	5	3	40	37
October	(1)	—	—	3	1	24	22
November	—	—	—	2	2	11	10
December	1	—	—	4	2	34	20

1942	January	—		—		—		—		—		6	6
	February	—		—		—		1		1		12	8
	March	—		—		—		1		2		10	8
	April	—		—		2		1		1		15	14
	May	1		1		—		1		4		27	21
	June	1		—		2		5		5		33	23
	July	1	12 (1)	—	12	2	18	2	28	2	40	41	32
	August	1		3		2		1		3		73	57
	September	2		1		2		4		4		101	66
	October	2		2		2		—		5		62	40
	November	2 (1)		4		3		10		9		127	78
	December	2		1		3		2		4		101	49
1943	January	—		—		—		—		—		33	22
	February	2		3		1		6		4		74	44
	March	3		2		1		5		5		122	74
	April	6		2		1		3		4		140	80
	May	5 (2)		12		1		6		6		211	137
	June	4		2		2		4		2		90	44
	July	11	49 (4)	3	34	1	8	5	36	—	26	74	42
	August	5		1		—		2		—		28	11
	September	1		3		—		2		—		43	23
	October	10 (1)		1		—		2		2		54	42
	November	2 (1)		4		1		1		—		23	14
	December	—		1		—		—		3		17	10
1944	January	3		2		—		3 (1)		3		53	36
	February	1 (1)		2		—		—		4		36	28
	March	1 (1)		1		—		3		2		30	25
	April	—		2		—		1		2		22	19
	May	3		4		2		2		2		40	24
	June	8 (1)		6 (1)		—		6		7 (1)		110	65
	July	2	21 (6)	4	26 (4)	—	3	3	24 (1)	6	30 (1)	55	40
	August	1 (2)		1 (1)		1		3		4		39	25
	September	2		2 (1)		—		2		—		21	10
	October	— (1)		—		—		1		—		10	3
	November	—		— (1)		—		—		—		12	10
	December	—		2		—		—		—		21	7
		84+(15)		73+(4)		31+(2)		110+(2)		132+(2)		2,383	1,546

157 (+ 19 shared) U-Boats sunk or probably sunk.
273 (+ 6 shared) U-Boats damaged.

RECENT ATTACKS ON U-BOATS

Promising Attack on a Conning Tower

At 1844 hours on February 16, **Wellington Q/304 (Polish)** was patrolling almost due east at 1,000 feet when the second pilot sighted a swirl, a periscope, and then Schnorkel and the upper part of a conning tower, bearing Green 80°, distant less than 1 mile in position 57° 20′ N., 11° 24′ W., course 189° and speed approximately 12 knots. The swirl is described as 20 to 30 yards in diameter, beginning to lengthen, and in the centre two mast-like objects were seen, one thinner than the other—the thinner object being in front—appearing intermittently with an oval shaped object at the base in the trough of the waves. The whole structure was painted grey. The aircraft banked steeply to starboard, losing height rapidly to 200 feet and proceeded immediately to attack down track at an angle of Red 30° to the U-Boat's course (course of aircraft 350°), releasing from 200 feet, six depth charges, set to shallow depth, spaced 60 feet, while the target was still visible, and 45 seconds after it was first sighted. During the attack the first pilot saw the target intermittently until the release of the depth charges. Points of entry were not observed but the S.E. operator from the astro dome observed six plumes and the rear gunner, during a steep turn, also observed the six plumes with the fifth depth charge exploding dead on the apex of the wake. The aircraft circled three to four minutes after the attack and an oval-shaped scum was observed approximately 100 yards long, 40 yards wide, with half-moon-shaped oil patches adjoining the scum on each side. Three minutes later the aircraft made a second circuit, and it was noticed that the scum had disappeared and that the two oil patches had joined together to form an oval-shaped oil patch about the same length as the scum. After a third circuit the oil patch became a long, stationary streak twice the length of the original scum. Soon after the attack a marine marker, Mark II, was dropped and the aircraft started homing, further markers being dropped at intervals. At 2103 hours the aircraft established contact with homed aircraft which also dropped marine markers and remained in the area. The weather was good during the attack but deteriorated 10 minutes later.

Comments

This was a good sighting followed by immediate action, resulting in a good attack. It would appear that this U-Boat broke surface accidentally and gave herself away, with this in mind the captain wasted little time in launching the attack.

The oil seen afterwards suggests that damage was inflicted to fuel tanks, in any case the U-Boat certainly received a severe shaking up.

Admiralty Assessment

From the visual and photographic evidence of oil it is considered that the U-Boat was probably slightly damaged and the attack is accordingly assessed E.

A Schnorkel contacted by Radar

During the evening of February 24, **Warwick K/179** was on patrol at 600 feet south-east of the Lizard when a Radar contact was obtained bearing dead ahead 2 miles. At that time the weather was fine and clear. The aircraft immediately lost height and turned slightly to starboard in order to see below and ahead, almost at once the captain sighted a wake and then a Schnorkel, bearing Red 20°, distant 1½ miles, in position 49° 54′ N., 04° 43′ W., course 230° and speed approximately 5 knots. The captain decided to attack without Leigh Light and circled to put the target towards the sunset. Approaching on course 250° at a height of under 100 feet the second pilot and others in the aircraft saw thin vapourish smoke coming from the easily identified Schnorkel. The aircraft attacked from Red 160° and tracked right over the Schnorkel, releasing from 70 feet, six depth charges, set to shallow depth, spaced 55 feet, while the Schnorkel, wake and wash of water were visible. A perfect straddle was obtained, three depth charges entering the sea one side, and three on the other side of the Schnorkel. The front gunner fired 300 rounds on the run in and the rear gunner fired 800 rounds, both claiming accurate shooting. The rear gunner and the navigator saw all the depth charges explode where the Schnorkel had last been seen. One of the flame floats was blown up by the last depth charge and burning fragments were seen flying up in the plume. On returning to the area of the attack Leigh Light was used to search for after effects and a smooth patch of water, with what looked like black rubber balls floating within it, was seen close to the depth charge scum. These objects sank shortly afterwards and two or three patches of oil about 60 to 80 feet across were left in their place. Homing was begun and the third Escort Group arrived in the area at midnight. When the aircraft set course for base at 0105 hours an extensive oil slick could be clearly seen from 2,000 feet close to the markers in the moonlight.

Comment

The Radar operator is congratulated on the excellent Radar lookout which made this attack possible. The captain made full use of the opportunity presented by the Radar and carried out an excellent attack. From the evidence of entry of depth charges the attack should have been lethal. The after evidence of oil increasing in extent supports this hope, but there is, at present, no information on the eventual fate of the U-Boat.

Greenland

Iceland

Shetlands

St. John's

NORTHERN TRANSIT AREA

Hours...5971
U/B's Sighted 8 (1)
U/B's Attacked 6
Ships Sunk 0

NORTH SEA AND BALTIC.

Hours... 629
U/B's Sighted 15 (3)
U/B's Attacked 11 (2)
Ships Sunk 2

NORTHERN CONVOY AREA

Hours...9586
U/B's Sighted 4 (8)
U/B's Attacked 3 (6)
Ships Sunk 4

THE BAY AREA

Hours...9952
U/B's Sighted 5 (7)
U/B's Attacked 2 (3)
Ships Sunk 6

CANADIAN COASTAL AREA

OPERATIONS IN THE HOME APPROACHES

Hours...14,542
U/B's sighted 12 (17)
U/B's attacked 7 (10)
Ships Sunk 10

While the figures in the main chart are shown under the usual areas a large proportion of the operations by home-based aircraft were over inshore waters. To illustrate these separate (but not additional) figures are given in the inset.

Azores

AZORES AREA

Hours.....957
U/B's sighted -
U/B's attacked -
Ships Sunk -

GIBRALTAR MOROCCO AREA

Hours.....2832
U/B's sighted -
U/B's attacked -
Ships Sunk -

Canary Is

WEST AFRICAN AREA

COASTAL COMMAND
ANTI-U/BOAT ACTIVITIES MAR. 1945

According to information received by Admiralty up to APL 2, 1945.

Note: Only ships sunk by U-Boats (1) are included on this Chart.

Note: (2) Figures in respect of Grade B Targets (i.e. a swirl, wake or smoke believed caused by a U-Boat) are given separately in brackets.

Note: (3) The figures for the Northern Transit Area include flying in the Baltic and Skagerrak.

Disappearing Contacts

Liberator N/224 was patrolling during the afternoon of March 4 in an area west of the Hebrides on track 283° at 1,500 feet, when the front gunner sighted a cloud of pale blue Schnorkel smoke bearing green 30°, 6 miles away, in position 58·46 N., 04·27 W. Simultaneously the Radar operator reported a contact on the same bearing and at the same distance. The aircraft turned immediately, losing height, and at approximately 300 yards range the smoke ceased to issue from the sea, but a trail of bubbles and disturbed water was seen. An attack was made from Green 90°, and six depth charges were released from 200 feet, set to shallow depth, spaced 55 feet, three seconds after the smoke had ceased and whilst the bubbles were visible. As the aircraft passed over the position a distinct bump was felt. Only five depth charges were seen to explode but the sixth probably functioned correctly. The flight engineer in the bomb-bay saw the entry and explosion of the depth charges but was unable to estimate their position in relation to the target which was possibly obliterated by the depth charge splash. Approximately 45 seconds after the depth charges were released the flight engineer saw in a trough of the swell a definite periscope and Schnorkel bearing Red 135°, distant 1½ miles. This was seen for a few seconds as the aircraft was starting to turn to port and it was estimated that 3–5 feet of Schnorkel were protruding from the water. The aircraft turned to investigate but there was nothing to be seen. Whilst circling and photographing depth charge scum, three members of the crew saw an orange-coloured flat-topped circular object approximately 5 feet in diameter, apparently made of rusty iron, less than ¼ mile from depth charge patch—this was seen four minutes after the attack. At 1600 hours when the aircraft was on course 090° at 800 feet, a Radar contact was obtained bearing Green 12°, range 4 miles. The aircraft turned to home and at 2 miles three crew members identified distinct Schnorkel smoke dead ahead. When 1 mile from the source of the smoke, an orange-coloured plank-like object was seen floating on the water. This object was approximately 6 feet by 1 foot, slightly tapered at one end with the thick end half submerged; its position was bearing 150°, 1 mile, from the depth charge scum. The aircraft continued on course towards the smoke which ceased to issue at 1 mile range. At 1603 hours a marine marker was dropped in the estimated position, then the aircraft returned to search for the yellow plank-like object, but this was not seen again. A few minutes later when the aircraft was on course 150° at 500 feet, a Radar contact was obtained bearing dead ahead, range 2 miles. The contact disappeared immediately and it was thought it might have been a marine marker. The pilot then decided to begin a Sono buoy pattern and a purple buoy was dropped on the marine marker. There was no result. Whilst circling the depth charge scum, positive results were obtained on the purple buoy at 1632 hours and Basic Pattern. Just before 1700 hours another Liberator arrived on the scene. Faint propeller beat was heard on the purple buoy, and at 1653½ hours, whilst circling the Sono buoy pattern, a Radar contact was obtained, bearing Green 30°, range 8 miles. The aircraft homed but lost contact, but it reappeared at 4 miles range, bearing Green 8°. It then disappeared again and was regained dead ahead at 3 miles, finally disappearing at 1½ miles ahead.

Between 1700 hours and 2100 hours the noise of high-speed machinery was picked up several times by Sono buoy. A Radar contact was obtained at 2133 hours, this was lost and picked up twice, and finally in the estimated position a dark cylindrical object, 3 feet high by 18 inches was illuminated by Leigh Light. Soon afterwards two destroyers arrived and N/224 left the area having been recalled by Control.

Comment

An excellent sighting and one of the few cases where there has been a Radar contact on the smoke which infers that the Schnorkel was sticking up more than usual. It appears to have been a good attack, though the subsequent sightings of Schnorkel and the Sono buoy evidence show that the U-Boat was alive and not damaged by the attack.

Good Crew Drill

During the afternoon of March 8, **Sunderland Z/422 (R.C.A.F.)** was flying on Loran exercise almost due west at 1,000 feet when Schnorkel smoke was sighted bearing Red 17°, distant 5 miles, in position 55·35 N., 06·37 W. The weather was fair with 8/10th cloud base 2,000 feet, the sea calm and visibility 5 miles. At the time of the sighting which was verified with binoculars, the Radar was unserviceable. The captain prepared to attack immediately, eight depth charges were selected and the crew were told to watch for a Schnorkel. Nothing was seen so six depth charges were switched off, leaving Nos. 1 and 2 selected. The captain completed the run in, banked, and attacked from Red 150° to the U-Boat's course, releasing from 50 feet the two depth charges spaced 60 feet, set to shallow depth, both pilots' releases being pressed simultaneously. The first depth charge was seen to explode in a bubbling effect in the water and the second ahead of this. Two minutes after the explosions a patch of light blue oil, about 10 yards in diameter, appeared near the bubbling water. Basic Sono Buoy pattern was laid immediately, and positive cavitation was picked up from the first purple. This was repeated on red, blue, and orange. From the Sono Buoy tracking the U-Boat appeared to be steering a very erratic course

through the pattern and stayed within the pattern for a considerable time. The U-Boat then appeared to be making a south-easterly course and the pattern was extended in that direction. Later the U-Boat altered course to the north-east and the easterly pattern was then extended in an easterly direction and contact held until the aircraft was recalled. The aircraft remained in the area for 3½ hours after the attack and left at 1724 hours having been recalled by Control.

Comments

An excellent sighting while on a training flight. It is always a sound policy to drop depth charges for scare effect, and the decision to do this was no doubt governed by the difficulty in estimating the aiming point, always a difficult problem where the course and speed of the target are not known. The Sono Buoy tactics were correct although no concrete results were obtained. The whole attack clearly points to good crew drill and training.

The Sinking of "U 681": Both Sides of the Story

In the morning of March 11, **Liberator N/103 (U.S.N.)** was patrolling around the Scillies and Land's End on track 265° when the captain sighted a fully surfaced U-Boat 2 miles away, bearing Red 55° in position 49° 53′ N., 06° 31′ W. There were no clouds, visibility was 10 miles with a slight haze and the sea was calm. The Radar had been switched off 8 minutes previously on the captain's instruction. An attack was ordered and the aircraft made a sharp turn to port losing altitude rapidly. The U-Boat which had been sighted on course 333° proceeding at 5 knots also made a tight 180° turn to port and appeared to be diving. The pilot in order to get in an immediate attack disregarded the firing angle and light conditions favourable to the enemy, and the attack was made up sun from Green 30° to U-Boat's course which was now 153°, speed 8 knots. Eight depth charges were released from 100 feet set to shallow depth, spaced 45 feet. At the time of the attack the conning tower and decks were still visible. The photos show the depth charge explosions close astern of the U-Boat (*see* plate 3). One sono buoy (negative) and a smoke float were also dropped. After completing the first run the aircraft made a 360° turn to starboard and ran over the U-Boat again. The bow turret gunner fired 25 rounds from 1,000 yards out and the waist gunner fired 25 rounds. Rear view photographs taken on the second run show an explosion in the U-Boat just after the aircraft passed over, subsequently the bow came out of the water and the U-Boat sank. The aircraft circled in time to see the U-Boat's bows submerging and shortly afterwards many dinghies with survivors were observed in the area. A little later heavy oil, debris and a spreading oil slick were seen. Homing procedure was then begun and other aircraft came into the area. Approximately two hours later a British patrol craft arrived and picked up some of the survivors and at 1315 hours a British Escort Group of two frigates, one of them H.M.S. *Lochfadda*, arrived and picked up more survivors—a total of 40 were rescued. At 1330 hours N/103 received orders to return to base. The Escort Group had previously advised that they needed no further assistance.

Comments

What must have been a very welcome sighting of a fully surfaced U-Boat was shortly followed up by an immediate attacking run without trying to position for sun or best angle of approach. The attack was pressed home and from photographic evidence the last two depth charges of the stick appear to have straddled the target. The U-Boat had been already seriously damaged by grounding and was leaving a trail of oil fuel when sighted. However, it is considered that this depth charge attack caused the abandonment and subsequent foundering of the U-Boat. The captain and crew are to be congratulated on a good day's work.

One of the survivors from this U-Boat (she was *U 681*) has given the following account of the action.

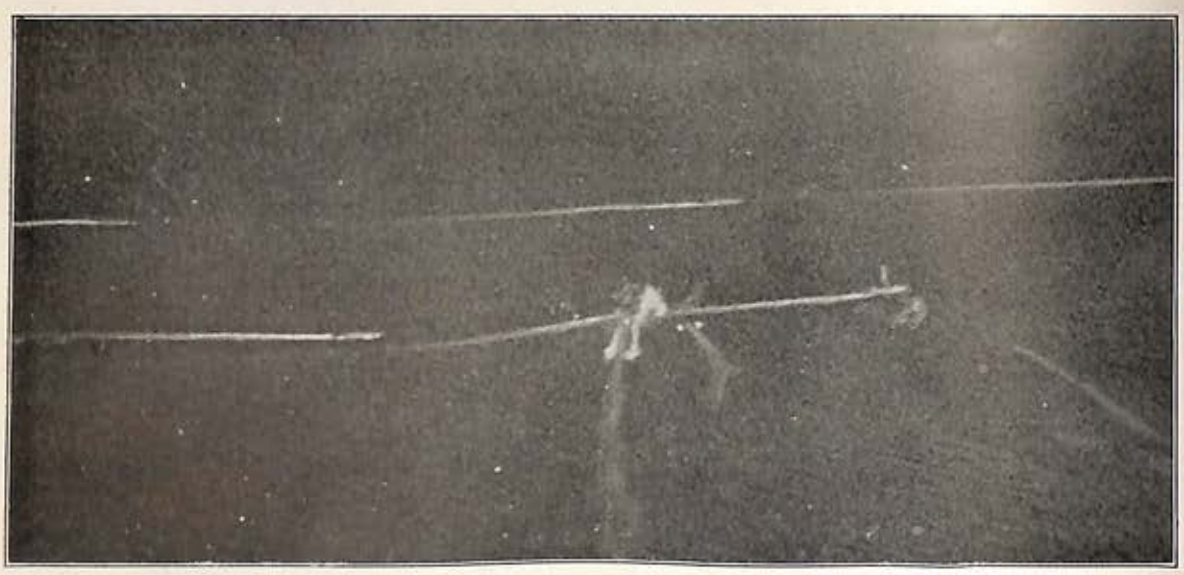
'We sailed from Kiel on February 7; 1945, and after calling at Kristiansand and Bergen set out for our first patrol. We had been allotted an area between Ushant and the Scillies though I believe the commanding officer had it in mind to go further and attempt to intercept the convoys entering Devonport.

Until March 11 the patrol was quite uneventful. We chose the passage between the Shetlands and the Faeroes and then came south keeping close to the British Isles. I understood that this course was chosen to economize in fuel as we were not carrying a full load.

Before proceeding to the Devonport area, the commanding officer was anxious to inspect an anchorage in the Scillies, and as the bottom there is tricky, he decided to take careful crossbearings on Bishop Rock lighthouse. At 0800 hours on March 11, he pinpointed himself as 3 miles south of the Scillies where the depth was 80 metres. From there we proceeded dead slow on a course that the chart showed to be clear of obstructions, but at 1100 hours we ran on a rock near the lighthouse. "Full astern both" was ordered, but the boat again ran on the rocks, damaging one of the screws and causing a leak in the Diesel compartment. "Full ahead" resulted in yet another grounding, and this time the pressure hull must have been damaged and oil began to pour into the control room from one of the inner fuel tanks. In the electric motor compartment the fuel rose to the level of the floor plates and this compartment was then closed off from the rest of the boat. In the control room the oil rose to about one metre. The tanks were then blown and the boat brought to periscope depth, and after five minutes the tanks were blown again and the U-Boat came to the surface. The commanding officer immediately began to send an emergency report that the boat was unable to dive and was being scuttled, but the current

These photographs are the first obtained of a depth charge attack on a U-Boat for a considerable time, and were taken by N/103 (U.S.N.) Squadron. In the upper print the spray from main depth charge attack is seen subsiding while a late explosion is developing on the U-Boat's starboard quarter.

In the lower photograph a big explosion, thought to be that of the batteries, is developing as the U-Boat sinks. (*See* letterpress, page 10.)



On March 7 the Banff Mosquito Wing made its first deep penetration of the Skagerrak in daylight. It intercepted a southbound convoy consisting of eight Tank Landing Craft, Type I, a type constantly used by the enemy for the transport of war material. Five of these vessels were sunk and two others damaged. These photographs were taken by the R.A.F. Film Unit Mosquito which accompanied the strike. (*See* letterpress, page 14.)

failed before a reply could be received. The emergency transmitter was taken up and placed aft on the bandstand, but after trying to send for several minutes the operators realized they had forgotten the aerial. The commanding officer then gave orders to abandon ship. The diesels had been set running at "Full ahead" as soon as the boat had surfaced and were left in this state by the last of the diesel watch who was climbing on deck as the engineer officer began to open the air vents. At this moment an aircraft was seen approaching on the starboard beam; an attempt was made to get the guns into action but the 37 mm. only fired two rounds before a stoppage occurred. The traversing gear of this gun had been bent by heavy seas. The two twin 20 mm. were not serviceable. The aircraft swung to attack, dropping a stick of seven or eight depth charges which straddled just astern of the conning tower, and while the aircraft was circling, apparently in preparation for a second attack, the boat, still proceeding at full speed ahead, began to settle by the stern. The dinghies were launched and we hastily abandoned ship. The boat continued to forge ahead at full speed and when we in the dinghies were some little way astern, the aircraft came in for the second attack, raking the boat with machine gun fire and dropping two more depth charges. Immediately there was a loud explosion, the bows rose out of the water and the boat began to slide under stern first with the diesels still running. As she disappeared there was another loud explosion which we believed to be the batteries exploding.'

II.—ANTI-SHIPPING

SUMMARY OF ANTI-SHIPPING OPERATIONS BY COASTAL COMMAND AIRCRAFT
MARCH, 1945

Weapons Carried.	Number of Sorties.			Number of Aircraft to Attack.			Target.	
	On Reconnaissance.	On Strike.	Total.	On Reconnaissance.	On Strike.	Total.	M/V.	Naval
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DAY OPERATIONS.								
Torpedo	11	—	11	6	—	6	—	6
R.P.	443	115	558	87	86	173	158	15
Bomb	54	9	63	5	5	10	5	5
Depth Charge	109 (1)	—	109 (1)	9 (1)	—	9 (1)	2	8
Cannon and M.G. only	183 (1)	18	201 (1)	20 (1)	8	28 (1)	21	8
TOTAL DAY	800 (2)	142	942 (2)	127 (2)	99	226 (2)	186	42
NIGHT OPERATIONS.								
Torpedo	44	—	44	5	—	5	—	5
R.P.	108	3	111	3	3	6	—	6
Bomb	469 (1)	4	473 (1)	172 (1)	2	174 (1)	89	86
Depth Charge	1 (16)	—	1 (16)	— (16)	—	— (16)	2	14
Cannon and M.G. only	40	—	40	4	—	4	—	4
TOTAL NIGHT	662 (17)	7	669 (17)	184 (17)	5	189 (17)	91	115
ALL OPERATIONS.								
Torpedo	55	—	55	11	—	11	—	11
R.P.	551	118	669	90	89	179	158	21
Bomb	523 (1)	13	536 (1)	177 (1)	7	184 (1)	94	91
Depth Charge	110 (17)	—	110 (17)	9 (17)	—	9 (17)	4	22
Cannon and M.G. only	223 (1)	18	241 (1)	24 (1)	8	32 (1)	21	12
GRAND TOTAL	1,462 (19)	149	1,611 (19)	311 (19)	104	415 (19)	277	157

Notes.—(1) Included in the above figures are :—

(A) 201 Sorties directed against midget U-Boats and comprising—
5 Sorties with bombs.
9 Sorties with cannon and M.G. only.
95 Sorties with depth charges.
92 Sorties with R.P.s.
18 Midget U-Boats were attacked.

(B) 42 Sorties directed against navigational aids and comprising—
22 Sorties with R.P.s.
20 Sorties with cannon and M.G. only.
29 Aircraft made attacks.

FINAL ASSESSMENTS FOR FEBRUARY, 1945

Day :—

Cannon and Tsetse

2 T.T.A. damaged.

R.P. and Cannon

1 M/V (490 tons) sunk.
2 M/V.s (totalling 1,764 tons) seriously damaged.
1 *Narvik* class destroyer damaged.
1 M/V (4,500 tons) damaged.
1 Coaster (300 tons) damaged.

Depth Charge.

1 Midget U-Boat sunk (provisional).

Night :—

Bombs

1 M/V (6,105 tons) sunk.
2 M/V.s (totalling 7,000 tons) damaged.
2 T.T.A. damaged.
2 E-Boats damaged.

Torpedo and R.P.

1 M/V (4,000 tons) sunk.

RESULTS CLAIMED FOR MARCH, 1945

Day :—

R.P. and Cannon

5 M/V.s (totalling 9,495 tons) sunk.
1 Midget U-Boat sunk.
1 Coaster (200 tons) sunk.
2 T.L.C.s sunk.
5 M/V.s (totalling 10,733 tons) seriously damaged.
1 Coaster seriously damaged.
5 T.L.C.s seriously damaged.
1 Fleet trawler seriously damaged.
5 M/V.s (totalling 11,477 tons) damaged.
2 T.T.A.s damaged.
1 Tug damaged.

Bombs

1 Motor-boat damaged.

Cannon

2 Midget U-Boats sunk.
1 Motor launch sunk.
1 Barge seriously damaged.
1 T.T.A. damaged.

Depth Charge

5 Midget U-Boats sunk.

Night :—

R.P. and Cannon

1 E-Boat sunk.
3 E-Boats damaged.

Bombs

2 M/V.s (totalling 4,000 tons) seriously damaged.
8 M/V.s (totalling 35,026 tons) damaged.
1 Destroyer damaged.
1 Minesweeper damaged.
1 Floating dock damaged.
1 E-Boat damaged.
1 T.L.C. damaged.

Cannon

1 Minesweeper damaged.
1 E-Boat damaged.

Depth Charge

1 R-Boat sunk.
1 M/V (1,000 tons) damaged.

Shipping Strikes in March

During the night of March 2, **Halifax K/502** on patrol in the Skagerrak, homed on to a Radar contact and sighted a merchant vessel escorted by a trawler type auxiliary and a destroyer. An attack was made on the merchantman, now known to be the "Isar," 9,026 tons, and two direct hits were scored. The ship caught fire and the flames from it were visible at a distance of 15 miles.

Early on March 6, **Halifax E/58** sighted and attacked a 1,000-ton merchant ship south-east of Homborsund Light. One 500-lb. bomb was seen to hit amidships, causing a bright glow and a huge pall of smoke. The vessel was seriously damaged.

In the late evening of the same day, **K/502** homed on to a contact east of Homborsund Light. With the aid of flares the pilot sighted two merchant vessels of about 3,000 tons each. He attacked one of them with bombs and obtained a direct hit on the stern. A great column of smoke rose from the stricken ship, and when more flares were dropped she was seen to be stationary with the other vessel circling around her.

During the morning of March 7, **Beaufighters A/236** and **G/254** sighted a small motor launch south-east of Heligoland. They attacked it and scored many cannon strikes. The launch sank and the crew were seen in the water.

A few hours later **34 Mosquitos** from **Banff** carrying long-range tanks and tier stowed R.P., patrolled the Skagerrak in search of a suitable target. Soon after 1300 hours they sighted a convoy of eight heavily laden tank landing craft, which they attacked with R.P. and cannon. Many cannon strikes and a total of 72 R.P. hits were scored on seven of the vessels, five of which were sunk. (*See* plate 4.) Unfortunately, two of our aircraft collided on breaking away from the attack and crashed into the sea.

On March 8, Beaufighters **X/254** and **Q/236** on an anti midget U-Boat patrol attacked a small coaster off Spiekeroog with depth charges, R/P and cannon. The depth charges fell within five yards of the stern of the vessel and at least one hit was scored with R/P. The coaster was left with decks awash and is claimed as seriously damaged.

Later the same day W/236 and K/254 also on an anti midget U-Boat patrol sighted three coasters north of the Weser estuary. Depth charges were dropped close to one of the vessels and many cannon strikes were scored on it. This vessel was left on fire, and is claimed as seriously damaged.

The **Dallachy Wing Beaufighters** were also active on March 8, and 28 of them attacked three merchant ships and three auxiliaries in Midtgulen. Many R/P and cannon strikes were obtained on a merchant vessel of 3,700 tons and on another of 1,000 tons ; they were both seriously damaged and left on fire. Two trawler-type auxiliaries and a tug also received damage during the attack (*see* Plate 1). Two Beaufighters failed to return.

Halifax E/58, while on patrol in the Kattegat on March 12, sighted a merchant ship of 3,000 tons accompanied by an escort vessel. An attack was made and the last bomb in the stick landed on the stern of the ship. A great shower of sparks and much smoke were seen coming from the target.

A strike producing excellent results took place on March 17, when **31 Mosquitos** of the **Banff Wing** attacked a number of merchant ships in the anchorages at Aalesund. The vessels ranged in size from 1,000 to about 4,000 tons and were attacked with R.P. and cannon. A ship of over 3,000 tons and two of nearly 2,000 tons each were sunk, whilst another vessel of 1,000 tons was damaged. (*See* plates 5 and 6.) Intense flak was met from shore batteries, and two aircraft failed to return.

On the same day **Mosquito E/333, (Norwegian),** while on a shipping reconnaissance of the Norwegian coast, sighted a large barge being towed by a tug. The pilot made two attacks on the barge using cannons and machine-guns and scored many strikes each time. He finally attacked with two 500-lb. bombs and obtained a direct hit amidships. A large explosion followed and the aircraft was hit by pieces of flying debris, but managed to reach base.

On the night of March 20, **Halifax U/58** homed on to a Radar contact in the Skagerrak and sighted five merchant vessels on an easterly course. The pilot attacked one of the ships, a vessel of 2,500 tons, and obtained a direct hit with one bomb. As the aircraft turned away the ship was completely obscured by explosions and smoke.

On the night of March 21, **Beaufighters G/W/E/236** attacked three E-Boats west of Texel. They scored R/P and cannon hits on one of the boats, which blew up and was left a burning wreck. The two other E-Boats were set on fire with cannon shells.

On March 23, **12 Mosquitos** from **Banff** attacked a merchant ship of nearly 8,000 tons in Dalsfjord. They obtained many R.P. hits which caused a large explosion on the superstructure and the ship was left on fire. (*See* plate 7.)

A few minutes later another formation of Mosquitos attacked and seriously damaged a 1,000-ton ship north-east of Stadlandet. (*See* plate 7.)

On March 24, **31 Beaufighters of the North Coates Wing** attacked a coaster off Ameland with six torpedoes and 89 R/P.s. The coaster sank.

The same evening **28 Beaufighters of the Dallachy Wing** attacked shipping in the outer harbour at Egersund. In spite of bad visibility and formidable anti-aircraft fire the attack was pressed home. R/P and cannon were used to good effect, causing serious damage to a merchant ship of 2,500 tons and a large trawler. A 1,000-ton merchant vessel was also damaged (*see* Plate 8). Four Beaufighters did not return from this strike.

During the early hours of March 27, **Liberator F/547,** on anti U-Boat patrol in the western Baltic, sighted a lone R-Boat on a northerly course. An attack was made with four depth charges which fell close to the target. The Liberator then straffed the R-Boat with machine-guns and the vessel completely disintegrated.

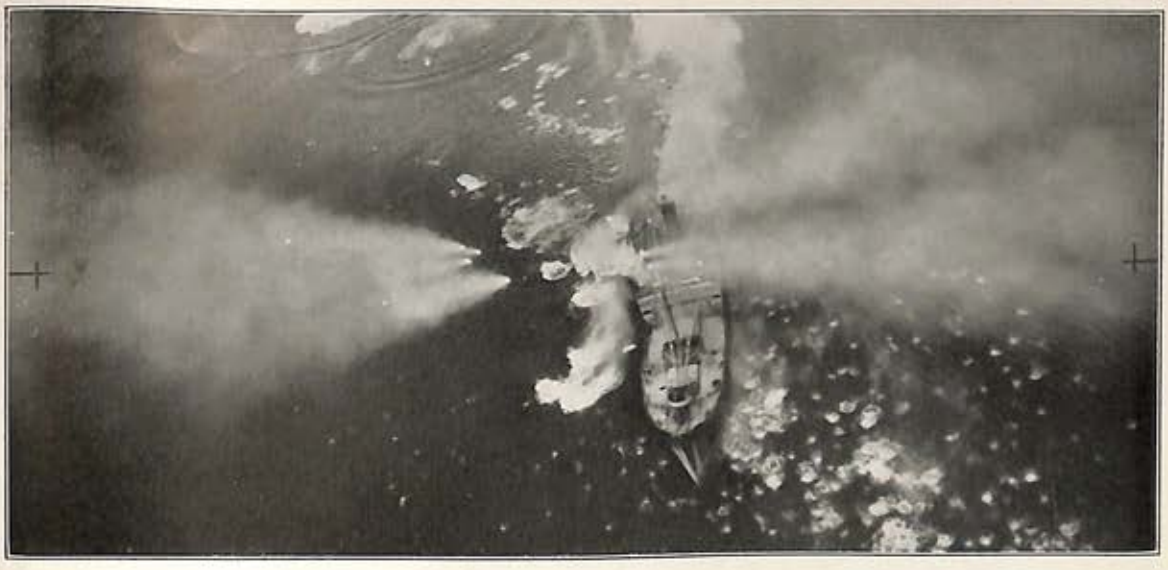
Soon after midnight on March 27, **Wellington Q/524,** sighted three " M " Class minesweepers and a small unidentified vessel near Norderney. A bombing attack was made, resulting in damage to one of the minesweepers.

On March 30, **44 Mosquitos** of the **Banff Wing** penetrating the Skaggerack as far as the entrance to Oslo Fjord, found a number of ships alongside the quay at Porsgrund. They attacked four merchant vessels and a barge, as well as silencing two flak positions on the shore. All the merchantmen were hit with R.P. and cannon and two, of nearly 1,500 tons each, were sunk. Another ship, the " Scharhorn " of 2,643 tons, was seriously damaged, and a fourth ship was damaged. Only one aircraft was lost in this attack.

A highly successful attack was made on March 7, 1945, by Mosquitos of the Banff Wing on enemy shipping lying in the protected anchorage at Aalesund. Three ships totalling 6,757 tons are known to have been sunk and another one damaged. The top photograph shows part of the attacking formation flying overland on its way to the target. The lower one illustrates the low level at which the aircraft attacked. (*See* letterpress, page 14.)

(C55229)

These photographs show three stages in the attack at Aalesund. The larger vessel was the German "Iris," 3,223 tons, which sank. It had been damaged by Coastal Command aircraft on a previous occasion. (*See* letterpress, page 14.)



On March 23, 1945, the Banff Mosquitos attacked the German "Rotenfels," 7,854 tons, in the long and narrow Dalsfjord. Damage from R.P. and cannon was inflicted. (*See* letterpress, page 14.)

On the same day another Mosquito force attacked the "Lysaker," 910 tons, in the little harbour of Tetgenaes near Standlandet. This ship, originally Norwegian, had been heavily armed by the Germans. At the least she must have been very seriously damaged. (*See* letterpress, page 14.)

On March 24 Beaufighters of the Dallachy Wing penetrated the anchorage at Egersund and successfully attacked shipping there. A merchant ship of some 2,500 tons was sunk, another of 1,000 tons damaged, and a fleet trawler seriously damaged. These photographs illustrate the action. (*See* letterpress, page 14.)

III.—OTHER OPERATIONAL FLYING

Air/Sea Rescue

During the month of March, 84 members of aircrew were rescued by the Air/Sea Rescue Service.

Air/Sea Rescue needs good weather, without it an aircraft cannot make a good ditching, the crew drill gets thrown out of gear and, when it gets rough enough, even the H.S.L.s are shut in harbour. During March the weather was ideal for almost the whole month. In the busy area off the south-east coast it was calm and sunny, and the sea was so smooth that our amphibious aircraft were often able to use it as a big seaplane base. The U.S.N. Catalinas, which have been so successful as an Air/Sea Rescue medium in the Pacific, made five open sea landings in the first twenty-four days of the month. They picked up ten men, including three fighter pilots, the whole crew of six of **Wellington O/612** and a German.

Wellington O/612 sent an S·O S and long dash on the Group frequency so the position could only be guessed at, consequently two Warwicks were started on a search of an area forty miles long and fifteen wide at first light. Before they had covered half of it, a returning bomber had spotted the dinghy and a Catalina had picked up the crew. The dinghy was found in the search area of the Warwicks, but in the half which they had not yet covered.

During the same period Walrus aircraft made six landings. They rescued four men including the coxswain of a German explosive motor-boat. The other three survivors were all from transit gliders.

The Air/Sea Rescue organization had a very busy twenty-four hours on the day of the airborne operation on the Wesel area. They backed up the operation with 35 surface craft and flew 52 air sorties. Fortunately, only two gliders came down in the Channel. In both cases the same Walrus of 278 Squadron saw the ditching and circled the survivors until, in the first instance, H.S.L. 190 and, in the second, R.M.L. 529 came to the scene. Eight men were picked up in each case. The 1st Allied Airborne Army lost no lives in the sea that day and the Commanding General saw fit to thank Coastal Command for its efforts during the operation.

On March 9, a Mustang pilot baled out in position 52° 30′ N., 02° 13′ E. and got into his K-type dinghy. **Beaufighter S/236** circled the dinghy showing Rooster on to which **Warwick W/280** was homing when the Beaufighter had to leave. Eventually W/280 with the assistance of **Walrus H/278** found the fighter pilot and dropped two Lindholmes both of which overshot. Contact was made with an H.S.L. which homed by W/T and picked up the survivor.

Beaufighter H/254 with a Dutch crew was flying a Rover patrol off the Frisian Islands on the night of March 26, when an engine was put out of action by shore-based flak. In spite of more flak and the difficulty of maintaining height on one engine, a torpedo attack was made before the aircraft turned for home. The Beaufighter crossed the North Sea to within a mile of Sheringham when the other engine failed and a perfect ditching was made. The crew got into their dinghy and paddled ashore. They then rang up for transport and were soon being debriefed, apparently unaware that they had done anything unusual.

On March 30, the good luck of the American Catalinas ran out and two of them got into difficulties. The first aircraft landed and picked up two survivors from a ditched bomber but were unable to take-off again owing to the rough sea. Warwicks homed R.M.L.s to the area and the crew and survivors were picked up the same evening.

The experience of the other Catalina crew was a very different matter. They landed on the sea on March 30, and were not on dry land again until April 5. They spent one day in their Catalina, three days in an airborne lifeboat, and one day coming home in an R.M.L. The sea was very rough all the time and the wind reached Force Seven.

The Catalina landed five miles off Schiermonnikoog in an unsuccessful attempt to rescue a fighter pilot. Unfortunately, an oil line broke and an engine seized. Shortly afterwards an Me 109 strafed the flying-boat as it lay crippled on the water.

The next day three airborne lifeboats were dropped. The first lifeboat, from **Warwick Z/280,** was not boarded because it was damaged by the heavy seas which smashed it against the hull of the Catalina. The crew managed to board the second lifeboat from **Y/280** but they could not start the engines. The third was a large type experimental American lifeboat dropped by a Fortress. The Catalina crew of six transferred to it and, as night fell, got underway on a westerly course.

Two R.M.L.s were waiting at a rendezvous position seventy miles away ready to meet the lifeboat if aircraft found it again. But for the next two days the weather was very bad with fronts, low cloud, poor visibility and very rough sea so that, although extensive air searches were flown, the lifeboat was not found.

During the search on April 1, **X/254,** one of four Beaufighters who were flying an inshore sweep, called "Mayday," and crashed into the sea, after turning through 270° to starboard. The other Beaufighters circled the spot but there were no survivors.

On the morning of April 3, the weather moderated and continuous automatic S O S signals

were picked up by G.P.O. stations. The bearings were mainly second class but the rough fix was definitely in the area where the missing lifeboat should be. Warwicks homed onto these signals and, in position 54° 06′ N., 06° 18′ E., the lifeboat was found. In spite of the westerly gales definite progress had been made since it was last seen. At the time of the sighting, however, it was lying derelict and although petrol containers were dropped to the crew and retrieved successfully the boat did not get under way again.

R.M.L.s had set sail from Yarmouth as soon as the S O S signals were tied up with the lifeboat. Unfortunately, on account of the heavy seas, they failed to arrive before darkness fell and the lifeboat was again lost.

At first light on April 4, **Warwick K/280** found the boat and watched the survivors being picked up. The R.M.L.s set course for home and finally docked at Yarmouth on the morning of April 5. In spite of five days at sea the whole crew survived and were not found to be suffering unduly from exposure.

Photographic Reconnaissance

The retreat of the German Navy and Merchant Units from the eastern Baltic ports proved an interesting target for P.R.U. Several of the retreating ships have been photographed in convoy and lying off Sassnitz. This port has become increasingly important as a port of call or junction in the withdrawal. The Pocket Battleship "Admiral Scheer", the Heavy Cruiser "Admiral Hipper", the Light Cruisers "Nurnberg", "Koln" and "Emden", and a large number of minor naval units and merchant vessels are now located in western Baltic ports less vulnerable to immediate occupation by the Allies.

Work on pre-fabricated U-Boats appears to have slowed down considerably, particularly in the last month. Priority has obviously been given to the most advanced hulls and there has not yet been a big decline in the numbers completed.

Excellent low verticals and oblique photographs were obtained of the hulk of the Battleship "Tirpitz" at Tromsø to assess possible repair work. (See plate 9.)

Cover of German airfields has shown a notable increase in jet propelled aircraft as an added defensive element on the Western Front. Otherwise most airfields, particularly in Denmark, have, as a result of reduced German territory, become more active than hitherto

Damage assessment targets such as oil installations, railway marshalling yards, railway facilities and bridges comprise one-half of the total targets photographed. In particular oblique photographs of the Bielefeld Railway Viaduct, one of the targets struck by 10-ton bombs were most impressive. The favourable weather conditions enabled P.R.U. to play a great part in the success of the recent Allied advances on the Western Front. Photographing of large stretches of railways have been made on a far greater scale than has been possible in the past.

The following reports were written by members of the air crews concerned.

544 Squadron Mosquito

On March 16 we were detailed to photograph targets in the Leipzig–Dresden area, and were airborne at 1230 hours.

Climbing up to operational height we met cloudy conditions due to a front passing through, and it was not until we were well into France that we were able to see the ground at all clearly. The cloud broke soon after, but didn't fully clear until just before reaching Leipzig. We covered some of the targets west of the city at 33,000 feet, and in slight non-persistent trails.

We started our run over Leipzig, and about half-way through it, I saw two thick trails very near to the ground, but coming up extremely fast. Identifying them as Me.163 trails, I called my navigator to his seat, jettisoned drop tanks, turned 90° to starboard, opened up both engines fully, and in a slight dive attaining an I.A.S. of 260 m.p.h. (T.A.S. 460 m.p.h.).

Within a few minutes of the initial sighting of the 163's they were slightly above and behind us, one on each side. They attacked simultaneously one from the port and one from the starboard, upsetting my plan of a turning duel, so I did a half roll, and a screaming dive for the pine trees, attaining an I.A.S. 480 m.p.h. (T.A.S. 650 m.p.h.), pulling out of the dive at 12,000 feet.

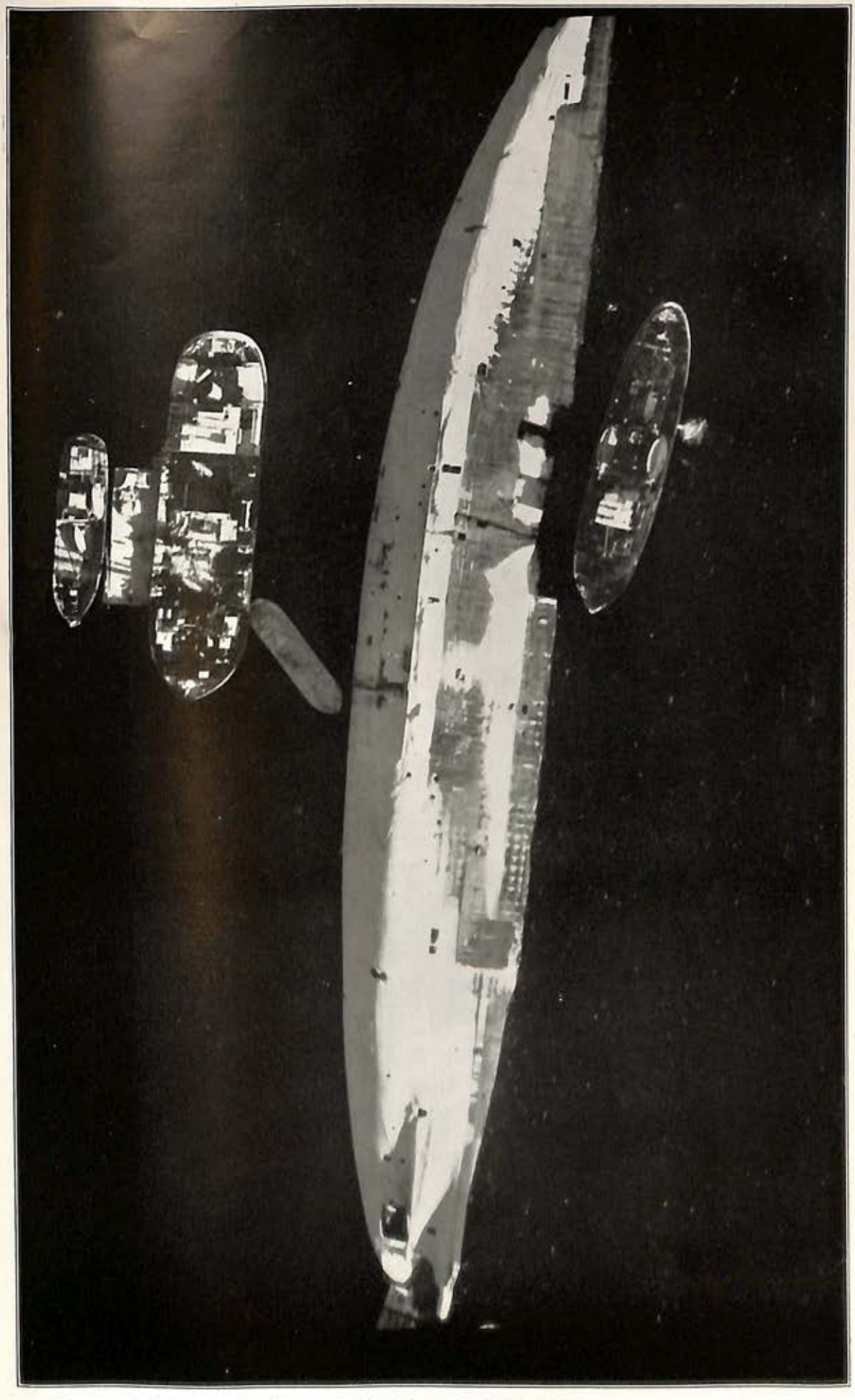
The aircraft came out of it very nicely, only to find three more Me.163s on our tail, one on each side and one directly behind. All three were slightly above in range and firing, so I went into a spiral dive right down to the deck and fortunately we lost the enemy aircraft.

On levelling out, however, I discovered black smoke was pouring from the starboard engine, which had been hit by cannon shells. The engine was losing power so I feathered and set course for the Rhine, having no desire to fly back through the same area.

On the way across Germany, flying more or less at deck level, barely clearing hill tops, we noticed several farmers and other civilians firing at us with rifles and shot guns. This however did not do any further damage to the aircraft.

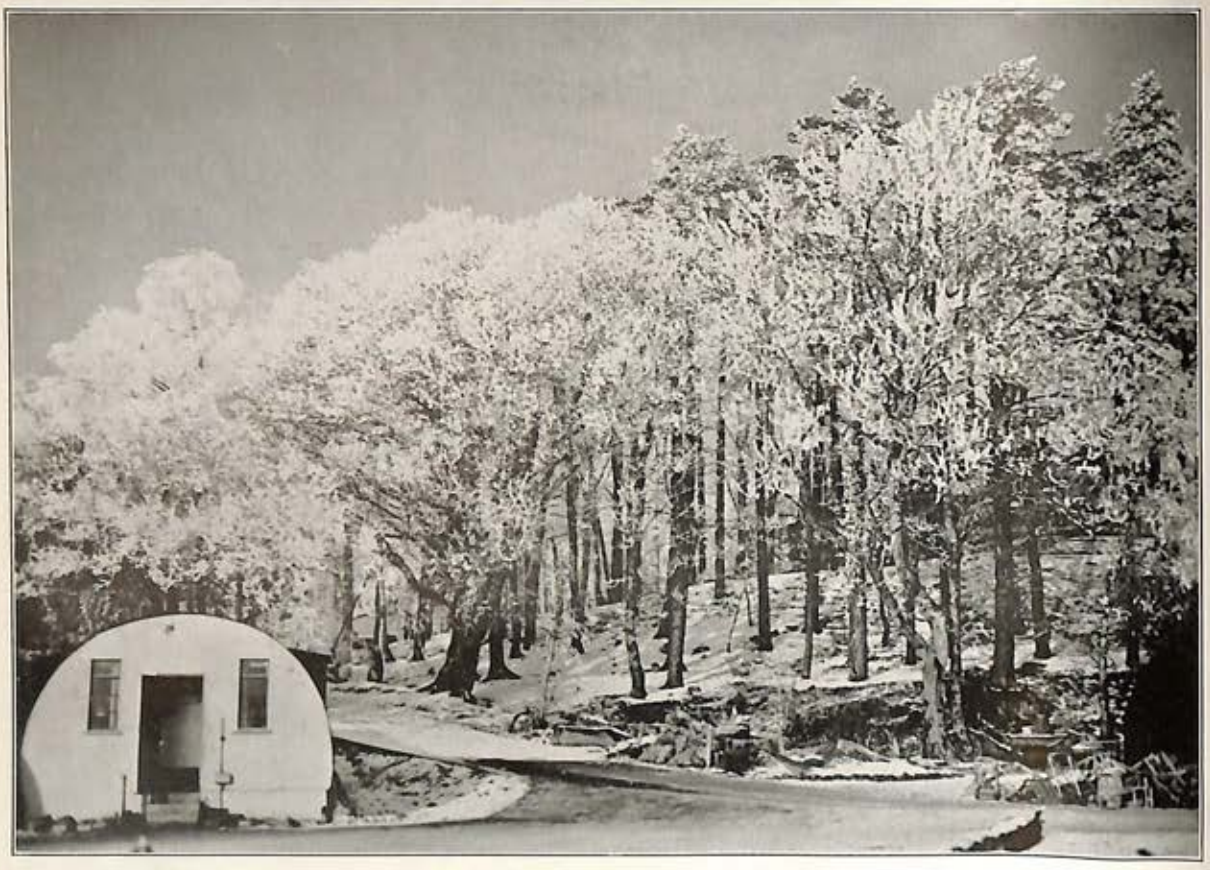
After about 35 minutes, the navigator, keeping an unprecedented lookout, spotted an Me.109, 1,000 yards behind and about 400 feet above. I did some hectic flying down valleys, up hills, and around trees, and after several minutes lost him.

At this time we made a pinpoint and reckoned ourselves to be about 30 miles west of Kassel.



This remarkable large scale photograph of the German battleship "Tirpitz" was obtained by a Mosquito of 544 Squadron on March 22. The ship remains in the position where she capsized near Tromso, in northern Norway, following the Bomber Command attack late in 1944. Snow covers the ship. A considerable flying effort was involved in obtaining this photograph. Stops to refuel in the Shetlands were made on both outward and inward trips. The total flying time, all in one day, was over 10 hours, and the total distance covered approximately 3,000 miles. (*See* letterpress, page 16.)

(C55229)



These photographs of the Great Frost were taken at Killadeas between the 19th and 29th of January, 1945. During that time aircraft were unable to operate as the ice on Lough Erne was three to four inches thick. In the bottom photograph members of the crew can be seen standing on the ice in front of a Sunderland.

We carried on, altering course 30° alternatively to port and starboard every five minutes in an attempt to outwit the German DF. After a further 45 minutes, still at ground level, we crossed a small unidentified town, and met very accurate and severe flak. One shell went through a blade of the feathered propeller, bursting just afterwards and wounding the navigator in the right leg. Several pieces of shrapnel were found in his leg from the knee to ankle. Damage to the propeller blade caused it to rotate.

A few minutes later we encountered prefrontal cumulus cloud and thankfully flew into 3 to 5/10ths of it, climbing to 2,000 feet to do so.

Flying in steadily increasing cloud for a further 30 minutes, we saw through a break, several American D.C.3s and gliders, though no aerodrome. Deciding we were somewhere near friendly territory, we altered course to 300° and flew on.

To be sure of avoiding all high ground we stayed at 2,000 feet, flying on instruments for an hour. We then reckoned we had cleared all the high ground and gently let down, breaking cloud at 800 feet. Previously, our VHF Mayday calls had met with no response, and Gee was U/S as a result of damage to the aircraft.

Soon after breaking cloud we pinpointed Lille and immediately prepared to land there. A normal single engine approach was made, but immediately on touching down the aircraft swung violently to starboard, both legs collapsed, and the aircraft was almost completely written off. It was found that the swing was due to the cannon shell which had gone through the starboard tyre.

Other shells had hit the starboard engine and sprayed the fuselage with fragments. The landing was made at 1745 hours. We had been on one engine for exactly 3 hours, half of which time was blind flying.

544 Squadron, Mosquito

We were airborne at 0950 hours and climbed through thick haze over this country, crossing out at 28,000 feet in trails on track, just north of Great Yarmouth. Cloud built up rapidly across the North Sea and as trails were low, we decided to go up high. We attempted to jettison our drop tanks, but neither came off. We climbed to 33,500 feet making long persistent trails and carried on to E.T.A. Sylt over 10/10th strat. cumulus. We then turned for Rostock and on this leg our starboard drop tank came off, making the aircraft rather unweildy. The low cloud broke up in this area, leaving large gaps which were unfortunately covered by thin altostratus. However we photographed airfields at Grossenbrode, Rerik West and Rostock before doing one run above thick altostratus over the port of Sassnitz. A break over Swinemunde allowed us to photograph the port and approximately 20 ships just off shore, in spite of a smoke screen turned on for our benefit. As our remaining targets south-west of Swinemunde were covered by cloud, we set course from D.R. position, Neubrandenburg. Two minutes later we were rather worried to see a trail coming straight towards us on a reciprocal track about 6,000 feet above us. We both held our courses and as no attempt was made to intercept us, we thought that this was the Mosquito detailed to double-bank us.

About four minutes later, still at 33,500 feet, we saw two trails approximately 15 miles away on our port quarter. These did not worry us at first, but when they began to turn towards us we accelerated and dived to 32,000 feet with 240 m.p.h. indicated on our clock. The trails began to catch up on us, so we dived into some cirrus at 30,000 feet and lost sight of them. We flew in this cirrus flat out for approximately five minutes and just as we thought ourselves well placed, the navigator saw two aircraft 1,000 yards behind, slightly below. Recognition was mutual and they climbed for attack, one on each quarter astern. We turned slightly to port in an endeavour to get both on our starboard quarter. They attacked together and we turned very steeply to starboard and lost height. The aircraft, now identified as Me.262s, crossed below us and again came up, one on each quarter astern. It was during this turn that our remaining drop tank came off with a bang which shook us badly. However the aircraft handled much better and when the starboard Me.262 attacked we went into another steep turn, turned half onto our back and dived. The enemy aircraft overshot and we lost him to port, but the port enemy aircraft turned outside us and as we tightened the turn he also broke away to port. We were now at 22,000 feet and momentarily lost contact with the enemy so we turned north. Half a minute later we were rather startled to see him shoot across our tail from port to starboard at about 250 yards range. He climbed and positioned himself for another attack from our starboard quarter. This was made with the same lack of success and we again did a steep diving turn to starboard, losing him in the cirrus as he broke away. We had dropped to 20,000 feet in thin cirrus flying approximately north-west. Flying from patch to patch of cirrus we made our way to Denmark and after running out of cirrus dropped down to 19,000 feet below trails. We returned to base without further incident, landing at 1500 hours.

542 Squadron, Spitfire

On the morning of March 7, I was briefed to photograph the Bohlen Synthetic Oil Plant, the Molbis Thermat Power Station and an Oil Storage Depôt at Rositz, all being to the south of Leipzig. A damage assessment was also required of Chemnitz which the R.A.F. had attacked two days before.

At 0930 hours I took off carrying split 36-inch cameras with full magazines and all tanks full including a 90-gallon drop tank. I was soon well above cloud and heading out over the North Sea, eventually setting course at 35,000 feet. 10/10ths cloud lay well below and continued to within ten minutes of the target area. The trip was completely uneventful except for the disconcerting factor of the thick 100 yard non-persistent contrail I was trailing behind.

At 1125 hours I arrived in the area, Leipzig was clearly visible to the north and all my targets, including Chemnitz, in full view to the south east. Chemnitz lay under a thick pall of smoke which

was drifting slowly to the south, otherwise little or no cloud was visible in the sky. I felt very visible to those on the ground, however, I had no interference over Bohlen and Molbis, the first two targets.

It was during the first run over Rositz that, in looking behind towards Leipzig, I saw two large black trails at approximately 20 and 10,000 feet respectively coming from the Leipzig/Mochau airfield. Their speed was phenomenal, rate of climb about 10,000 feet per minute at an angle of about 60°. It was not long before two tiny Me.163 rocket propelled aircraft became visible.

The first enemy aircraft drew up to my altitude and about a mile distant, passing on up to about 40,000 feet before turning off his rocket and becoming very difficult to see. This happened in what seemed to be a second, meanwhile the other Me.163 was already drawing very close and it was obvious that I would stand no chance of seeing both aircraft when they were gliding above endeavouring to position themselves. On the other hand, with the contrail flowing behind me, I was a very conspicuous target.

My first impulse was to get out of trails, I rolled over on my back, opened up to full boost and revs., and dived to about 18,000 feet where my airspeed was in the region of 500 m.p.h., then I levelled out and swinging on a violent 90° turn to port I looked back up my descending trail. One Me.163 was already diving parallel to my trail and when I saw him he was only 5 or 6,000 feet above and rapidly closing. I swung round in a sharp 180° turn as he made his pass, thereby causing us to be heading in opposite directions and drawing apart so rapidly that he was soon only a tiny speck to arc around. I again altered course and descended rapidly. The enemy came back to the area but was well above me. Realizing I was not seen I descended to 6,000 feet in a southerly direction, I tried to see the second Me.163 but was unable to do so.

The engagement had only lasted five minutes and as I had obviously lost the enemy I decided to fly east. I climbed to just below trails in order to photograph Chemnitz which was now about 50 miles to the north west. No further sign of the enemy was seen and I had no difficulty in completing my photography. At 1345 hours I landed at Bradwell Bay with 10 minutes fuel left.

The inability of the enemy to position himself owing to his high speed and lack of manœuverability was, I thought, the most outstanding feature of this short engagement.

IV.—SPECIALIST AND GENERAL ARTICLES

Range Flying Control

Research into the performance of Coastal Command aircraft showed that there was an unacceptably large variation in the Still Air Ranges of operational aircraft on individual sorties, and that this variation, which often exceeded 30 per cent. could not be entirely attributed to tactical reasons. It was thought at first that the position could be improved by providing specialised instruction on Range Flying and Engine Handling for aircrew, together with additional data on aircraft performance and handling. This, however, did not prove to be sufficient, as although improved instruction helps the better crews, it appears to have little effect on the poor results obtained by some pilots, who in many cases have their own ideas on flying and cannot appreciate that they are inefficient.

2. Low fuel consumption gives very little indication of Range Flying Efficiency, although it is often accepted as a criterion of performance in Coastal Command. This practice encourages the unnecessary use of Loiter cruising conditions and low engine powers which often results in a loss of range with a corresponding reduction in the factor of safety. It is evident that there is a need for a simple method of measuring the results obtained on all operational sorties and expressing them in terms of potential range, so as to provide a yard stick which will enable crews to appreciate the effect of their flying in relation to the aircraft's measured performance on test.

3. To meet this requirement, a system of Range Flying Control which provides a standard method of assessing aircraft performance has been developed as a result of experiments with operational squadrons. Range Flying Control consists in principle of assessing every operational sortie in terms of its potential still air range. The results are then expressed as a percentage above or below average, the air range that provides a reasonable factor of safety on a full operational sortie being taken as such. This comparison is done automatically by plotting certain data on a chart and reading off the percentage difference.

4. In order to foster a competitive spirit among aircrew, the results obtained are plotted on a wall chart and displayed in the Crew Room. By plotting separate charts for crews and aircraft, it is possible to show that a greater discrepancy exists between the results obtained by different crews flying the same aircraft than by one crew flying different aircraft. A summary of the results is forwarded to Command Headquarters at the end of each month, together with flight engineer logs for all operational sorties made by the squadron during the month. This enables the results to be plotted at Command Headquarters and used when planning future operations.

5. In order to ensure that all crews and aircraft in a squadron are normally capable of covering the aircraft's agreed Still Air Range, the squadron flight engineer leader is responsible for instituting an enquiry into any sortie which produces below average results. Where it can be established that the poor results are due to tactical reasons and that the captain was fully aware, during flight, that there would be a reduction in range, the plot for the sortie is marked with an asterisk which indicates that although the assessment for the sortie is below average, the sortie was not unsafe, as the crew had taken action during flight to amend their flight plan accordingly. In the case of below average results which are not due to tactical reasons, the flight engineer leader is responsible for pointing out any mistakes made to the crew concerned, and drawing the squadron commander's attention to any aircraft or crews that consistently show below average results.

6. To provide the data for operating Range Flying Control, a very high standard of flight or flight engineer log keeping is required, since it is essential that all subsequent calculations are based on an accurate assessment of air distance flown and total fuel used. When a flight engineer is carried, he must compute the "Air Range left" in order to provide the captain with information on which he may form a decision as to whether the flight plan need be altered as a result of deviations from optimum cruising conditions.

7. Experience has shown that log keeping must be made a primary responsibility of one member of the crew. Where a flight engineer is carried, he is made responsible for the accuracy of the Log, the accurate assessment of Air Range Covered, and the measurement of Total Fuel Used. It has been found that this work provides a full time job for the flight engineer, and he is, therefore, unable to undertake other crew duties in flight except for short periods, or in an emergency.

8. Investigations into the possibility of operating Range Flying Control in squadrons which do not employ flight engineers are being made. It appears that this can be done by making the second pilot, or some suitable member of the crew, responsible for logging all the necessary observations during flight, and by establishing a flight engineer on each squadron. The latter would be responsible for doing the necessary calculations and plotting the results provided by the second pilot's observations. This arrangement would provide sufficient data to ensure that all crews and aircraft are normally up to the required standard. If Air Mileage Indicators and Gallons Gone Meters prove to be sufficiently accurate their introduction should make Range Flying Control very much simpler, since they will provide the Air Range Covered and the Total Fuel Used.

9. To facilitate its introduction a course on Range Flying Control for flight commanders and flight engineer leaders has been in operation at the Engine Control Instructional Flight for several months. Representatives of practically all the squadrons carrying flight engineers have attended this course and the system was officially introduced into these squadrons on April 1.

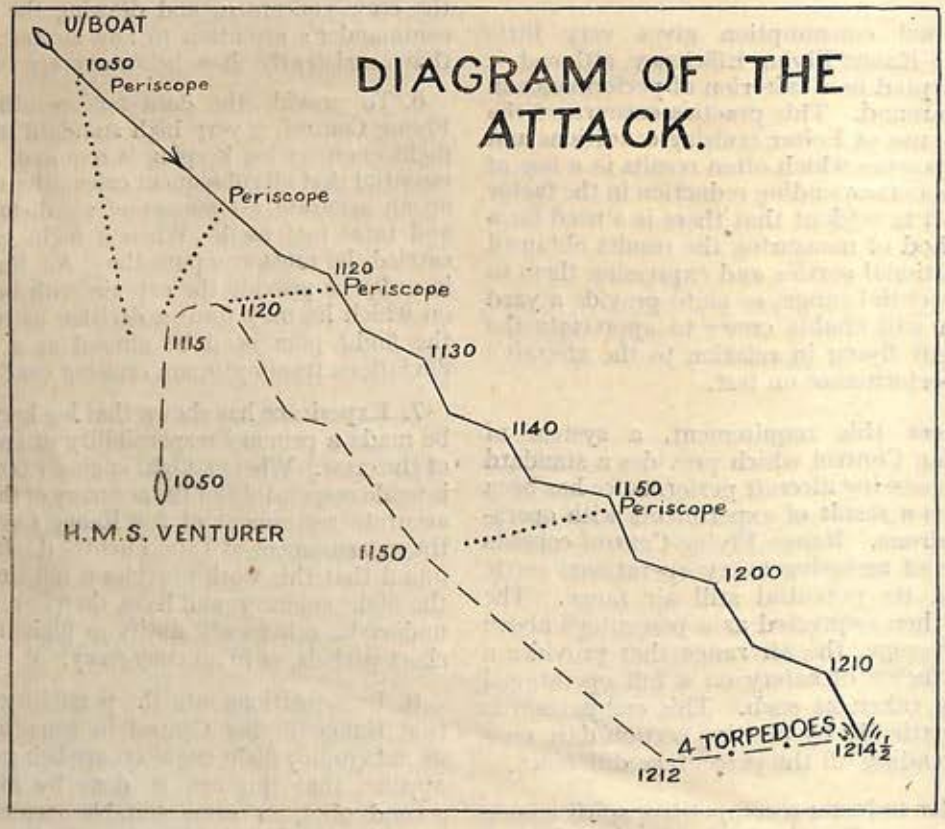
10. It will be seen that Range Flying Control by exposing subnormal aircraft and crews ensures that a pre-determined minimum standard of Range Flying Efficiency exists on all operational sorties, and that captains are alive to the need for amending their flight plan in the light of the tactical and meteorological conditions encountered.

Submarine *v.* U-Boat

It is not often realized how valuable an anti-submarine weapon is the submarine herself. The vast majority of the encounters between U-Boats and British submarines occur by day when the enemy is unwise enough to be on the surface in areas patrolled by our own submarines who are at periscope depth. The U-Boat is a very small torpedo target, and is seldom sighted until very close on account of her low bridge. The attack therefore, is generally a snap affair requiring extremely quick thinking and good judgment.

British submarines have been credited with 44 German or Italian U-Boats sunk to date, and successful attacks against Japanese U-Boats are increasing this total satisfactorily.

The following account is taken from the 11th War Patrol Report of H.M. Submarine *Venturer* and concerns the almost unique case of both friend and foe being underwater at the time of first sighting and throughout the attack—it will be seen that from 0932 hours when the presence of the enemy was first suspected until the sinking at 1214½ hours the commanding officer had only three brief glimpses of a periscope.



Hours.	*Narrative.*
0932.	Very faint (diesel?) "Hydrophone effect" heard, bearing 340°. It then faded.
1010.	H.E. again heard, now bearing 293° increasing in volume and drawing north.
1035.	Bearing now 320°. Still nothing to be seen.
1050.	The officer of the watch, after prolonged search over the bearing sighted "a thin mast." Nothing could be seen shortly after. Altered course to north to intercept.
1115.	Sighted periscope and prepared to attack. Target was apparently running some noisy machinery like an air compressor —there was definitely no schnorkel in use.

Hours.	*Narrative.*
1117.	Target crossed to starboard. In view of tidal set to northward and position of target his course might have been anything from 120° to 170° and, in view of doubt about his speed and range as well, it was thought advisable not to fire hastily but to take station on him and catch up to fire when better estimation of course and speed were possible.
1122.	Periscope again sighted, one showing about 8 feet and another showing about 3 feet. It was then apparent that *Venturer* was very broad on the bow and that the target would have to alter course more to starboard to make good the course to the harbour we expected her to be making for.
1151.	Periscope sighted range about 2,000 yards. We were now beginning to establish his course as about 135° speed 3½ knots and we were gaining bearing on his starboard quarter. The enemy appeared to be zigzagging about a mean course of 120°.
1210.	Target altering course to starboard leg of zig. Altered under full helm to 140° track to fire by Asdic, Director Angle 2° + 1°.
1212.	Fired four torpedoes by Asdic. In view of long firing interval and position on enemy's quarter (rendering an avoiding turn away at the sound of the torpedo H.E. almost certain) aimed the first torpedo at the estimated position of the stem and spread the others in half lengths to one half length astern.
1214½.	Loud sharp explosion followed up breaking up noises.
1217.	Fainter sharp explosion followed by two more at 16 and 17 second intervals (believed to be torpedoes striking the land behind the target). In view of the regularity of these explosions it seems probable that it was either the first or the last torpedo which hit the U-Boat.
1220.	Observation and listening showed that no interest was being taken by any of the fishing boats within hearing. Turned back and set course for the estimated position of the explosion.
1240.	Gathering seagulls observed on starboard bow.
1246.	Entered patch of extensive and spreading oil which got progressively thicker as it was penetrated until the wavelets looked yellow brown as they lifted against the light. In this patch was a long cylinder, a little bigger than a torpedo, floating with fair buoyancy. This canister appeared to be made of steel and had several brackets, etc. on its length, one end had a door with butterfly nuts; the other end appeared to be welded. It is thought possible that this container might have been an empty upperdeck torpedo stowage which had been torn free at the explosion. This possibility and the low revolutions-per-knot (170 revs. for 3–3½ knots) seem to indicate that the target was a 1,200-ton supply U-Boat.
	Also observed in the oil patch were many odd pieces of wood and numerous dead fish to varying size—the seagulls however kept well clear of the oil and none was seen to alight for the feast. It was impossible to see through the periscope below the surface for any remains at low buoyancy on account of the oil.

Comment

This straightforward account of the affair gives no conception of the difficulties and problems confronting the commanding officer. Submarines under water are extremely unmanœuvrable when travelling at slow speed, the "plot" had to be based entirely on estimation of range of a periscope sighted for a brief moment, on only three occasions, through another periscope during a 2½-hour stalk, all bearings obtained by listening to the hydrophone effect produced by the propellers of the enemy and finally the point of aim had to be chosen with in fact nothing to aim at but a source of noise. An error of 2° in obtaining the bearing of the source of the hydrophone effect would have meant a miss.

This submarine recently sank another U-Boat within six minutes of first sighting it.

Extracts from remarks by Captain (S/M) on this attack :—

. . . "*subsequent plotting back shows that the range on first sighting of enemy's periscope must have been about 5,000 yards and this sighting is as creditable to the officer of the watch as it is discreditable to the U-Boat who must have been using his periscope most carelessly.*

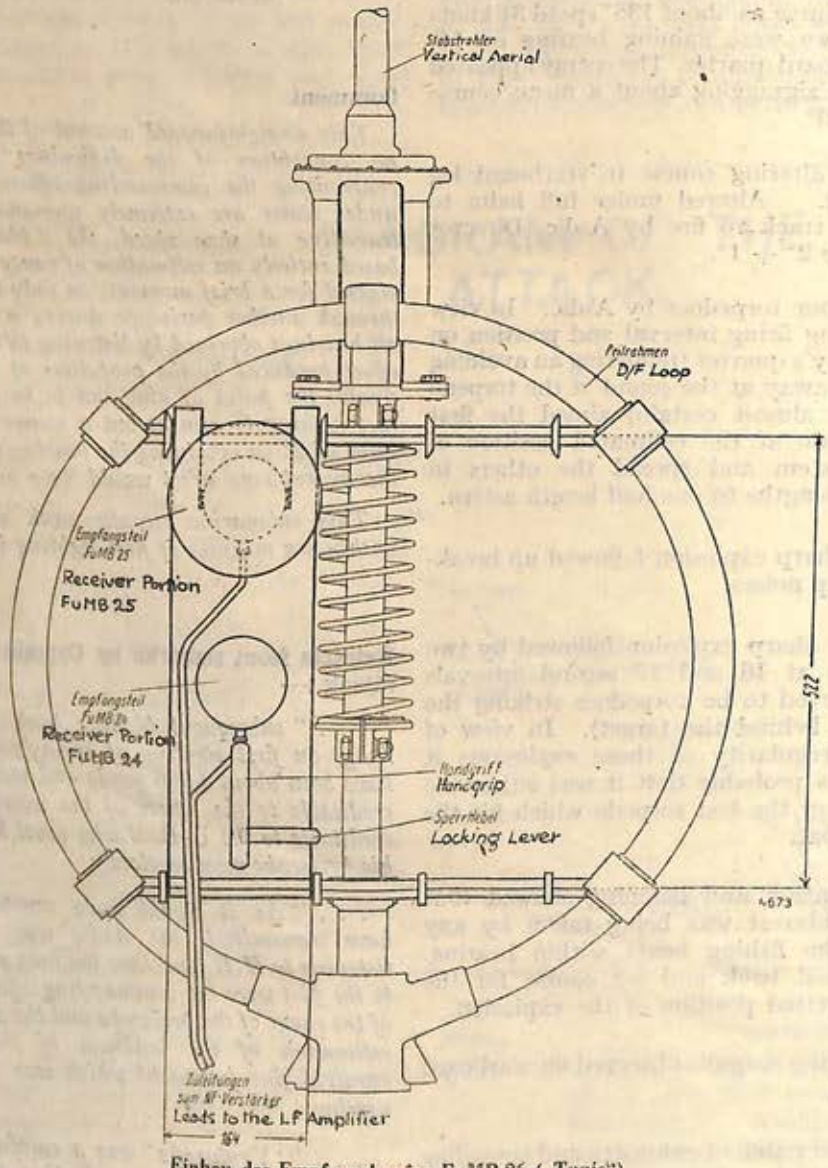
. . . "*As it would have courted detection to have transmitted, the Asdic was only used for listening to H.E. and thus the only ranges available to the plot were the commanding officer's estimation of the range of the periscope and the Asdic operator's estimation of the loudness of the H.E. Both required fine judgment which was evidently forthcoming.*

. . . "'*Venturer's*' *was a carefully thought out and finely judged attack lasting two hours with no assistance from Asdic ranges. Whilst good fortune must inevitably play its part in this sort of attack, which cannot be expected to be often repeated, nevertheless, the highest skill and efficiency was required.*"

German Search Receiver—"Tunis"

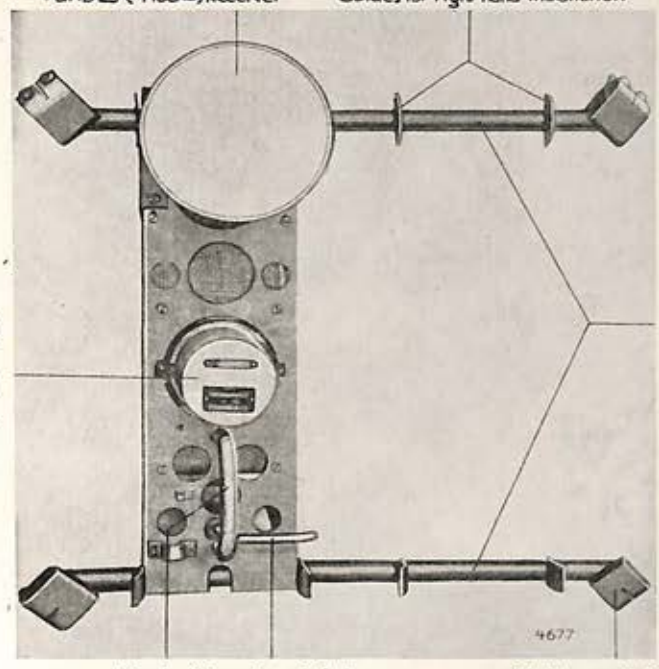
The following extracts and illustrations are taken from a translation of the "Tunis" handbook which was captured at Toulon. The handbook is labelled "Secret" and is dated April, 1944.

The Radar intercept and D/F installation "Tunis" is for reception of enemy Radar transmissions in the waveband around 3 cm. and between about 8 cm. and 15 cm. The purpose of the installation is early detection of all transmissions in the above wavebands, in particular enemy plotting by means of Radar sets. It permits the detection of transmitters with vertical and horizontal polarisation. By estimation and comparison of the signal strengths a bearing indication to an accuracy of about 15° can be made by experienced operators. In addition to the warning, an approximate bearing is therefore also obtainable with the installation here described. The set is installed on board ships, especially U-Boats. When installed in surface vessels, the set must be built in a special rotatable mounting frame. A most important point to be remembered is that the installation "Tunis" is not pressure tight, it must, therefore, be taken in before submerging.



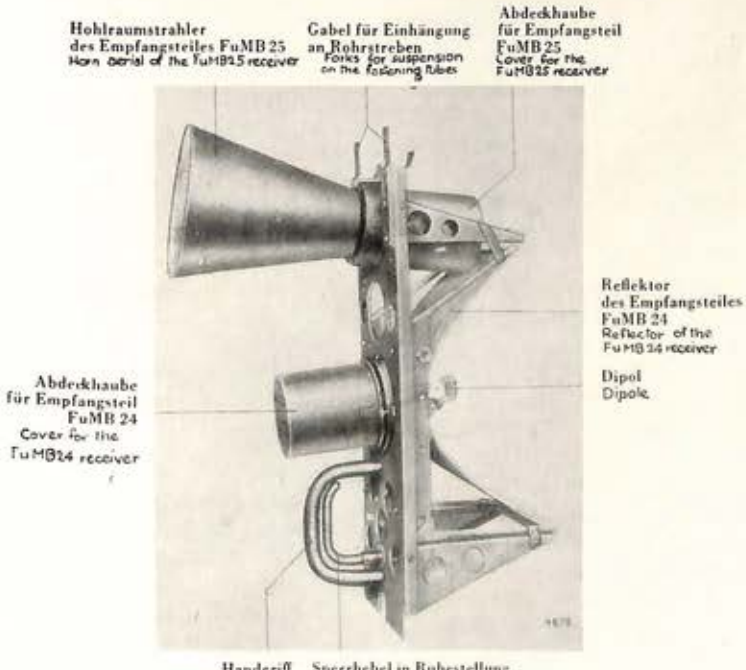
Einbau des Empfangskopfes FuMB 26 („Tunis") in den Peilrahmen H mit Stabstrahler

"Tunis" mounted in the D/F Loop.



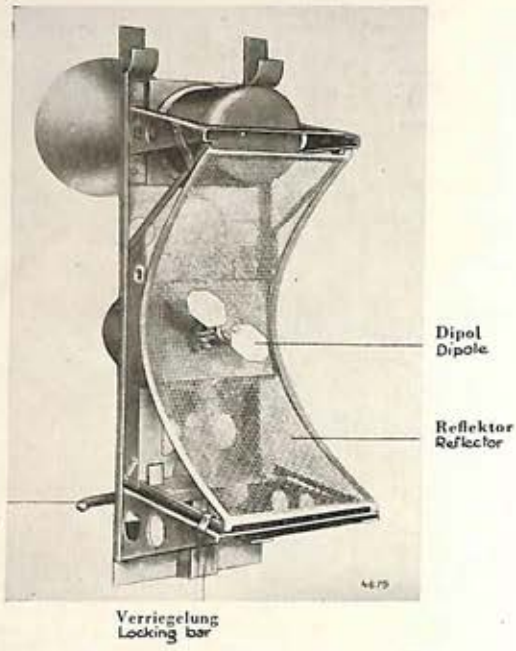
Vorderansicht des Empfangskopfes FuMB 26 („Tunis") mit Rohrstreben (Abb. 1)

Front view of the FuMB ("Tunis") receiver head with tubes.



Seitenansicht des Empfangskopfes FuMB 26 („Tunis") (Abb. 2)

Side view of the FuMB26 ("Tunis") receiver head.



Rückansicht des Empfangskopfes FuMB 26 („Tunis") (Abb. 3)

Rear view of the FuMB ("Tunis") receiver head.

Construction and Circuit Details of the Installation

The " Tunis " installation consists of :—

(1) The movable receiver head on deck.

(2) The cable leads.

(3) The two L.F. amplifiers with their corresponding mains units, connected to the cable leads and housed in the listening or D/F room, and

(4) The indicating apparatus (headphones, possibly also an oscillograph).

The receiver head of the installation consists of the receiver portions of the Radar intercept installations (*a*) " Mücke " and (*b*) " Fliege " which are fitted on a common frame and, on U-Boats, placed in the D/F loop. A special rotatable mounting frame is obtainable for surface vessels.

The receiver portions are arranged one above the other in two holes in a metal panel. The panel is fastened to two metal tubes arranged horizontally, which are set in an 800 mm. D/F loop frame, type H, with vertical radiator, and locked in place by a locking arrangement. The " Mücke " receiver head is on top, the " Fliege " receiver head underneath. The receiver heads of the "Mücke" and "Fliege" are sector D/F aerials, and therefore cover only the sector to which the reflectors are directed. Consequently, in order to ascertain the approximate bearing of the received transmission, the receiver head of the " Tunis " must be rotated by hand, which is done on U-Boats by turning the D/F frame drive.

The receiver head of the " Mücke " is a wideband detector receiver, which is tuned for reception on a wavelength of about 3 cm. This receiver portion consists of a horn radiator, the selectivity of which is determined by the dimensions of the throat of the horn. The rectified high frequency is fed from this detector to the receiver portion of the appropriate L.F. amplifier. The mouth of the horn is made waterproof (against spray) by a disc of plexiglass. Taking into account that the radiations generally emanate from aircraft, the receiver portion of the " Mücke " is fitted so that the reception angle is raised 5° above the horizontal.

The receiver head of the " Fliege " is similarly a wideband detector receiver. It is suitable for reception of wavelengths from about 8 to 15 cm. and consists of a wideband inclined dipole set in a paraboloid reflector with the " Naxos " finger and also the detector.

The reflector produces a more concentrated beaming, thereby increasing the range. The vertical beam angle is about 30°, the horizontal beam angle about 90°. Although this large horizontal angle decreases the accuracy of bearing, it facilitates, however, the picking-up of the transmissions.

The receiver portion of the " Fliege " is also set at an angle of 5° to facilitate interception of aircraft transmissions. From each of the receiver portions of the " Mücke " and " Fliege," a loose cable leads through the hatch to the two L.F. amplifiers in the inside of the U-Boat. The cables can be twisted together to form a single cable run.

Two complete " Naxos " units are used as L.F. amplifiers for the " Tunis " installation,

During the past few months operations by the enemy's Small Battle Units Command have been increasing, one man U-Boats (Biber), two man U-Boats (Seehund) and explosive motor boats being employed. All of these are very vulnerable to aircraft attack. This photograph taken by 254 Squadron shows a surfaced Biber. A considerable operational effort has been devoted by No. 16 Group to countering this enemy effort to interfere with our shipping in the southern North Sea.

The U-Boat war is not over, as is demonstrated by this photograph of a sinking British ship taken on March 22, 1945, by a 112 Squadron (U.S.N.) aircraft.

These photographs show the successful ditching of a Sunderland in the Irish Sea. In the top photograph a member of the crew can be seen standing on the fuselage with the dinghies on either wing. The middle photograph shows some of the crew in the H.S.L. which picked them up. The Sunderland is under tow in the bottom photograph. (*See* letterpress, page 25.)

i.e., one "Naxos" unit for the 3 cm. wideband receiver unit and one "Naxos" for the 8 to 15 cm. wideband receiver. The output voltages of both L.F. amplifiers are led to common headphones. In a second version, one 'phone of double headphones can be connected to one of the amplifier outputs, the other 'phone to the other amplifier output.

Reception with the "Tunis" Installation

When operating, and subsequently evaluating the received signals, the following points are to be observed :—

(*a*) Switch on the mains units of the "Naxos" installation. The installation is ready for operation after a minimum of one minute.

(*b*) Turn the frame until a tone is heard in the headphones. In order to ascertain which of the two receivers (wavelengths 3 cm. or 8–15 cm.) is receiving, test by breaking the connection to one of the two L.F. amplifiers, by pulling out the plug provided for this purpose.

(*c*) After determining which receiver is picking up the enemy transmission the direction from which the transmitter is radiating can be ascertained accordingly.

(*d*) The frame should be rotated so that one rotation through 360° takes about 30 seconds. A higher speed of rotation is not recommended, as otherwise it is possible that the received pulses produced in the headphones may under some circumstances not be noticed.

(*e*) Pay attention that the cables leading into the inside of the U-Boat do not become twisted.

Note.—When using the U-Boat Radar, take the receiver head below deck, otherwise the detectors may be damaged.

Dismantling before the U-Boat Submerges or when not in use

(*a*) Turn the locking lever upwards through 90°.

(*b*) Draw out the "Tunis" receiver head towards the front, holding it by the hand grip. Take the receiver head including cables inside the U-Boat.

Care and Maintenance

For testing the operational readiness of the "Tunis" installation, the test transmitter "Puck 301" is preferably to be used for the 3-cm. waveband, and "Puck 901" for the 8–15-cm. waveband. These test transmitters are equipped with a small radiating element. A 4·5-volt pocket lamp battery or 2-volt accumulator serves as power supply. The test transmitter is directed with the radiating surface towards the horn, or reflector opening. The frequencies lying in the frequency range of the installation are picked up out of the mixture of frequencies, and led to the detector. The distance of the test transmitter from the receiver under test should be about 2 metres.

A Successful Ditching by a Sunderland

Sunderland M/10 took off from Mount Batten in the early morning of March 4 on an anti U-Boat patrol. The weather was good with a calm sea. The patrol was without incident until 1313 hours when the starboard inner propeller flew off, taking with it portions of the starboard outer propeller.

The captain decided to try and make base, he sent a signal to this effect saying he was returning with engine trouble and giving his position as 51·24N., 05·59W. At the time of the accident the aircraft was flying at 500 feet, it immediately lost height to 200 feet.

The pilot set course for base but the aircraft continued to lose height rapidly and it soon became necessary to ditch. An S O S was sent out and an attempt was made to jettison the depth charges but this was unsuccessful as the apparatus failed.

The pilot put out 2/3rds flap and as there was no time to turn into wind he decided to land along the swell down wind. The aircraft did not bounce and a successful ditching was made with the two port engines. Immediately afterwards a further signal was sent saying that the aircraft had ditched and that the crew were uninjured.

These signals were intercepted, and Sunderlands **A/10** and **B/10** together with a Liberator and an A.S.R. Warwick were soon circling the aircraft which was taxying towards Pembroke Dock at a speed of about 4 knots.

The captain of A/10 asked permission to land but was told to await the arrival of A.S.R. and then patrol the area.

At 1628 hours H.S.L. 194 arrived and the aircraft was taken in tow. Six of the crew were transferred to the H.S.L. whilst the pilot and three others remained in the aircraft (*see* Plate 12).

During the tow the wind increased and the rope broke several times. However no damage was caused and the aircraft reached Pembroke Dock where she was moored at 0140 hours, March 5.

(C55229) 1,580 4/45