

Please do not upload this copyright pdf document to any other website. Breach of copyright may result in a criminal conviction.

This pdf document was generated by me Colin Hinson from a Crown copyright document held at R.A.F. Henlow Signals Museum. It is presented here (for free) under the Open Government Licence (O.G.L.) and this pdf version of the document is my copyright (along with the Crown Copyright) in much the same way as a photograph would be.

The document should have been downloaded from my website <https://blunham.com/Radar>, or any mirror site named on that site. If you downloaded it from elsewhere, please let me know (particularly if you were charged for it). You can contact me via my Genuki email page: <https://www.genuki.org.uk/big/eng/YKS/various?recipient=colin>

You may not copy the file for onward transmission of the data nor attempt to make monetary gain by the use of these files. If you want someone else to have a copy of the file, point them at the website. (<https://blunham.com/Radar>). Please do not point them at the file itself as it may move or the site may be updated.

It should be noted that most of the pages are identifiable as having been processed by me.

I put a lot of time into producing these files which is why you are met with this page when you open the file.

In order to generate this file, I need to scan the pages, split the double pages and remove any edge marks such as punch holes, clean up the pages, set the relevant pages to be all the same size and alignment. I then run Omnipage (OCR) to generate the searchable text and then generate the pdf file.

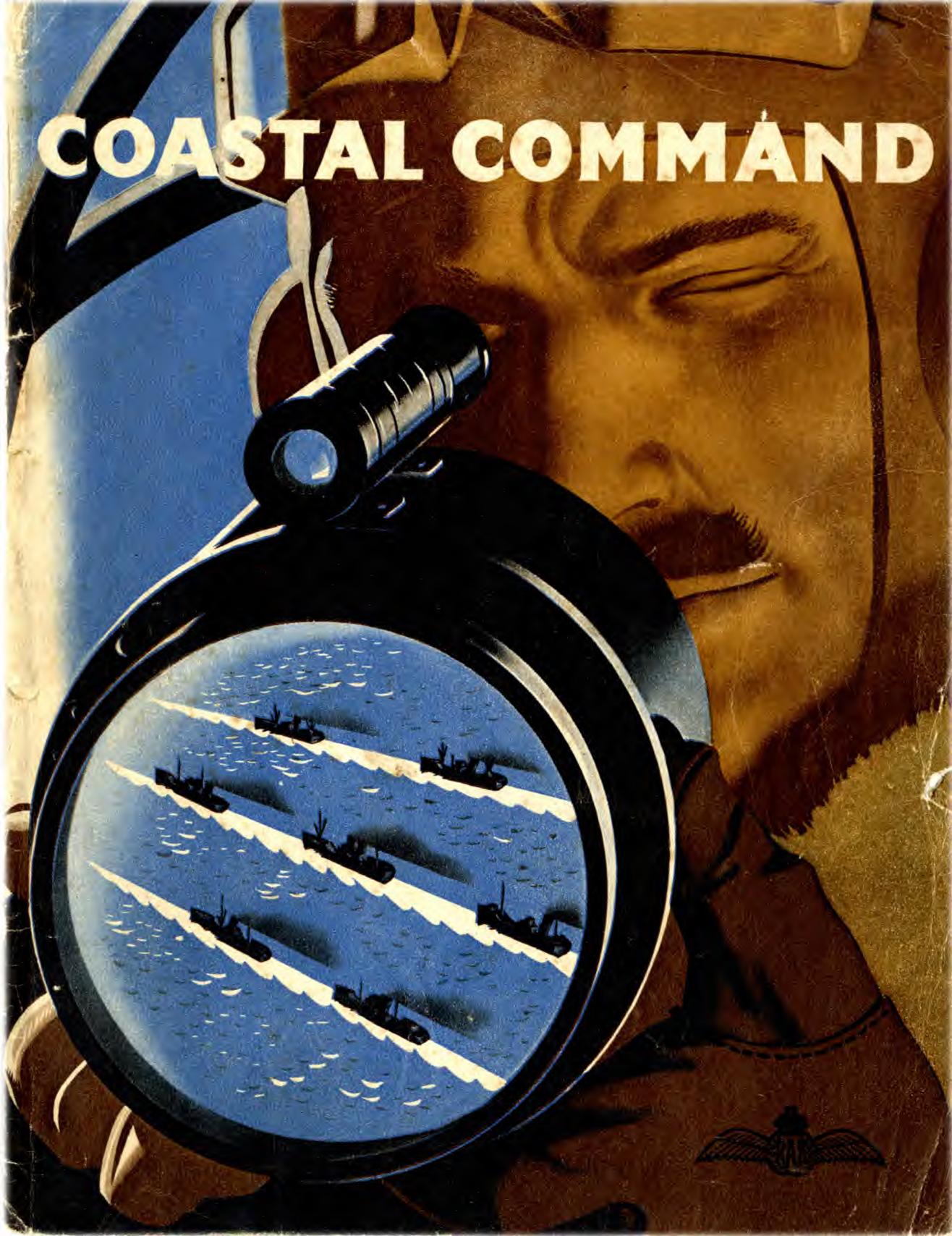
Hopefully after all that, I end up with a presentable file. If you find missing pages, pages in the wrong order, anything else wrong with the file or simply want to make a comment, please drop me a line (see above).

It is my hope that you find the file of use to you personally – I know that I would have liked to have found some of these files years ago – they would have saved me a lot of time !

Colin Hinson

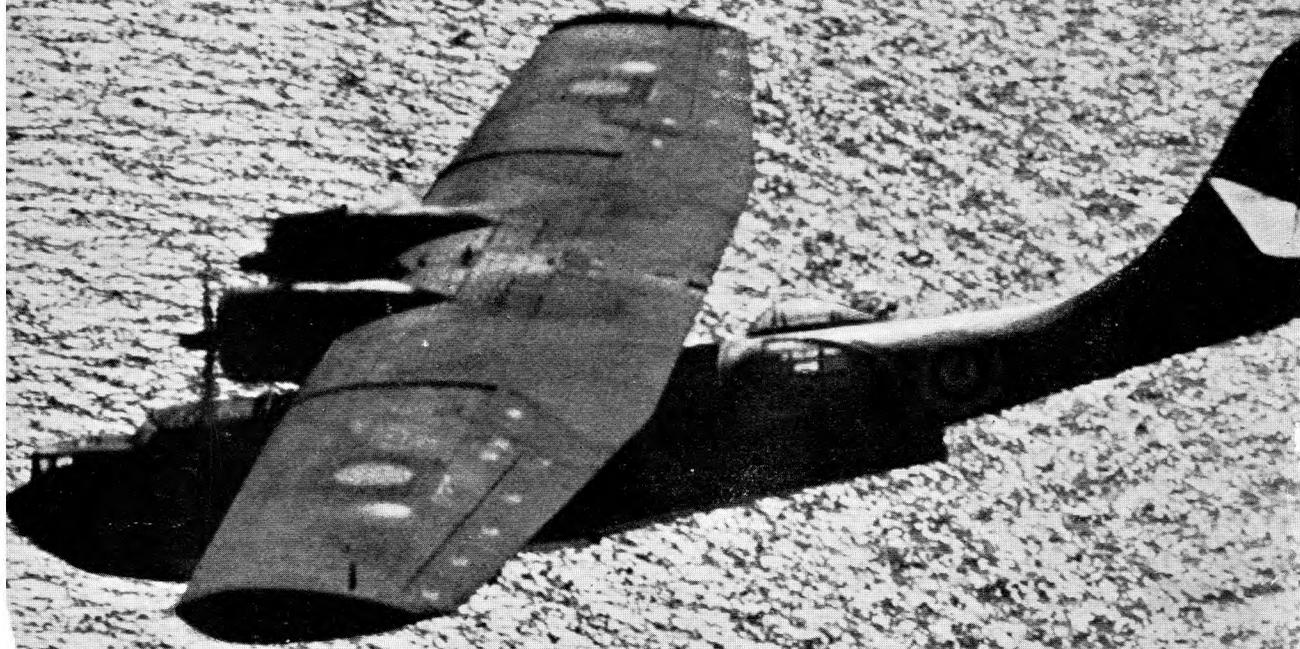
In the village of Blunham, Bedfordshire.

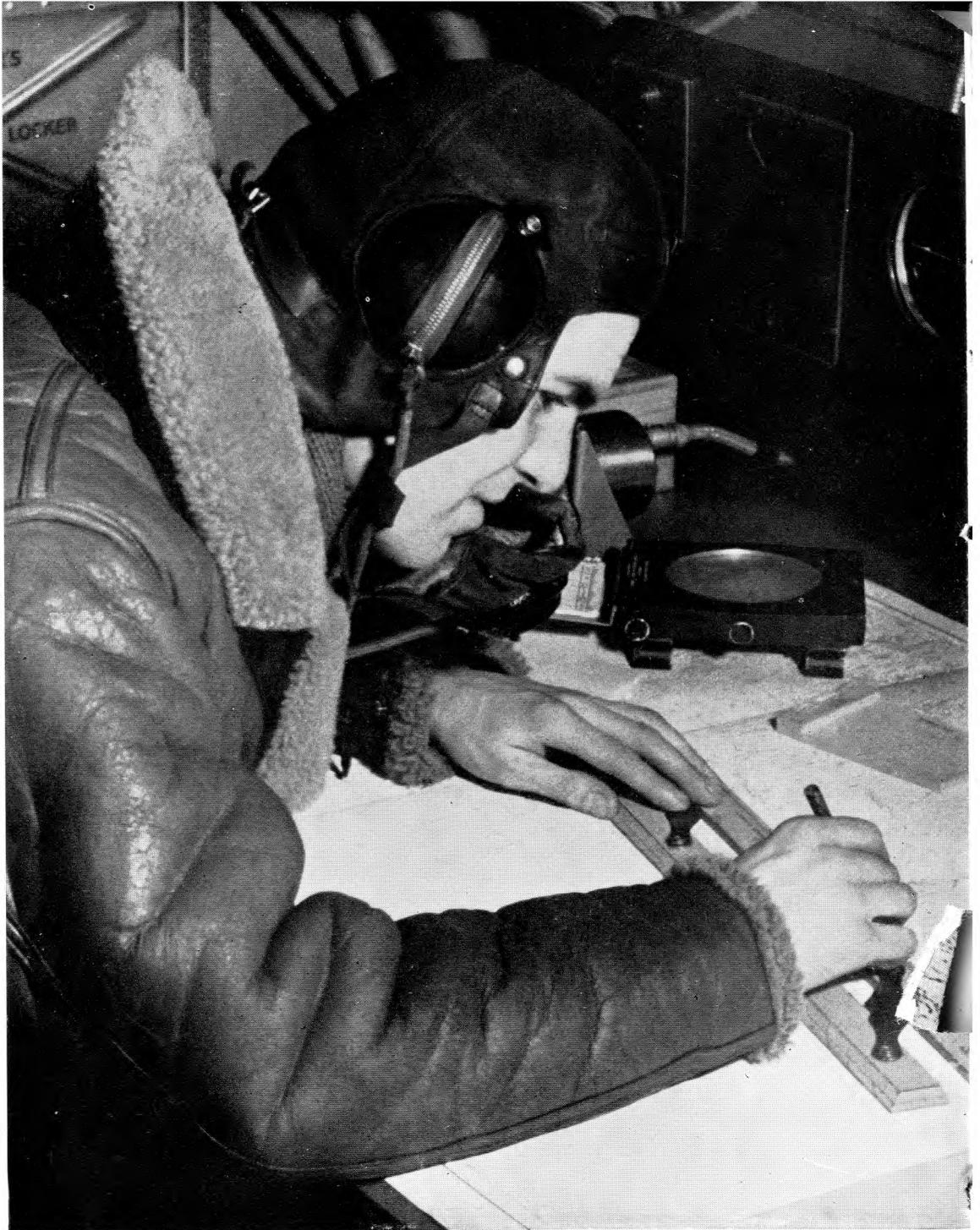
COASTAL COMMAND



An aerial photograph of the ocean's surface, showing a dense pattern of small, shimmering whitecaps and ripples. The water is a deep, vibrant blue, and the sunlight creates a sparkling effect across the entire scene. The perspective is from directly above, looking down at the water's texture.

WAVE ON WAVE ON WAVE TO WEST





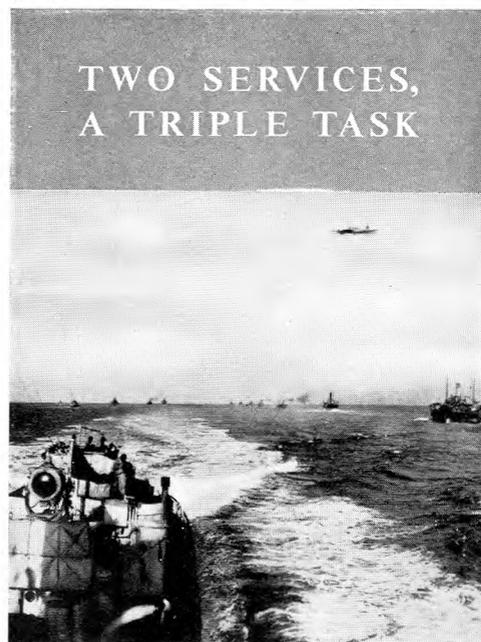
COASTAL COMMAND

THE AIR MINISTRY ACCOUNT OF THE PART
PLAYED BY COASTAL COMMAND IN THE
BATTLE OF THE SEAS

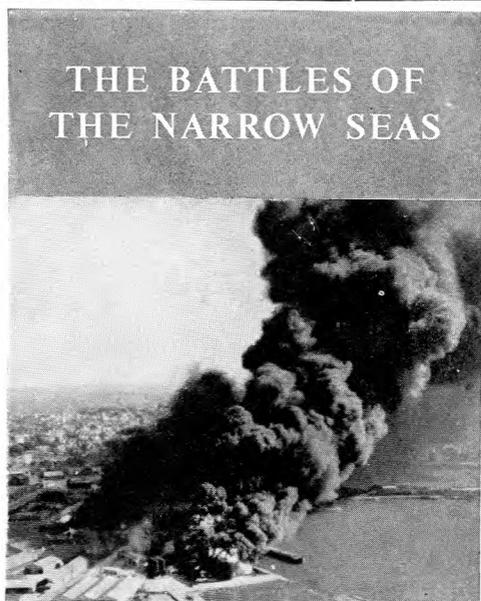
1939 • 1942

LONDON: HIS MAJESTY'S STATIONERY OFFICE

LIST OF CONTENTS



- CHAPTER 1
"It's the 'Bismarck'!" Page 8
- CHAPTER 2
Plot of Operation Page 17
- CHAPTER 3
The Men and the Aircraft Page 26
- CHAPTER 4
Flying Start : September 1939 Page 34



- CHAPTER 5
The Fight for Norway Page 42
- CHAPTER 6
Heinkel-haunted Skies :
the Attack in the West Page 50
- CHAPTER 7
Seeking the Raider in his Lair Page 56

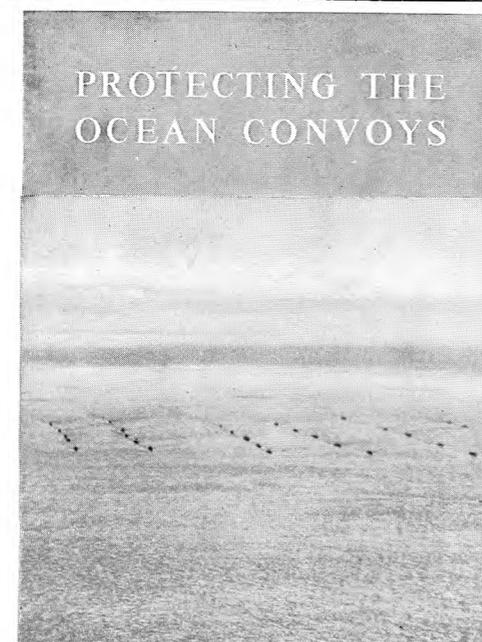
- CHAPTER 8
Ten Million Miles of Sea Page 66

- CHAPTER 9
Ocean Rendezvous Page 80

- CHAPTER 10
The Attack on the U-Boats Page 98

- CHAPTER 11
The Big Bad Wulf Page 106

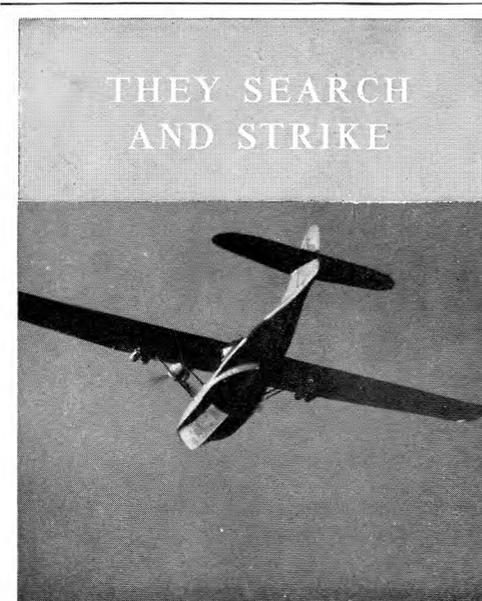
- CHAPTER 12
Rescue Flights and Secret Missions Page 114



- CHAPTER 13
Blockade by Mine and Bomb Page 124

- CHAPTER 14
Torpedoes Running Strongly Page 134

- CHAPTER 15
Their Spirit is Serene Page 142



To be purchased from His Majesty's Stationery Office at : York House, Kingsway, London, W.C.2 ; 120 George Street, Edinburgh, 2 ; 39-41 King Street, Manchester, 2 ; 1 St. Andrew's Crescent, Cardiff ; 80 Chichester Street, Belfast ; or through any bookseller.
Price 2/- net, or 21/- for 12 copies.

THERE ARE MANY MEN AND WOMEN IN THE FORCES WHO WOULD WELCOME A CHANCE OF

ISSUED FOR THE AIR MINISTRY BY THE MINISTRY OF INFORMATION
CROWN COPYRIGHT RESERVED . FIRST PUBLISHED 1942
PRINTED BY THE WHITEFRIARS PRESS, LTD., LONDON AND TONBRIDGE S.O. CODE NO. 70-411*

READING THIS BOOK. IF YOU HAND IT IN TO THE NEAREST POST OFFICE, IT WILL GO TO THEM

1: "It's the 'Bismarck'!"

"I GIVE YOU the hunter's toast: 'Good hunting and a good bag.'" With these words Admiral Lütjens ended his speech to the ship's company of the "Bismarck." They were heard throughout the vessel, those who could not be on deck listening to them through the loud-speakers situated in various parts of the battleship. The hour was a few minutes past noon on Monday, 19th May, 1941. That evening the "Bismarck" weighed anchor and put to sea, taking a Northerly course from Kiel Bay. It was the intention of Admiral Lütjens to raid commerce in the Atlantic. He had done so before earlier in the year, flying his flag in the "Gneisenau," which together with the "Scharnhorst" had sunk twenty-two British and Allied ships, including the "Jervis Bay." The "Gneisenau" and "Scharnhorst" were now in Brest and had already suffered damage from the attacks made on them by aircraft of Bomber and Coastal Commands. If Germany was to obtain a decision in the Battle of the Atlantic, other units of her Navy must be sent to sea. The "Bismarck" and the "Prinz Eugen" were chosen.

For the "Bismarck" it was her first and last voyage. She formed the main unit of a squadron made up of the eight-inch cruiser the "Prinz Eugen," two destroyers and two mine-bumpers. After passing through the Great Belt the squadron moved up the conquered coast of Norway, and on the morning of 21st May entered a fjord near Bergen, where it anchored. There had been little sleep on board during that night, for an air-raid alarm had kept the crews at action stations until half-past eight in the morning. There was another alarm in the early afternoon which

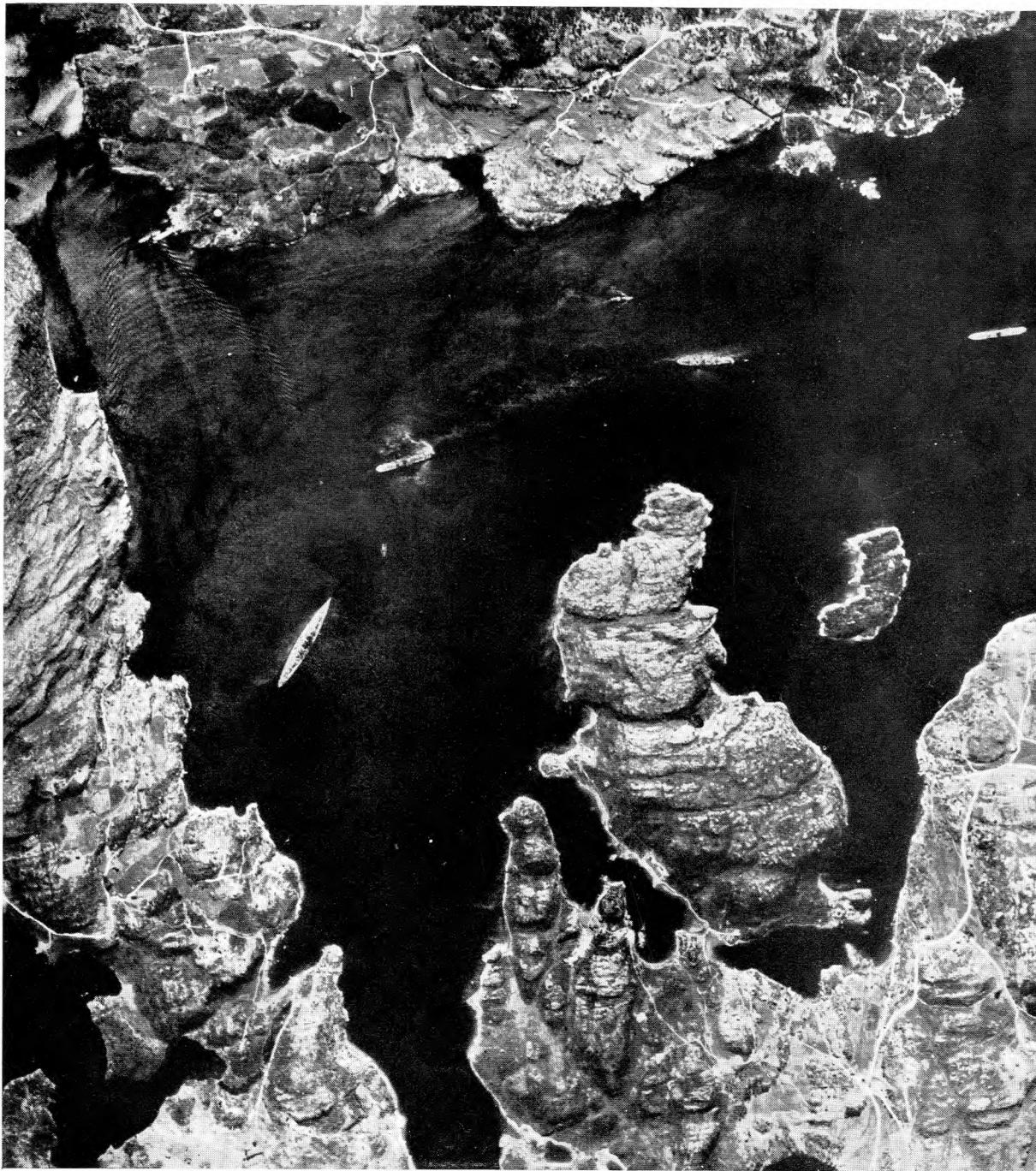
lasted a quarter of an hour. A little before dusk the squadron put to sea again.

That day an aircraft of Coastal Command, in the course of a reconnaissance of the Norwegian coast, had flown as far North as Bergen. Reconnoitring the approaches to that port, the pilot discovered two warships, one of large size, at anchor in a small fjord.

On his return he made a cautious report of what he had seen to one of the Station Intelligence Officers. While they were talking the wet prints of the photographs which the pilot had taken were brought in. The Intelligence Officer examined them and saw that what the pilot surmised was indeed the truth. He spoke immediately with Headquarters, Coastal Command. "Bring me those prints at once," ordered the Commander-in-Chief.

A slight difficulty arose. The only aircraft available to take them to Headquarters was that of the pilot who had just finished the patrol. Moreover, it was now evening. Nevertheless, he took off and flew South until with night fallen he found himself short of petrol on the outskirts of Nottingham, his home town. Here he landed and roused a friend of his, the owner of a garage and of a motor-car. They continued the journey together, driving through the night and the blackout at an average speed of fifty-two miles an hour. The prints were delivered at Coastal Command Headquarters in the early hours of the morning. Admiralty and photographic experts confirmed the opinion of the Intelligence Officer in Scotland. The "Bismarck" and the "Prinz Eugen" were out.

Very early that same morning they were attacked by six Whitleys and six Lockheed-Hudsons of Coastal Command. The attack was



The picture that sank a battleship. The “ Bismarck ” caught by photographic reconnaissance in Dobric Fjord, just before she weighed anchor for her first and last sortie.

unsuccessful, for the weather was very thick and only two of the aircraft succeeded in reaching the fjord, where they dropped their load of armour-piercing bombs with no observed effect. Throughout that day—it was 22nd May—the weather could justifiably be described as atrocious. Nevertheless, reconnaissance of the Norwegian coast was maintained from first light until dark, every available aircraft of Coastal Command on the east coast of Scotland and the coast of Yorkshire being pressed into service. They flew at times through a full gale, at times through dense haze and cloud extending downwards to sea-level. Hour after hour they plunged into the mist shrouding Bergen harbour and the nearby fjords. It was in vain. No ships were seen. One of the pilots expressed the opinion that the enemy was no longer there because “I collided with nothing though I flew over the harbour at sea-level.”

The truth of this conjecture was proved about 6.30 that evening when the clouds above Bergen lifted for a moment—long enough for a shore-based naval aircraft, a Maryland, to report that a clear view had been obtained and that no warship had been seen. This aircraft was manned by very experienced officers of the Fleet Air Arm, who carried out the flight successfully in spite of very bad weather and obtained information of the highest importance. Through that long day the “Bismarck” and the “Prinz Eugen” had, in fact, been steaming steadily Northwards, having parted company with their destroyers in the small hours. At 1.0 a.m. on 23rd May the enemy altered course to pass through the Denmark Strait between Iceland and Greenland. By this time they were fully aware that they had been seen, but they judged that to follow this route would offer the best chance to elude the British Fleet now steaming to intercept them.

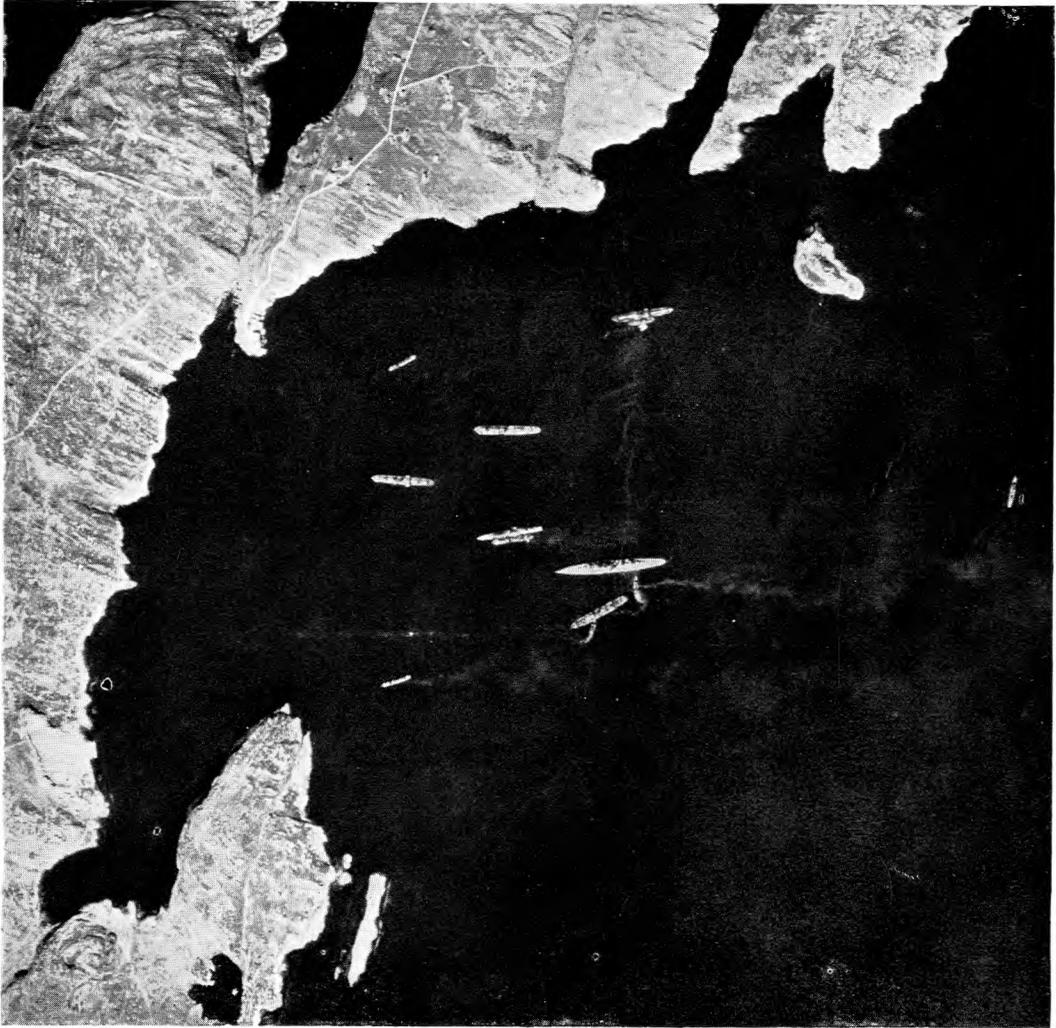
The weather on 23rd May was still very bad—too bad to patrol the Norwegian coast. Sunderland flying boats and Hudsons were able to cover the passages between Iceland and the Faroes and between the Faroes and the Shetlands. The Sunderlands maintained their patrol in relays from a quarter past six in the morning to a quarter past nine in the evening, the Hudsons from 4.0 a.m. to 5.15 p.m. The Sunderlands covered more than two thousand miles in a single sortie; but the weather was

against them. They encountered strong head winds, fog, rain-squalls, and heavy cloud in which severe icing conditions developed. In addition to the Sunderlands, two Catalina flying boats covered the Iceland Channel, beginning their patrol at 1.0 p.m. They had to abandon their task when unbroken cloud down to three hundred feet accompanied by unceasing rain reduced visibility to less than a thousand yards.

That evening H.M.S. “Suffolk” sighted the German warships in the Denmark Strait and soon afterwards a Sunderland and a Hudson from Iceland set off in the long twilight of those far Northern latitudes to search for the enemy. The Hudson could not find them and returned. The Sunderland held on. In the meantime the “Bismarck” and the “Prinz Eugen” had also been seen by H.M.S. “Norfolk.” Matters stood thus at the end of 23rd May. The two cruisers shadowed the enemy throughout the night.

Next morning another Hudson took off and at 5.54 a.m. sighted the “Bismarck” and the “Prinz Eugen” engaged in combat with the “Hood” and the “Prince of Wales.” Low clouds made it impossible to identify the opposing forces with certainty, but it could be perceived that one of the ships had suffered two direct hits, of which the second was followed by an explosion.

Meanwhile the Sunderland from Iceland had arrived in the neighbourhood of the “Suffolk,” and, on sighting this ship, saw at the same time the flash of gunfire well ahead. “As we closed,” says the captain in his report, “two columns, each of two ships in line ahead, were seen to be steering on parallel courses at an estimated range of twelve miles between the columns. Heavy gunfire was being exchanged and the leading ship of the port column was on fire in two places, one fire being at the base of the bridge superstructure and the other farther aft. In spite of these large conflagrations she appeared to be firing at least one turret forward and one aft.” At first the captain of the Sunderland could not identify the burning ship. He turned towards the starboard column and noticed that the second of the two ships composing it was making a considerable amount of smoke, and that oil escaping from her was leaving a broad track upon the surface of the



The “Prinz Eugen,” spotted in Hjelte Fjord, ready for a commerce-raiding voyage with the “Bismarck” in the Atlantic.

sea. He approached nearer, and as he did so the ship on fire in the column to port blew up.

A few seconds later the Sunderland came under heavy A.A. fire at the moment when its captain was identifying the ships in the starboard column as the “Bismarck” and the “Prinz Eugen.” He was forced to take immediate cloud cover and when, five minutes

later, he emerged into an open patch, the ship which had blown up, and which he now realised was British, though he did not learn until a little later that she was the “Hood,” had almost completely disappeared. “Only part of the bows was showing.” This sank almost at once, and when the Sunderland flew over the spot all that could be seen was an empty raft,

painted red, surrounded by wreckage in the midst of a large patch of oil.

Watching the remainder of the action, the captain of the Sunderland saw the "Prince of Wales" turn away under cover of a "light smoke screen" and open the range to about fifteen miles. The Sunderland closed the "Bismarck" to make quite certain of her identity and then, returning to the neighbourhood of the "Suffolk," exchanged visual signals with her and learnt that the ship which had been sunk was the "Hood." It was then about a quarter past seven on the morning of 24th May.

Throughout that day the shadowing of the German ships by the Royal Navy continued. A Catalina of Coastal Command saw them at 12.32 p.m. and, remaining in contact for two hours, at intervals signalled their course and speed to the pursuers. Coming under anti-

aircraft fire, the flying boat developed engine trouble which forced it to return to base. This was the last contact with the enemy made by Coastal Command that day. The "Norfolk" and "Suffolk" with the "Prince of Wales" held on. The "King George V," in which the Commander-in-Chief of the Home Fleet was flying his flag, and the aircraft carrier "Victorious" were now rapidly approaching.

On board the "Bismarck" there was much rejoicing, not without good reason. She had damaged the "Prince of Wales." She had sunk the "Hood." That evening there was a large extra issue of sausage, chocolate and cigarettes, and Hitler conferred the Knight Insignia of the Iron Cross on the First Gunnery Officer. True, the speed of the ship had been reduced, for a shell from the "Hood" had partially flooded some of her compartments and had also made

"Good hunting" was the German admiral's message to his men. But the hunter became the hunted. A County Class cruiser, with H.M.S. "Prince of Wales" in the distance, is chasing the "Bismarck."



it impossible to use the oil fuel in the forward bunkers—it was this oil escaping from the ship which had left the broad stain upon the sea seen by the Sunderland—but a formidable unit of the British Fleet had been disposed of and another, still more formidable, had been damaged. Surely it was now time to return to the safety of the Norwegian fjords !

Captain Lindemann, in command of the “ Bismarck,” thought so ; but he was overruled by his Admiral, who ordered the “ Prinz Eugen ” to part company while the “ Bismarck ” held on her course for a French port. Night fell without further incident, but soon after midnight torpedo-carrying Swordfish from the “ Victorious,” supported by Fulmars, delivered an attack in which a hit was scored on the starboard side. Survivors from the “ Bismarck ” subsequently spoke with surprise and admiration of the courage displayed by the British pilots. One Swordfish, they said, after being hit, still tried to get into a position from which to release its torpedo before plunging into the sea. The anti-aircraft fire of the “ Bismarck ” was tremendous, many of the guns becoming red-hot. Our losses in this attack were two Swordfish and two Fulmars, the crews of the Fulmars being saved. It was put about on board the “ Bismarck ” that forty-seven British aircraft had been destroyed.

Soon after 3 o’clock that morning, 25th May, visibility became very bad, and contact with the “ Bismarck ” was at last lost by the cruisers “ Norfolk ” and “ Suffolk,” which had shadowed her so tenaciously since sunset on 23rd May. When last seen her speed had been reduced to 20 knots. It now seemed to the Admiralty that, in view of the damage which she had sustained and her heavy consumption of fuel, she would either double back on her track and return to Norway or make for one of the French ports in order to refuel and refit. Coastal Command did its best to meet both contingencies.

All that afternoon and throughout the night three Catalinas searched the area through which it was considered most probable that the “ Bismarck ” was steaming. They remained air-borne for 19 hours 36 minutes, 20 hours 54 minutes, and 22 hours 21 minutes respectively. They saw nothing of the enemy, though one of them passed over a warship in the dead of

night and was not able to identify it, low cloud making the use of parachute flares impossible.

During 26th May Hudsons patrolled the Denmark Strait all day in very bad weather, while Sunderlands, with the help of a Catalina and a Hudson, covered the passage between Iceland and the Faroes. None of these aircraft sighted the enemy. Units of the Royal Navy were taking up fresh dispositions. The main body of the Home Fleet was steaming at high speed in a South-Westerly direction from Northern waters. Another force, headed by the “ Renown,” was steaming North-Westwards at high speed from Gibraltar, while the “ Rodney ” and the “ Ramillies,” on escort duty in the North Atlantic, proceeded to move in the direction of the enemy.

On board the “ Bismarck ” the mood of exaltation occasioned by her victory over the “ Hood ” began to give way to one of anxiety which increased to alarm when, shortly before midday, Admiral Lütjens informed the crew that it had proved impossible to shake off pursuit and that, though aircraft and U-boats would be forthcoming as soon as the ship came within their range, an action would almost certainly have to be fought, in which case the best which could be hoped for would be that the “ Bismarck ” would take some of the British Navy to the bottom with her. Yet, as the day wore on, and no aircraft appeared over them and no hostile ships were sighted, their spirits rose again, especially when at evening they entered a U-boat area.

Dawn on 26th May broke over a heavy sea above which scudded broken clouds. During the morning the weather became somewhat hazy. At 10.30 a Catalina flying boat appeared above the “ Bismarck.” It had taken off from a base in Northern Ireland seven hours before and was one of two sent to patrol some five hundred miles out in the Atlantic almost due West of Land’s End. Contact with the “ Bismarck ” had been regained after a lapse of thirty-one and a half hours.

This had been achieved by brilliant calculation on the part of the Air and Naval Staffs, whose plotting of the “ Bismarck’s ” probable course was accurate enough to enable the Commander-in-Chief, Coastal Command, to design the pattern of his patrols so as to place them exactly where the enemy was most likely



The tell-tale wake of the "Bismarck," showing that the attack by Swordfish aircraft has damaged her steering-gear and left her out of control.

to be found. The sighting of the "Bismarck" at this stage was, in fact, the second principal factor which ensured her destruction, the first being the reconnaissances which had found her near Bergen and then discovered that she had sailed.

"'George*' was flying the aircraft," said the

*'George' is the nickname given by the Royal Air Force to the automatic pilot.

pilot, "at five hundred feet when we saw a warship. I was in the second pilot's seat when the occupant of the seat beside me, an American, said 'What the devil's that?' I stared ahead and saw a dull black shape through the mist which curled above a very rough sea. 'Looks like a battleship,' he said. I said: 'Better get closer. Go round its stern.' I thought it might be the 'Bismarck,' because I could see no destroyers round the ship and I should have

seen them had she been a British warship. I left my seat, went to the wireless operator's table, grabbed a piece of paper and began to write out a signal. The second pilot had taken over from 'George' and gone up to 1,500 feet into broken cloud. As we came round he must have slightly misjudged his position, for instead of coming up astern we found ourselves right over the ship in an open space between the clouds. The first thing I knew about this was when two black puffs appeared outside the starboard wing tip. In a moment we were surrounded by black puffs. Stuff began to rattle against the hull. Some of it went through and a lot more made dents in it. I scribbled 'End of message' and handed it to the wireless operator. In between the smudges of the bursting shells I looked down on the ship, which seemed to me to be one big, winking flame. She was taking violent avoiding action by turning hard to starboard, heeling well over."

The Catalina took similar action to dodge the A.A. fire. None of the crew was hit, though a piece of shell passed upwards through the floor between the two pilots as they were changing places. The only casualties occurred in the galley, where one of the crew, who was washing up the breakfast things, "dropped two china R.A.F. plates and broke them."

Touch with the "Bismarck" was temporarily lost, for the evasive action taken by the Catalina had removed her some miles from the ship. At 11.15 aircraft from "Ark Royal," now about 70 miles away, found her again, and another Coastal Command Catalina in the neighbourhood was diverted from its patrol area and reported sighting the enemy at 1.28 p.m. It kept the "Bismarck" more or less in view during the afternoon, though it lost her at intervals owing to the bad visibility. It had to return to base at 6 p.m.

Some three hours later an event occurred which was the final factor in accomplishing the fate of the "Bismarck." As will have been realised, she had been shadowed on and off by aircraft of Coastal Command or by naval aircraft throughout the day of 26th May. Three powerful forces of the Royal Navy were closing in upon her. At five minutes to nine in the evening, 15 Swordfish torpedo-carrying aircraft from the "Ark Royal" launched an attack. It lasted half an hour, and when it

was over the "Bismarck's" steering gear was wrecked and her rudders jammed at an angle of between 10 and 15 degrees, thus causing her to turn in circles. Throughout that fierce half-hour she put up a tremendous A.A. barrage, firing off practically all her A.A. ammunition. The Swordfish "darted through it like flashes of lightning" to score two and possibly three hits. No aircraft was lost, the only casualties being a pilot and an air gunner who were wounded.

The position of the "Bismarck" was now desperate. Despite all their efforts her divers, who were promised the Knight Insignia of the Iron Cross, if they succeeded, could only free one rudder. The other remained jammed and immovable. That night destroyers, of which one was the "Cossack," went in close and delivered six torpedo attacks, scoring three more hits. Dawn on the 27th May found the "Bismarck" striving to make about ten knots. By now the main British force had come up, and at 8.45 a.m. the great ships opened fire. In less than an hour the "Bismarck" was a blazing wreck; but she did not surrender.



The kill. A battered, blazing hulk after many hits by gunfire and torpedo, the "Bismarck" is sinking.

The *coup de grâce* was given by the torpedoes of the "Dorsetshire," and the "Bismarck" sank shortly afterwards with her colours flying.

Throughout the 27th and 28th May Hudsons of Coastal Command were busy escorting units of the Fleet moving back to their bases after the action. A number of combats, mostly with Heinkels, took place. During one of them, the British and German aircraft found themselves, after a spirited engagement over the sea, flying up a valley in Northern Ireland below the level of the hill-tops. Luck was with the enemy. A round of tracer ammunition became jammed in the breach of the Hudson's port forward gun, where it exploded, filling the cockpit with smoke. When the pilot could see clearly again the Heinkel had got away in the gathering darkness.

In another, the port gunner, whose gun had been knocked out of his hand, got it into action again, silenced a Heinkel's fire and forced its pilot to jettison the bombs. In a third, the Hudson's pilot, a Wing Commander, having used all the ammunition of his front guns, took up a position almost underneath the Heinkel with which he was engaged, and "by suddenly throttling back for an instant put his aircraft in a position from which the rear guns could be brought to bear. Only fifty yards then separated the two aircraft, and the rear gunner used his guns almost at point-blank range, spraying the Heinkel along its whole length until the port engine caught fire. Into that fire he poured everything he had got. The Heinkel burst into flames and crashed into the sea."

Soon after the "Bismarck" sank a message was received by the Commander-in-Chief of Coastal Command. "The Admiralty," it read, "wish gratefully to acknowledge the part played by the reconnaissance of the forces under your command, which contributed in a large measure to the successful outcome of the recent operation."

The story of the hunting and destruction of the "Bismarck" has been told at some length because it illustrates not only an important function of Coastal Command but also its close co-operation with the Royal Navy. On this, as on many other occasions, their combined efforts have discomfited the Germans.



As Chaucer said of the doctor and the apothecary: "Ech of hem made other for to winne." Together they seek out the enemy on the high seas to destroy him. Together they are striving to keep free the great ocean routes along which steam in convoy ships freighted with the commodities necessary for the successful prosecution of the war. Together they are denying such routes to the enemy by the maintenance of a strict and pitiless blockade.

These tasks the Royal Navy has performed in time of war for upwards of a thousand years, Coastal Command for scarcely a thousand days. But if the weapons it uses are something new in the history of the world, if the craft it mans traverse the fields of air rather than the fields of ocean, the object it intends to achieve is the same. It can be summed up in nine words: Find the enemy; strike the enemy; protect our ships. How Coastal Command performs this triple task it is the aim of this account to show.

Close co-operation between the Royal Navy and the Royal Air Force is the secret of Coastal Command's success. The Naval Commander-in-Chief, Rosyth, with the Air Officer Commanding, directing an operation upon the Norwegian coast.

tration of the Fleet Air Arm on land, including the training of its units when on shore; and, thirdly, the development of Service Flying Boats of which the duties would be to defend the trade of this country and to maintain communications with all parts of the Empire.

In 1937 the administration of the Fleet Air Arm was removed from Coastal Command and was placed under the Admiralty for all purposes. The effect of this change was to cause the principal task of the Command to be the provision of trained shore-based squadrons for the defence of trade and for co-operation with the Royal Navy in home waters. To provide them was not easy. The international scene was becoming more and more confused. Across it passed processions of tortured figures holding one thing in common in addition to their common humanity—fear. Gas-blistered Abyssinians were succeeded by homeless and starving Chinese, who in turn gave place to sombre Europeans, fugitives from countries which had either been used as a practice battlefield by the armed forces of two irresponsible dictators or were about to suffer at their hands a form of alien protection indistinguishable from slavery.

To discerning eyes—and there were many—it was apparent that Great Britain would soon once more be fighting to keep safe and open those routes across the ocean which are vital to her existence. But in this field as in all others there was much that remained to be done in order to cope with war on a world-wide scale. Nevertheless, steady progress was made. General reconnaissance squadrons were formed and trained. Modern flying boats, such as the Sunderland, were slowly forthcoming for their equipment. The Anson, that most useful and dependable of aircraft, came into service in increasing numbers; American-built Hudsons began to make their appearance.

There was one achievement of major importance. Co-operation with the Royal Navy,

2: Plot of Operations

HOW COASTAL COMMAND IS ORGANISED

IN ITS PRESENT form Coastal Command is the development of Coastal Area of the Royal Air Force, formed in September 1919 "to control all air units working with the Navy." Its main functions were to be: first, the study and development, in close relationship with the Admiralty, of all aspects of air co-operation in a war at sea; secondly, the eventual adminis-

which from the outset had been close, became the watchword of Coastal Command. It was laid down as a principle that the ultimate decision concerning any operation must rest with the Royal Navy, whose duty it is to fight and win wars at sea. This did not, and does not, mean that Coastal Command should have no initiative of its own. Far from it. But the operational requirements of the Admiralty must come before all else. This is realised to the full, and close and harmonious co-operation with the Royal Navy is the happy result. How it is achieved is best seen by examining the organisation of Coastal Command.

At the centre is Headquarters, where the Commander-in-Chief is in constant and immediate touch with the Admiralty. This is maintained by Naval Officers stationed at the one place and Royal Air Force Officers stationed at the other. Each keeps the other "in the picture" throughout. The Command is divided into Groups whose geographical boundaries conform to those of the Naval Commands on shore with which they are associated. They cover the whole of England, Scotland, Wales and Northern Ireland. There is a separate group in Iceland and a station at Gibraltar.

Each Air Force Group and Naval Command possesses an Area Combined Headquarters where the Operations Room, common to both Services, is situated. The Army staff responsible for the anti-aircraft and other defences are normally part of headquarters. The Air Officer Commanding the Group, usually an Air Vice-Marshal, has his office next to that of the Naval Commander-in-Chief, who is an Admiral or a Vice-Admiral. They fight their part of the war together. If, for example, the Commander-in-Chief of the Home Fleet requires air support or a special reconnaissance, he asks for it through the Flag Officer Commanding the nearest Area Combined Headquarters, who passes on the request to his Air Force colleague. If for some reason—such as lack of aircraft available—the request cannot be met, it is referred at once to the Air Officer Commanding-in-Chief, Coastal Command, who takes action.

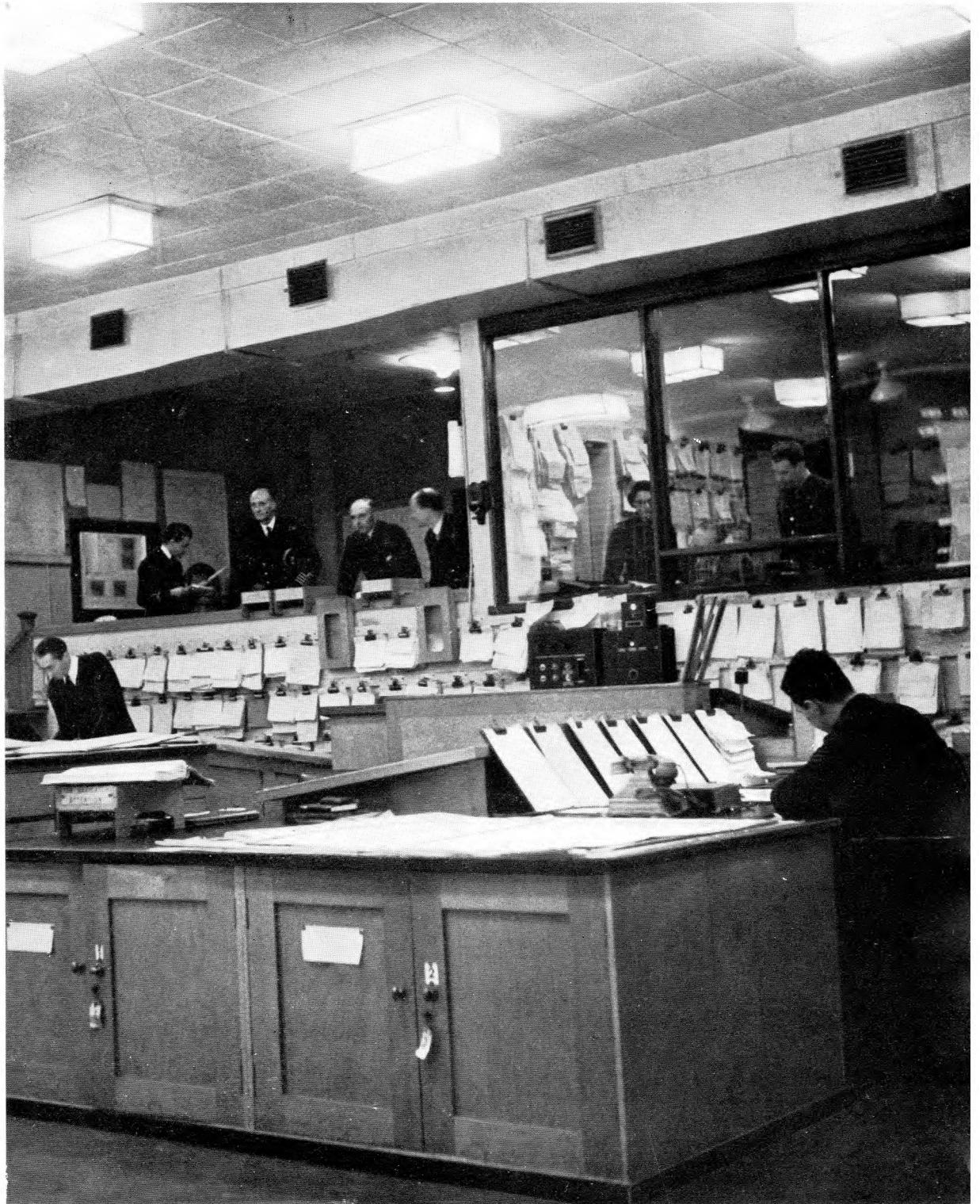
All essential information and operational instructions given and received by Headquarters and lower formations pass through a special communications system common to the Royal Navy and the Royal Air Force, and

manned by ratings and aircraftmen, Wrens and Waaf. This system feeds both Services simultaneously. For example, the Form Green, as it is called, on which the orders for an operation—an attack on enemy shipping, an anti-submarine patrol, or whatever it may be—are set out, goes at once to the Naval and the Air Force Commanders and units concerned. This process is repeated with the Form Orange, on which the result of the operation is recorded after the crews who have carried it out have been interrogated at their Station by the Intelligence staff.

The Operations Room of an Area Combined Headquarters is of standard pattern. Some of them are sunk many feet deep underground and are approached by long flights of steps. All are surrounded by groups of offices containing the various branches of the staff, Intelligence, Signals, Cipher clerks, telephone and teleprinter operators and the rest. All rooms are air-conditioned.

Let us take as an example the room belonging to the Group most directly concerned with the Battle of the Atlantic. It is large and lofty, oblong in shape, and bright with a soft reflected light. Along the whole length of one of the longer walls is a huge board on which is painted the map of the Atlantic. The land is coloured brownish yellow and on it are marked the Stations belonging to the Group, the harbours used by the Royal Navy, and such Stations of Fighter Command as are in the Area.

On this huge map, some sixteen feet high and thirty feet long, the Battle of the Atlantic is shown in full detail, so that the exact position at any moment can be seen at a glance. The details thus visually recorded are known as the "plot." Each convoy and the nature of its escort, both sea and air, is marked with the appropriate symbol and its route by elastic strings of different colours. The position known or suspected of every U-boat is also shown, as are those of our own submarines and surface vessels. The spot where an attack by Focke-Wulf, U-boat or surface raider has been made or where a ship has been sunk is similarly recorded. If a U-boat is sunk, the symbol representing it on the "plot" is turned upside down. Cardboard arrows indicate the speed and direction of the wind.



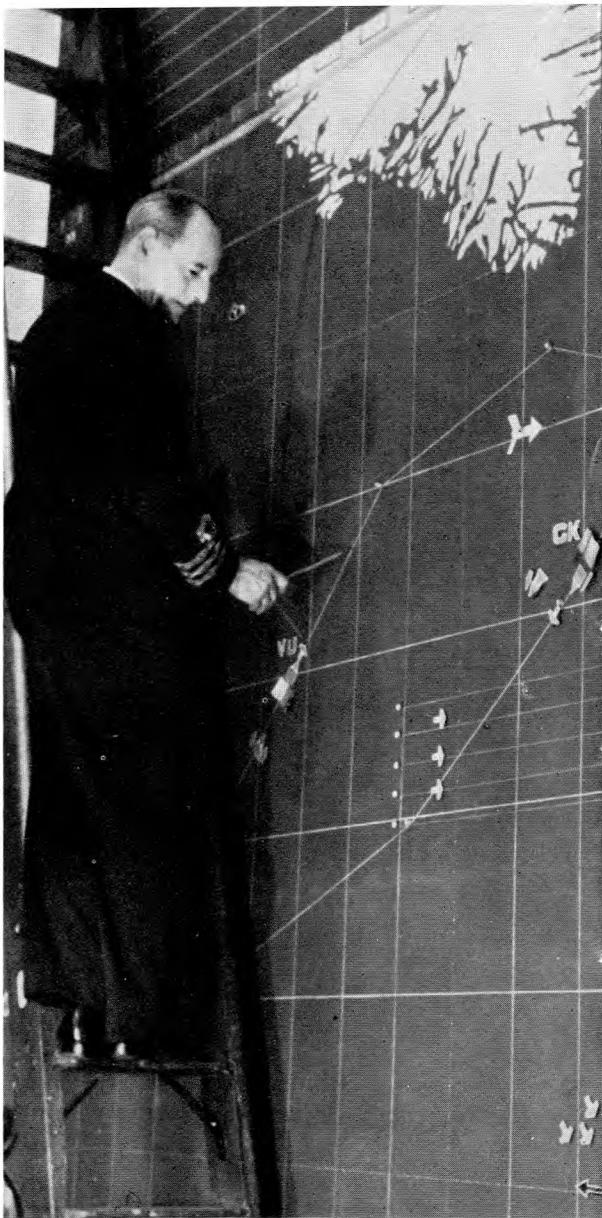
At Area Combined Headquarters, Naval and Air Force officers work side by side, in two offices fronting the "plot" on which every new movement in the Battle of the Atlantic is recorded.

In front of the "plot" is a tall step-ladder running along steel guides. It is used by the Naval and Air Force personnel, Wrens and Waaf, when symbols out of reach from the floor have to be moved or changed.

On each side of the main board are two smaller boards recording on the right information about convoys and their Naval escort, on the left information about aircraft. The information on these boards is written in chalk of various colours. All of it and that on the "plot" itself is collected and checked by the duty officers and their staffs, who work in two offices fitted with desks and telephones fronting the "plot," the Naval to the right, the Air Force to the left. There is a partition between the offices with a hatch through which messages can be passed at once by hand. Above these offices are those of the two Naval and Air Commanders similarly situated and constructed. One wall of each office, that giving on the "plot," is of glass, so that both can tell at a glance the fortunes of this long, relentless battle.

The layout in the Operations Room of the Area Combined Headquarters of the other Groups is the same, *mutatis mutandis*. In one the North Sea and fjords of Norway take the place of the Atlantic and the East coast of America, and the information concerns "strikes" instead of convoy protection; in another are depicted the Bay of Biscay and the changing areas where bombing attacks may be made, and where they may not lest the submarine be one of our own.

The Operations Room at Coastal Command Headquarters is, naturally, the largest of all, for on its boards and charts is set out all the information shown separately in the rooms of the various Area Combined Headquarters. All Operations Rooms are manned continuously throughout the twenty-four hours by staff divided into watches. In each watch there are the Controller and his Assistant, the Naval Staff Officer and his, a navigator, a plotter, telephone, teleprinter and wireless operators, and members of the Signal, the Meteorological and the Records staff. There are also the officers of the Air-Sea Rescue Service and of the Flying Control system. These have now been amalgamated to form the Directorate of Aircraft Safety, and deal



The "plot," a huge wall-map of the Atlantic, where the position of convoys, escort vessels and enemy raiders can be seen at a glance.

Coastal Command officers at work during an operation. Through the glass wall of their office they watch the fortunes of battle recorded on the "plot."

with all aircraft in distress, of whatever Command. The Flying Control Officers try to bring the aircraft back to its base if it is off its course, or to divert it should its home aerodrome be unserviceable for some cause; the Air-Sea Rescue Service controls the organisation for finding the crew in or on the water and bringing them safe to shore.

The smooth working and efficiency of the various headquarters of Coastal Command depend very largely on a rapid, sure and secret system of communications. These are ensured, in so far as telephones and teleprinters are concerned, by officials of the General Post Office, whose high standard in peace is surpassed in war. The essential requirements in addition to speed are the maintenance of secrecy and that breakdowns shall be few and

of very short duration. Delayed and wrongly addressed messages are few and far between. In one Group their number is about one in thirty-three thousand, and this is a fair average throughout the Command.

Attached to Headquarters, to Groups and to Stations is a section of meteorologists. They are for the most part civilian experts, but there are also serving officers and Waaf among them. It is their duty to provide weather forecasts for the Commander-in-Chief, the Commanders of the Groups, and for the crews detailed to carry out the operations planned. The importance of their task needs no emphasis. The state of the weather, always a cardinal factor in flying, assumes special significance when the aircraft has to remain long hours over the sea and when its usefulness,





Intelligence Room at an Area Combined Headquarters. Here, information from the air-sea front line is received, sifted, interpreted, pieced together.

The interpretation of photographs is one of the most important tasks of Coastal Command Intelligence. This photograph of Trondhjem revealed the presence of three German destroyers (1) in the roads: the arrival of destroyers, which were seldom seen in Trondhjem at this time, was connected with the sortie of the "Bismarck" and "Prinz Eugen" on the next day. Other interesting details are:— (2) The island of Munckholmen, heavily defended with gun and searchlight positions; (3) oil tankers, one alongside, one moving away from, a destroyer; (4) merchant vessels; (5) a coaster; (6) a motor vessel in the harbour; (7) a "Huarasean" type cargo-liner, used as a depot ship for U-boats; (8) two large motor vessels; (9) warehouses on the quay; (10) railway traffic yard; (11) a rectangular site, foundation for six large buildings to be constructed in connection with the German naval base; (12) a coastal battery; (13) a flak position; (14) huts for personnel of the batteries.





“ A good Intelligence Officer must have something of the qualities of Herodotus, Socrates and Voltaire.” He must be tireless in collecting facts, expert in checking them, concise in presenting them.

indeed its only justification, lies in the ability of the crew it carries to see what they have been sent forth to see—the convoy which must be protected, the submarine which must be slaughtered, the enemy surface vessel which must be bombed or torpedoed.

At all Headquarters the Met. Officers keep a 24-hour watch. There is always a forecaster on duty with a number of assistants, among them members of the W.A.A.F. specially trained for Met. duties. These give forecasts and other meteorological advice to all entitled to receive them. The Met. Officers keep a series of weather or synoptic charts, as they are called, altered every three hours and covering an area which includes not only the vast field of operations of Coastal Command but indeed practically the whole world. Pressure systems are plotted and their movements traced and recorded.

The difficulties of a forecaster are greater in war even than they are in peace, for weather

reports from ships are no longer available since wireless silence is maintained. Much of their knowledge is derived from the information gained from the “Met. flights.” These are flown day in, day out, over certain areas of sea. The pilots of the aircraft used, mostly Blenheims, have had many adventures. They have fought and vanquished Ju.88s, they have attacked U-boats. They fly in all weathers. One of them once landed with a gorse bush collected from a hill-top jammed in the wing of his Blenheim. The data they collect contribute in no small degree to the accuracy of the forecasts.

The forecasters have daily, often hourly, personal consultations with the Controllers at Group Headquarters and also with their own officers at the stations. Perhaps the most frequent question to be answered is: “Will the weather at base be suitable for landing when the aircraft on patrol returns, and if not, which is the most likely alternative base to

which the aircraft can safely be diverted?"

A word must also be said about the kind of work covered by the term "Intelligence." This ranges from the Operational Research section at Headquarters, in which officers and scientists together seek the solution of tactical problems, to the Station Intelligence Officer who briefs the crews and interrogates them when the patrol or sortie is over. "Pure" intelligence, as distinct from that arriving through channels to be broadly described as "secret sources," is derived from photographs. These are of great and sometimes, as in the case of the first and last voyage of the "Bismarck," of the greatest importance. Some of those accompanying this record will give an idea of their value. Every Station, every Group, and the Headquarters itself of Coastal Command have photographic sections where many thousands of operational photographs are the subject of close study. It is the general rule for aircraft of the Command to carry cameras which record anything of interest that may be seen in the course of a patrol.

As soon as an aircraft has landed, the films are taken to the Station Photographic Section, processed and delivered to the Station Intelligence Officer within an hour and a half. Those of particular interest are sent to Group or Command Headquarters and subsequently to the Air Ministry. Processing calls for expert knowledge and is carried out by a specially trained staff, many of whom were professional photographers in the days of peace. Mosaics, which are photographic maps, are made from a large number of individual pictures. The result is an absolutely accurate map of the temporary or permanent "abodes of the guilty." Pictures, too, of enemy shipping go to swell the considerable gallery of targets kept on every Station. With all these the Intelligence Officer must be familiar. They are an unflinching and invaluable source of knowledge.

A good Intelligence Officer must have in him something of the qualities of Herodotus, Socrates and Voltaire. He must be avid for the collection of facts, expert in sifting the true from the false, concise and convincing in his presentation of them. It is his unending and not unworthy task to pursue knowledge of the enemy, his habits of warfare on land, sea, and in the air. He must know, or be able to

find out without delay, all about enemy ships, their dimensions, armament, cargoes, about the convoys in which they sail and the ports they use and why, about enemy aerodromes and the aircraft based on them, about guns, balloons and other defences surrounding the targets chosen for attack, about the targets themselves, the ports, harbours, factories, barracks, wireless stations, oil dumps, everything that constitutes a military objective within range of Coastal Command. He must be able to identify ships from photographs, sketches, the written and verbal reports of pilots. He must, with the aid of the Royal Navy, always and instantly forthcoming, become an authority on E-boats, U-boats, destroyers, cruisers, every kind of craft up to and including pocket-battleships. He must be able from his knowledge to give advice on tactics, from the best way to approach a heavily defended port like Brest to the most effective method of bombing a ten-thousand-ton tanker. The information he receives and the knowledge he acquires are constantly changing as the war develops. There is about his duties nothing static, and this flexibility is part of that which is a chief characteristic of the organisation as a whole.

It is flexibility and the practice of close co-operation with the Royal Navy which are the twin hall-marks of Coastal Command. Its forces are not only sent into action instantly, they can be switched to any desired point with a speed never before achieved in warfare. They join with ship-borne naval aircraft in extending the vision and striking power of the Fleet. Though they are not everywhere at once, they are moved huge distances at great speeds. A Catalina or a Sunderland may on Monday be flying on the ice patrol above the Denmark Strait with "Greenland's icy mountains" on the horizon, and on Wednesday be rocking at its moorings in the sunny harbour of Gibraltar. A Hudson which has sunk a ship in Aalesund may two nights later be bombing a U-boat hundreds of miles West of Land's End.

The Royal Navy and Coastal Command are two separate Services with one common object, the defeat and destruction of the enemy. The men and women who serve in them wear uniforms of blue cloth. Those on the backs of the Royal Air Force are of a lighter shade. That is all the difference.



3: The Men and the Aircraft

BEFORE RECORDING the deeds of the pilots and crews of Coastal Command, something must be said of their training, their environment, and of the aircraft they fly.

In temperament the General Reconnaissance pilots and crews resemble their comrades in Bomber rather than those in Fighter Command.

This is natural, for their duties have this much in common—they involve flights of many hours' duration in almost all weathers, and during much of that time the main preoccupation must be whether the aircraft is on its right course or not. Then, however, the resemblance grows thin. The crew of a bomber are concerned to find a target, which is usually stationary, and to hit it with their bombs; those of an aircraft of Coastal Command have first to find what is very often a moving target and then to hit it, or to keep it under observation so that a striking force may do so. Moreover, if they are on convoy protection—and this form of patrol is one of their main duties and entails the spending of many thousands of hours in the air and the covering of many millions of miles over the sea—they

may never see a target at all, though they must constantly be on the look-out for one. They are therefore, generally speaking, of the phlegmatic turn of mind.

They must find their way by methods of precision, relying on instruments for their guidance. There are no landmarks five hundred miles out in the Atlantic, and they may not see land of any kind for nine-tenths of their patrol. There is bred in them much of the sense of direction possessed by the sailor or—it is almost possible to say—by the homing pigeon. Yet this power to find their way with precision and certainty over vast spaces of water, tracked only by the changing lanes traced upon its surface by the wind or by the spume of unnumbered waves, is an acquired faculty, the much-hoped-for result of months of practice and hard work.

“Ability to navigate accurately,” runs a passage in one of the reports of their first Commander-in-Chief in this war, “is, I consider, one of the most important qualifications

of the General Reconnaissance pilot, and my training policy has always been framed with that end in view.” So pilots and crews are trained from the first day of their career to have implicit faith in their navigational instruments—above all in the compass. To inculcate this requires patience. It is a natural tendency for the eye to look outside the cockpit straining to pick up some solid object which will give a guide to the position of the aircraft.

It was not easy, especially at the beginning of the war, to induce in the minds of the pilots and crews the belief that in the compass lay their safety; but as the days and weeks passed they became aware and now fully understand that it is dead reckoning which will bring them back to base and that no member of the crew, whether he be pilot, navigator, wireless operator or gunner, can lay claim to be a trained man until he knows, not in his head only but also in his heart, the true meaning of this phrase and all that it implies.

Once this lesson is learnt, this faith acquired, the result is immediately apparent, and it is a remarkable experience to witness the return of a young pilot and his crew from their first sortie in bad weather, when, having carried out all the drill learnt during long hours of instruction, they find that they are safely back in the Mess. They can then begin to feel—and, being young, to show—that joy and pride in achievement which is the reward of trained men.

It will thus be seen that pilots of Coastal Command flying boats must possess many of the qualities of the sailor. The young pilot in the early days of his training, unless he has had previous experience of the sea, is not infrequently found to stand in some awe of the Navy. He is brought into close association with a Service which acquired the title “Royal” in the reign of King Henry VIII, and whose victories have changed the course of history not once but many times. Soon, however, he perceives that, belonging to a younger Service, he has, nevertheless, a share in the tradition of an older, that he has much in common with those who go down to the sea in ships, and that, though he may behold the wonders of the Lord from a somewhat different angle and from some hundreds of feet nearer heaven, he is none the less of their company



He protects the lightships from the vilest of all the assaults the enemy is making at sea

and is admitted by right of his calling to their fellowship.

This should, indeed, be so ; for a great part of his training has a strong naval flavour. He must know almost as much about seamanship as he must know about airmanship. He must be able to handle and control a machine which is both an aircraft and a surface vessel. It is moored to a buoy. It carries an anchor. Its instruments are calibrated in knots, for its speed is calculated in sea, not in land, miles, and this is so with all aircraft of Coastal Command, whether they are designed to take off from and alight on land or water. He must have a sound working knowledge of tides and currents. He must acquire an eye for weather, with all that that implies. He must feel at home in a small boat. He must read a chart as a bomber pilot reads a map. He must be able to recognise ships of every sort and kind and in every condition of visibility.

Lighthouse keepers are his friends, and the crews of lightships, whom he still protects from the vilest of all the vile assaults which

the enemy is making at sea. He cannot hear the seagulls crying, but the flash of their wings may bring him to an open boat freighted with shipwrecked mariners or to a rubber dinghy holding a crew whose aircraft has come to grief over the sea. It is when he sees seagulls walking upon the water that he must, according to a saying of the Service, beware, for then the water is land, and to put down a flying boat on land . . .

His chief enemy is not the German Luftwaffe or the German Navy, but boredom, which may provoke first inattention, then indifference. He must spend hundreds of hours with nothing to look upon but the expanse of sea and sky. "Wave, on wave, on wave to West" stretches the vast monotony of the Atlantic Ocean. It may glitter in the noonday or lie devoid of light and colour in the hour after sunset and before dawn ; it may seem to crawl like the wrinkled skin of a beast or stretch in ridged and uneven furrows under the breath of strong winds ; but it will be empty for hours.

The aircraft quarters it, moving in squares of which each side is ten miles long. Its crew,

even if it be a Sunderland, have less room in which to move than is to be found in a small fishing smack. They are looking for a convoy four, five, six hundred miles out, or what is far more difficult, for a single ship. The one or the other is sighted and the protection patrol begins, enduring for as long as there is enough light or enough petrol. Then comes the long journey back to base.

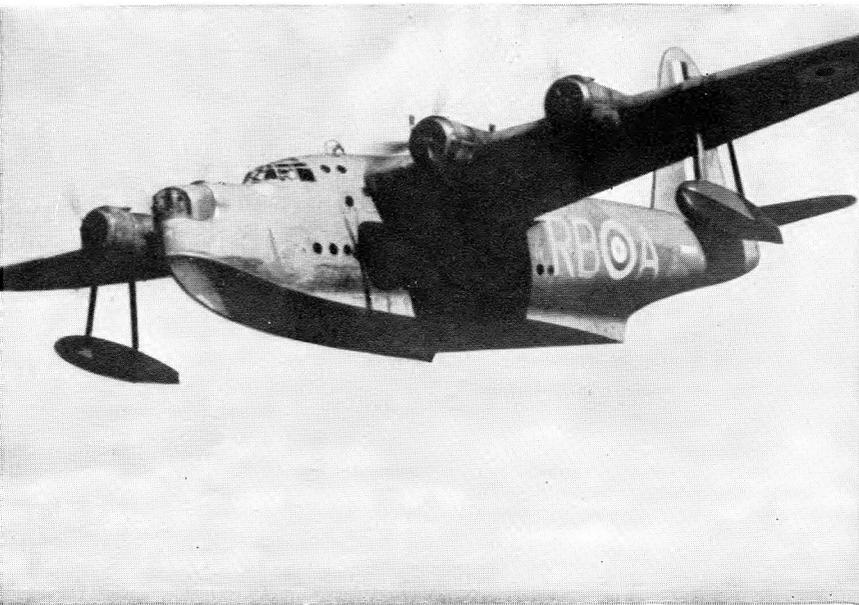
The General Reconnaissance pilot and his crew may envy their comrades leading a life of high adventure in a squadron of torpedo-carrying Beauforts in the Channel or of Hudsons striking at shipping off the Norwegian coast. These are flown by men who have passed through the same training as themselves, but who have had the good fortune to be given duties of a more exciting kind. They envy them, but that is all. They know better than anyone else the full importance of their task ; for theirs are the eyes which catch the first glimpse of the great convoys carrying the food and the weapons of war needed to prosecute the fight and achieve the victory. They watch the ordered lines of merchant ships crossing

a vast and vital battlefield. Over this they fly in fulfilment of a task which may be grim and is certainly not gay, but which is slowly and surely winning a decisive battle. "Set me some great task, ye gods ! And I will show you my spirit. 'Not so,' says the good heaven ; 'plod and plough.'" So writes a philosopher of the New World. The General Reconnaissance pilots and crews of Coastal Command pay daily heed to this advice.

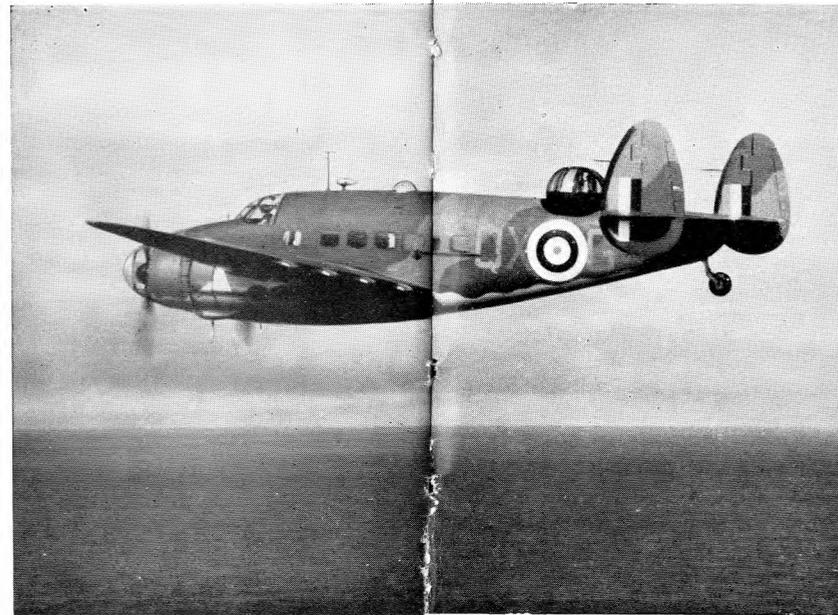
To provide and maintain a balanced air force, one, that is, in which a true proportion exists between land- and sea-borne aircraft, has ever been the aim of Coastal Command. Adaptable though the modern aircraft has proved to be, it cannot be used for all purposes, nor can one type entirely take the place of another. In general, land-borne aircraft are used for attack and for reconnaissance, while sea-borne, having a greater range and endurance, are more suitable for long-distance reconnaissance and for convoy protection far out in the Atlantic. It is by the judicious use, both strategical and tactical, of each main type that success is achieved.

The aircraft flown on general reconnaissance

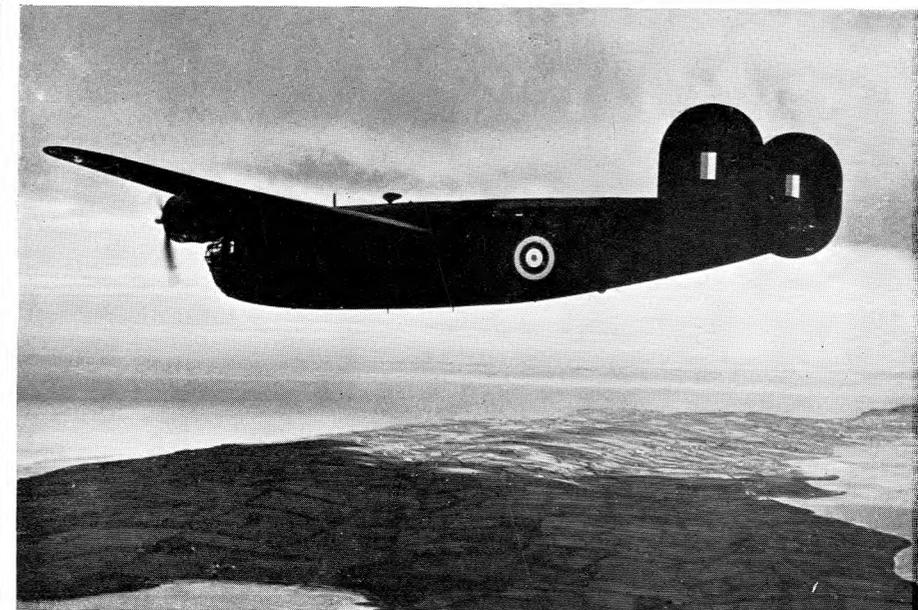
Some of the aircraft used by Coastal Command



SUNDERLAND



HUDSON



LIBERATOR



BEAUFORT TORPEDO-BOMBERS



ANSONS



WHITLEY

and convoy protection are some of them land aircraft, some of them flying boats. The first are the Anson, the Wellington and the Whitley, the two last specially adapted for flights of long duration over the sea. These are all British-built. At the beginning of the war among the land aircraft the Anson was the main standby. It has now been almost entirely replaced by faster aircraft, but the services it rendered to this country were of the greatest value. Though not fast, it was very reliable and easy to manoeuvre, and these qualities were summed up by the Command in the phrase, "Anson is as Anson does."

From the start, American-built Hudsons were put into service as fast as they could be procured. The Hudson has a good range, is well armed and has a wide field of vision.

The American-built Liberator has only recently been allotted to Coastal Command. It is capable of long flights far out into the Atlantic. Being well armed with gun-turrets, it can attack and destroy the prowling Focke-Wulf, and being fitted with depth charges it can deal effectively with U-boats.

The Wellingtons and Whitleys in use for reconnaissance are converted bombers. They are doing valuable service both by day and night.

At the beginning of the war there were three main types of flying boats in use—the

Stranraer, the London and the Sunderland. All these were British-built. The Stranraers and Londons, after doing excellent work in the first fifteen months of the war, were withdrawn from squadrons early in 1941. The Sunderland has a very wide range and an armament formidable enough for it to be nicknamed the "flying porcupine" by the Germans. It is the largest aircraft in use by Coastal Command and can almost be described as commodious. Meals can be cooked on board and there are bunks where those of the crew not on watch can sleep very comfortably. So much so that once a Sunderland dropped depth charges on a U-boat, and the second pilot, at rest and asleep at the time, knew nothing about the attack until he came on watch again an hour or so later.

Another flying boat almost as large as the Sunderland is the American-built Catalina. It first came into operation in March 1941, and is in constant and increasing use. It is a great standby and for long-distance patrols has few equals. One of these craft remained more than twenty-six hours in the air during the operations which ended in the sinking of the "Bismarck." In winter and bad weather it not infrequently happens that a Catalina returning in darkness to its base after an eighteen-hour patrol, and finding it obscured by fog or low cloud, remains aloft all night until it

can come down in greater safety by the light of dawn.

Other types of seaplane which have been used are the Lerwick flying boat and the Northrop float-plane.

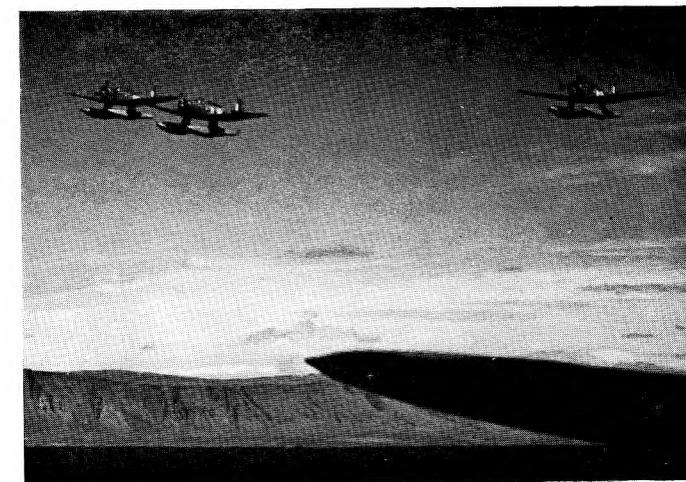
The pilots and crews of torpedo bombers and long-range fighters undergo the same training as those engaged primarily on reconnaissance duties. No special distinction is made between them; but, since the duty of Coastal Command is as much offensive as it is defensive, its pilots are ready at any moment to strike at the enemy with torpedo, bomb and machine-gun. The target of the torpedo is a ship, either a naval vessel or a supply ship; that of the bomb may be the same or may be a "fringe" target—one that is situated on or near the coast, a factory or a dockyard, or ships at anchor in a harbour, or a gun-emplacement or a wireless station or troops at drill.

The pilot of a long-range fighter is mainly concerned with getting close enough to the enemy bomber to bring it to action. His is in the nature of a roving commission. He is not directed from the ground on to an enemy formation previously discovered by radio-location or by other means. He must seek out the marauder, usually a single aircraft itself seeking a convoy or more often a straggler from a convoy. Frequently he is called upon

to give protection to ships of the Royal Navy operating in or near enemy waters, and he must then be ready to encounter enemy fighters faster and more heavily armed than his own aircraft, which has to carry enough petrol to take him to the scene of operations and back again over many miles of sea.

It will thus be seen that, though superficially the offensive role of Coastal Command

NORTHROP FLOAT-PLANES





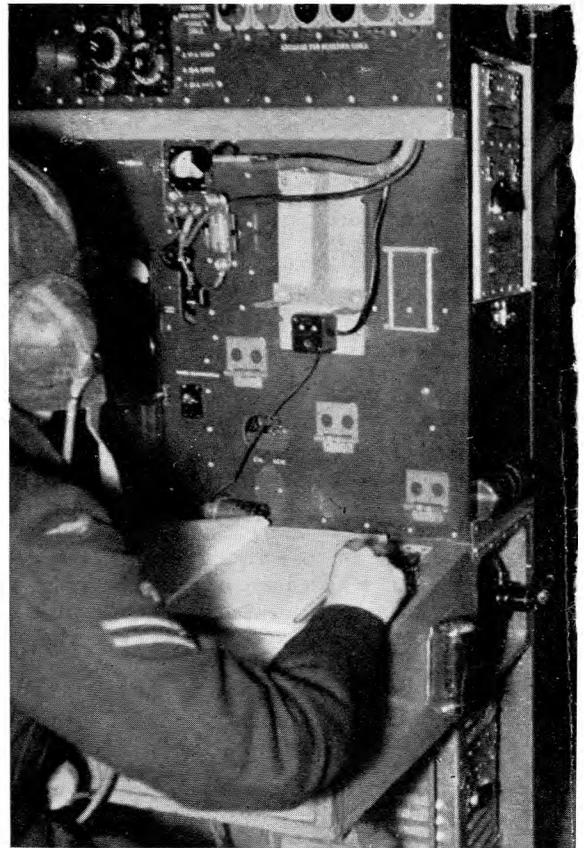
CATALINA

is the same as that of the other Commands, it is in practice more difficult to carry out and requires not only daring and resolution but a special degree of skill.

The aircraft used are, for torpedo attack the Beaufort, for bombing the Wellington, Whitley, Blenheim, and most often the Hudson, for long-range fighting the Beaufighter and the Blenheim. At the beginning of the war the Vickers-Armstrong Vildebeest was used as a torpedo-bomber, but was replaced in squadrons by Beauforts during 1940.

Operating under Coastal Command have been various types of aircraft belonging to other Commands of the Royal Air Force and various types of naval aircraft. For example, Battle bombers and Hurricane fighters have been used. So, too, have Swordfish, Albacores, Skuas and Rocs of the Fleet Air Arm when its squadrons have been attached to the Command for operations.

Before leaving the subject of the pilots and the aircraft, a word must be said about the members of the crew and about the maintenance staff. The work of the navigator will be described later. It is supplemented and completed by that of the wireless operator and the air gunner. A thorough knowledge of wireless is of great use and importance, and all wireless operators receive a specialised training. This must indeed be so in a service of which so much of the work is reconnaissance.



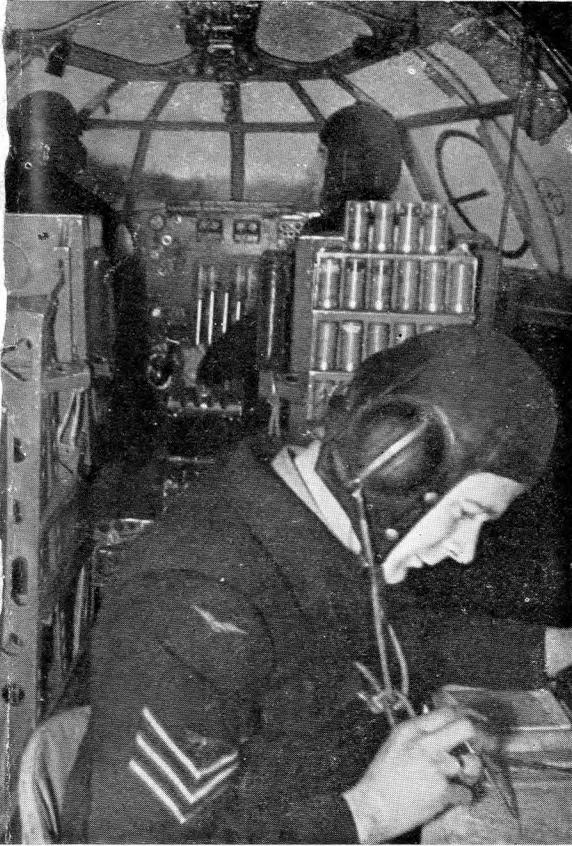
Pilots, navigator and radio operator in a Catalina
The airman of Coastal Command is half a sailor

The air gunner in Coastal Command is not only a gunner, he is also a wireless operator and may be trained in navigation.

The ground crews are concerned as much as are those of Fighter and Bomber Commands to maintain their aircraft and its engines in perfect condition. In the big flying boats the engine fitters and riggers are members of the crew and take part in all their flights. As in the other Commands, logs are kept of the performance of the engines, and it is not unusual for the ground staff to interrogate a pilot and his crew on their return and demand a detailed report on the behaviour of their aircraft so as to make sure that it was airworthy.

With men and aircraft such as these, Coastal Command is carrying on its triple task of reconnaissance, protection and attack. This triple task has a double object—to prevent the enemy from imposing his blockade and to help in imposing our own.

Whenever it is possible Coastal Command follows the old principle that attack is the best defence, being ever mindful of the words of Drake in his dispatch of March 1588: "The nation will be persuaded that the Lord will put into Her Majesty and her people courage and boldness not to fear invasion, but to seek God's enemies and Her Majesty's where they may be found." Its activities are thus at once defensive and offensive, and the line dividing them is often hard to perceive. What fortune has attended them will now be set down. It is a tale of the sea, the wind and the sky, and of men who, careless of the friendship or hostility of the elements, keep watch and ward by day and night, ready to attack and destroy a formidable, unscrupulous, but not invincible foe.



He navigates over great tracts of ocean. His flying boat carries an anchor and is moored to a buoy.





4: Flying Start: September 1939

COASTAL COMMAND began this war with one advantage. It had been fully mobilised a fortnight before the outbreak of hostilities. This was due to a fortunate circumstance. The authorities had decided to carry out an extensive exercise during the last fortnight of August 1939. For this purpose a large number

of officers on the Reserve had been recalled and they were all at their posts when war broke out. Many patrols were in the air over the North Sea, the Channel and the Western Approaches when they received a wireless signal notifying them that Great Britain was once again at war with Germany. The old warfare between sea and land power had broken out again; but now a third element, air power, was to be added. It had made its début in the war of 1914-1918.

On the outbreak of war the oceans of the world were being traversed by many hundreds of ships laden with goods for this country. They were not sailing in convoys, for they had left port while there was still peace. Profiting from the experiences of the war of 1914-1918, the Admiralty decided to institute the convoy system immediately. There was, however, an inevitable time lag between the moment when the decision was taken that all vessels below a certain speed sailing to and from these shores should proceed in convoy, and the moment when they actually began to do so. They had to be collected before they could be protected.

Moreover, many of them belonged to European States at that time neutral, and very eager to remain so. Such ships were in immediate peril, for Germany lost no time in putting into practice the plan which had so nearly brought her victory in the spring of 1917, and began to sink at sight any ship, whatever its nationality, which ventured to carry a cargo to Great Britain. Vessels belonging to the United States of America were at once forbidden by their Government to enter the combat zones. Such States, however, as Belgium, Holland, Denmark and Norway hesitated to incur the financial loss entailed by the adoption of such a policy, and continued to allow their ships to sail the North Sea. As the autumn of 1939 faded into winter they began to accept the protection of the convoy system, deeming the actions of the German Admiralty to be a greater peril than the threats of the German Foreign Office.

To meet the menace of the U-boat, Coastal Command had at its immediate disposal five Flying Boat Squadrons, seven Anson, two Vildebeest and half one Hudson Squadron. On the day on which war broke out there were,

in fact, 171 aircraft available for action with their crews. Its work of protection was therefore limited in range. The flying boats went out farthest from bases in Wales, Devon, Cornwall and the Shetlands. They were capable of covering great distances, and they did so. On 26th December, 1939, for example, a Sunderland made what was then a record by picking up the convoy it was sent to cover 364 miles from its base.

Beyond their range protection was provided by the aircraft carriers of the Royal Navy. In doing so, their aircraft covered 7,516,550 square miles in the first four months of war. Without

them our position in the Atlantic would have been serious.

As the merchant ships drew nearer to these shores they came under the protection of the spider-web patrols of Coastal Command which were flown over the approaches to Great Britain, especially those of the South-West. They were carried out by aircraft of limited range and endurance, the principal among them being the Anson.

The patrols along the East coast of Britain were for some months carried out by Tiger and Hornet Moths with an endurance of about two hours and a half and a petrol

“Anson is as Anson does.” These aircraft were Coastal Command's main standby in the earliest days of the war. Reliability and powers of manœuvre particularly adapted them for convoy protection.



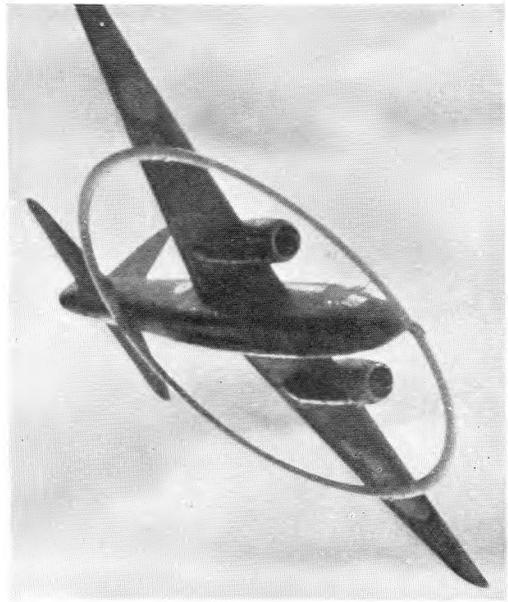
capacity of fourteen gallons. The object of these patrols was to protect coastwise shipping and to spot submarines on their way out North about these shores to the Atlantic. The presence of an aircraft, even of a Moth, made it impossible for U-boats to travel on the surface in daylight. The Moths ran considerable risks. The weather was often bad, and grew steadily worse as the weeks went by. "Left patrol area," says the report of one pilot, "on account of deteriorating weather conditions. . . . Contents of bottom of pigeon's basket were blown back into cockpit, affecting eyes." In one winter month 698 hours on patrol were flown by these Tiger and Hornet Moths.

In addition to the ocean convoys there were also the coastwise convoys to be protected. These passed almost daily through the Channel and up and down the East Coast. The practice was for the aircraft to meet the convoy at a chosen rendezvous and then to circle it for several hours before being relieved by another aircraft or by the approach of darkness. Stragglers had constantly to be rounded up.

The work of patrol and convoy protection was not carried on without opposition from the Luftwaffe. The Command fought many combats between 3rd September, 1939, and the end of the year. As a general rule they were indecisive. That which was fought on the 19th December, 1939, between a London flying boat and a Heinkel 111 is typical. The London, though much slower and without the advantage of position, set the starboard engine of the Heinkel on fire. A burst from the German aircraft, however, mortally wounded the British pilot, who, falling inert over the controls, sent the London into a steep dive. The second pilot dragged his captain from the steering column and righted the flying boat just in time to make a landing on to heavy seas. The Heinkel, damaged, flew away. The London, after twenty minutes on the water, took off again and completed its patrol.

The first time a Short Sunderland flying boat was in action it gave a very good account of itself. On the 3rd April, 1940, a Sunderland covering a convoy outward-bound for Norway encountered six Ju.88s. The fight was divided into two phases. The first lasted less than three minutes. Two Ju.88s, a hundred feet above sea-level, were engaged by the Sunder-

land's beam and rear guns. The enemy broke off the engagement and climbed to 1,500 feet, where they remained. Five minutes later four more Ju.88s dived in succession on the Sunderland's tail. The rear gunner held his fire until the leading Ju.88 was within a hundred yards, then he opened up. The enemy broke sharply away and fell in flames. The second to attack was also hit, and subsequently crashed



Aircraft v. Magnetic Mine. Wellingtons were fitted with a device for exploding the magnetic mines laid by the enemy in our waters. This mine-sweeping from the air was a hard and hazardous job.

in Norway, where the crew were interned. During this combat the two Ju.88s which had been circling above the flying boat dropped bombs upon it. They missed, and all the enemy aircraft made off home. The Sunderland was but little damaged.

In this early fighting the Ansons took a large share. On 8th November, 1939, for example, an Anson fought two Do.18 flying boats, forcing one into the sea, while another Anson on patrol encountered an enemy aircraft. fired the moment the pilot saw the black crosses

on its wings, and with the first burst sent it straight into the sea, where it broke up and sank before its type could be identified.

Such incidents provided a welcome but rare relief in the routine of ploughing through weather which grew worse and worse as the year drew to a close. Yet there were compensations. The pilots and crews of Ansons flying over the desolate seas to the North and North-West of Scotland soon became well known to the lighthouse keepers on the many islands off these coasts. It was a strange but firm friendship. Neither could meet nor speak to the other save by signs. The crews dropped newspapers and magazines. The lighthouse keepers expressed their gratitude by waving their arms, and one of them was wont to display a large sheet with "Thank you" written on it. There was also a dog who was given bones from the air, and soon showed great skill in marking the spot where they would fall and snatching them before they could roll into the hungry sea.

An average of 85 ships were escorted daily throughout November, and the total number of convoys up to the end of the year was 598.

To the perils provided by the U-boat another was added at the end of October 1939. This was the magnetic mine. Fortunately, one of them was recovered intact from the sea off Shoeburyness. Its secrets were laid bare by the courage and skill of a naval officer, and experiments were at once made to determine whether this type of mine, which blew up when it came into contact with the magnetic field of a passing ship, could be exploded from the air by an aircraft capable of setting up a similar field.

The Wellington was soon found to be the aircraft most suited to the purpose, and a number were equipped with a hoop-shaped casing extending all round them and secured to their nose, wings and tail. The casing held a magnetic coil, and current to it was supplied by an auxiliary engine—the ordinary Ford V.8 type—carried in the Wellington.

Experiments were made at sea, and in the early days of January 1940 a number of Wellingtons of Coastal Command were mine-sweeping round our shores. It was hazardous and unpleasant work. It was difficult to take off and land the aircraft. When the mines

exploded the Wellingtons were severely jolted, and their crews had no warning to brace themselves, for they could not know the moment when they would pass over the mine. The fumes of the auxiliary engine caused violent nausea. This mine-sweeping from the air went on for some four months, after which it became no longer necessary, ships having been fitted with degaussing gear. From that moment the magnetic mine became a nuisance rather than a danger.

The flying of patrols over convoys was not the only method of protecting them. The Command carried out more distant patrols, the object being to discover U-boats before they had reached the area in which they would find the shipping they had been dispatched to attack. A continuous line patrol to within sixty miles of Norway was flown daily from the first day of the war, it being impossible to go farther because of the limited range of the Anson. The gap was covered by our submarines. On only two days in October was the weather so bad as to make the flying of such a patrol impossible.

The "Scharnhorst," accompanied by a cruiser and four destroyers, was discovered by a patrol of this kind on 8th October off the South-West coast of Norway, although on this occasion weather prevented an attack by bombers. Bomber Command made numerous attacks as the result of the special reconnaissances of Coastal Command. On 23rd November an American flying boat in service with the Command searched all night in severe icing conditions for the "Deutschland," which had on that day sunk the "Rawalpindi." The search for the "Deutschland" went on for some days.

From the outset the Command joined with the Royal Navy in attacking the U-boat wherever and whenever it was found. The first was seen on the third day of the war. It was bombed from so low a level that the column of water flung skywards by the explosion split the tail of the attacking aircraft, an Anson.

Two examples of the encounters in those early days may be given. On 8th December, 1939, at 9.30 in the morning, far to the North-West of Cape Wrath, an Anson saw a U-boat on the surface and dropped two bombs on it. The first fell a yard to starboard of the conning-tower, the second into the swirl of air and water



Skulking in a dark corner of Josing Fjord, the prison-ship "Altmark" is discovered by Coastal Command reconnaissance.

set up as the submarine dived. After a moment or two, during which the sea became covered with oil and bubbles, the U-boat came to the surface; her bows rose at an angle which grew steeper and steeper until her hull was almost vertical. Then she sank slowly, stern first. She was considered a total loss.

On 7th March a Hudson off the North-East coast of Scotland saw a U-boat near the surface. At the first attack only one bomb fell—fifty yards short. The Hudson went in again and this time succeeded in dropping two more bombs, one of which fell on the track of the U-boat, which had by then submerged. An oil streak now appeared and grew gradually to the length of a mile. The time was close on 3.0 o'clock in the afternoon. At 5.0 p.m. two destroyers arrived and were directed to the spot by an Anson which had relieved the Hudson. The destroyers dropped depth charges. "A large, bubbling patch was seen."

By 31st December, 1939, out of seventy-five U-boats seen, fifty-one had been attacked, with considerable success. There was by then a marked decrease in U-boat activity. Coastal Command had had a share in achieving this satisfactory, if temporary, result. Up to the end of the year its aircraft had made 1,558 sorties and flown 40,633 hours and 20 minutes.

By the end of April 1940 the first bout of the Battle of the Atlantic was over. It had been to our advantage. Sterner days and a time of fiercer testing were, however, approaching.

Apart from their share in the opening stages of the battle, which directly and indirectly occupied so many of their flying hours, the aircraft of Coastal Command were engaged on other activities, of which two must be mentioned: the protection of our fishing fleets and the search for individual enemy or suspicious vessels. The Luftwaffe was brought early on the scene by the enemy and given an inglorious role to play. It began its attack upon us by bombing fishing vessels unprovided with any means of defence, and then machine-gunned the crews when they had taken to the boats. This practice was also extended to lightships. By the middle of October Coastal Command was giving protection to our fishing fleets in the area of the Dogger Bank and elsewhere in the North Sea and in the Irish Sea. This they did by extending their normal patrols and by flying special

sweeps carried out by aircraft in relays.

These patrols and the arming of the trawlers soon began to act as a deterrent, and the number of the fishing vessels sunk or hit fell off rapidly. Our aircraft were also of great use spotting nets and gear which had gone adrift. The crews of the trawlers and drifters gave quantities of fish to the local Coastal Command Stations and not infrequently set the Air Ministry a problem by addressing these to "Monty" (their term for an aircraft) X/796—or whatever the number was that they had seen painted on the fuselage when the aircraft passed over their heads—Air Ministry, London.

From the beginning, special searches were made for particular ships. Thus, early in November, 250 hours were spent in locating the "City of Flint," which the Germans sought to capture and which put in to a Norwegian port, discharged its cargo, and subsequently returned to the U.S.A. A search was made for the German ship "New York," and for a Greek vessel derelict in the Channel, where she was a menace to shipping.

The best known of these searches was that carried out to find the "Altmark." She was sighted at eight minutes to one in the afternoon of 16th February, 1940, by Hudsons of Coastal Command. They had been searching since dawn in misty weather which cleared by mid-morning, when the sun came out. It shone upon a sea which appeared to be frozen over for a considerable distance from the Norwegian coast. The "Altmark" was picked up about fifteen miles away. The Hudsons approached closely and the pilot of one of them, diving down, read her name in letters a foot high which, though obscured by paint, were clearly visible. Other aircraft took up the task of shadowing. The Royal Navy arrived at 2 p.m.

That afternoon the German vessel took refuge in Josing Fjord, whither she was pursued by H.M.S. "Cossack," who boarded her and removed the prisoners. Hudsons provided an escort for the homeward voyage of "Cossack" and the other warships engaged in this operation. On the way they spotted four floating mines, which were sunk by the destroyers. Hudsons stood by for a week in order to attack the "Altmark" should she venture out of Norwegian territorial waters; but she remained aground in the fjord.

THE BATTLES OF THE NARROW SEAS

Coastal Command's task is made heavier by the occupation of Norway, Holland and France, which gives Hitler many advanced bases both for an invasion of Britain and for his campaign against our Atlantic life-lines.



5: The Fight for Norway

ON 8TH APRIL, 1940, at 2.0 o'clock in the afternoon, a Sunderland flying boat sighted a battleship of the "Scharnhorst" class accompanied by two cruisers of the "Leipzig" class and two destroyers. They were a hundred and thirty miles from the Alsboen Light off the West coast of Norway. The ships saw the Sunderland almost at the same moment, and opened anti-aircraft fire which was both heavy and accurate. The Sunderland was hit almost at once; two of its tanks were holed and the hull gradually filled with petrol. When it landed at its base it had lost 300 gallons. That same day German destroyers had been seen at various times in the neighbourhood of the Horns Reef, steaming on a Northerly course. The German attack on Norway had begun.

Throughout the next day aircraft of Coastal Command were very busy reconnoitring the new area of battle. Before midday a London flying boat had reported the presence of a German cruiser of the "Köln" class in Bergen. This intelligence was confirmed later by a Blenheim and a Wellington. A Sunderland reported one "Hipper" class cruiser in Trondhjem Fjord, and Wellingtons enemy warships and possibly transports at Kristiansand (South). The cruiser at Bergen was attacked that afternoon by Wellingtons, which dropped thirty armour-piercing 500-lb. bombs from between 4,000 and 6,000 feet. They were met by heavy fire, but thought that they had scored one direct hit on her stern. On the next day a Hudson reported that after a further attack by naval Skuas from the aircraft carrier H.M.S. "Furious" the cruiser had sunk.

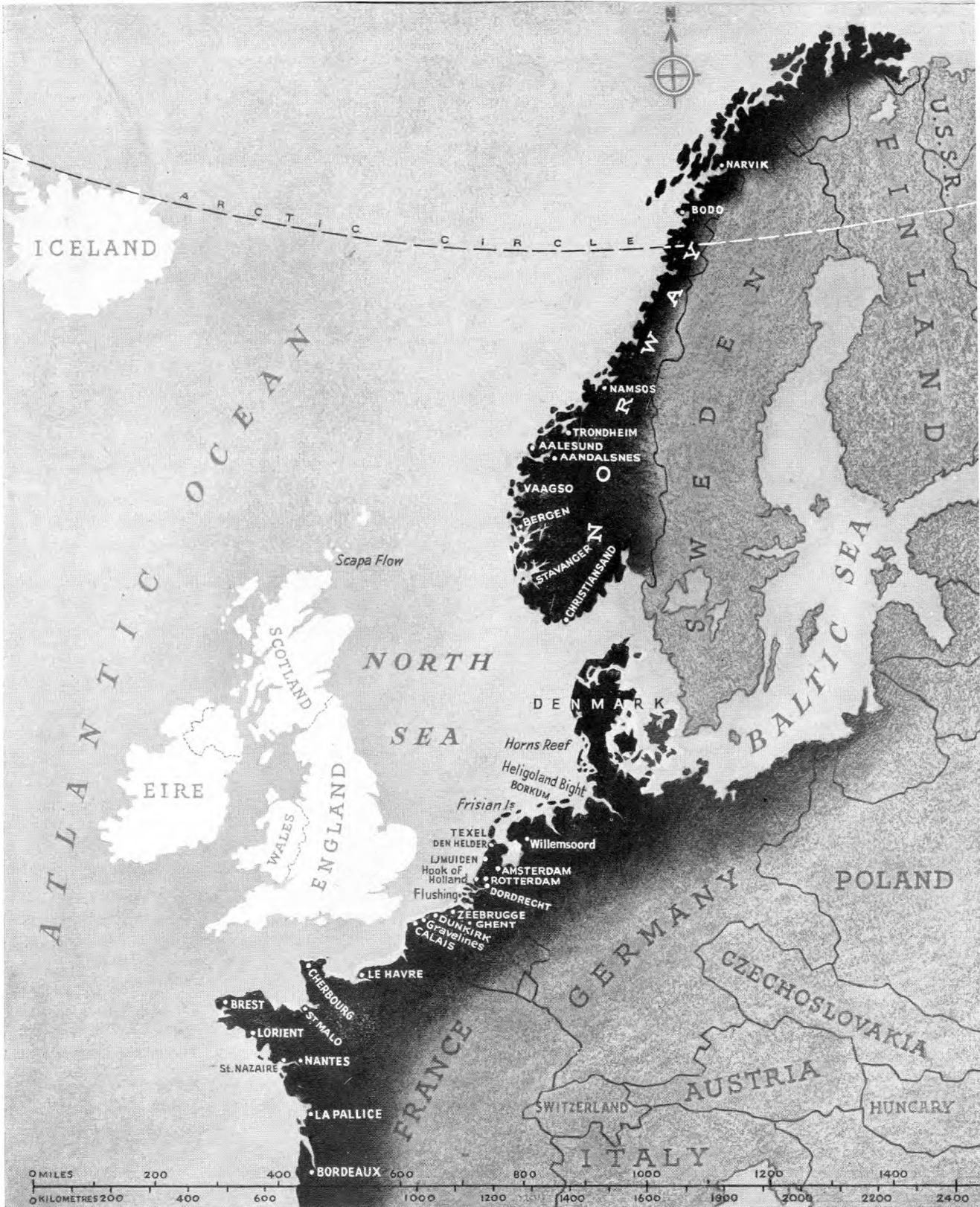
On 12th April a Wellington, put at the

service of Coastal by Bomber Command, flew from an aerodrome in Northern Scotland over a thousand miles of sea to the North of Norway. When it entered Narvik Fjord "huge rocks towered up on either side of us," reports the wireless operator. "Snow drifted down so that we could see only a few yards ahead. The gusts were terrific, bouncing and throwing us about. . . . By then we reckoned we were within about ten miles of Narvik, but we could not continue. Visibility was almost nil. . . . We went about and picked our way down the fjord again . . . like a boat hugging the shore. Suddenly we saw once more the open sea." They soon saw something else, a Ju.88 crossing their bows. "We began to circle each other, two heavy bombers waiting to pounce." Then the inevitable curtain of snow fell and they lost each other. Near Narvik the compass showed errors of between twenty and thirty degrees, but the Wellington set course for base and landed safely after a flight of fourteen and a half hours.

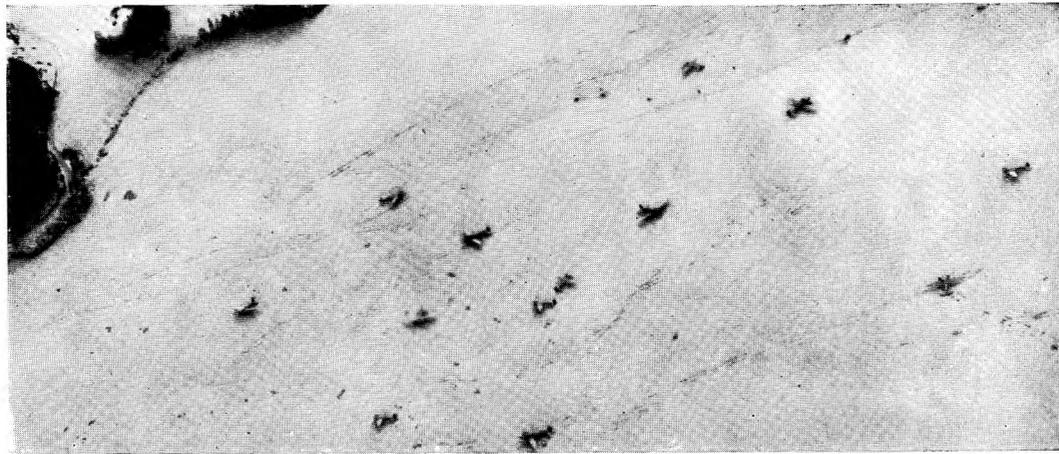
On the next day the Royal Navy entered the fjord and sank seven German destroyers. A second reconnaissance, made on 22nd April, also by a Wellington, covered 1,180 miles in eight and a half hours and photographed Trondhjem. It saw, among much else of interest, twenty-two German aircraft on "a frozen lake," and its signal about this discovery was picked up by an aircraft carrier whose aircraft "bombed the lake with excellent effect."

By 14th April the German Air Force was in occupation of all the aerodromes in Norway and Denmark. The most suitable from which to launch air attacks on the Fleet in Scapa Flow or on other Scottish naval bases was that at Stavanger, where there was also a sea-plane anchorage. It is not quite three hundred miles from the nearest point on our coast. The Germans began without delay to make the fullest use of it and for us it became an important target. Coastal Command bombed and machine-gunned it many times, beginning on 10th April. Here is the report contained in the official summary of a machine-gun attack by a long-range Blenheim. It is typical of many such.

"Reached Norwegian coast at 16.00 hours on 10th (April). At 16.04 entered the clouds



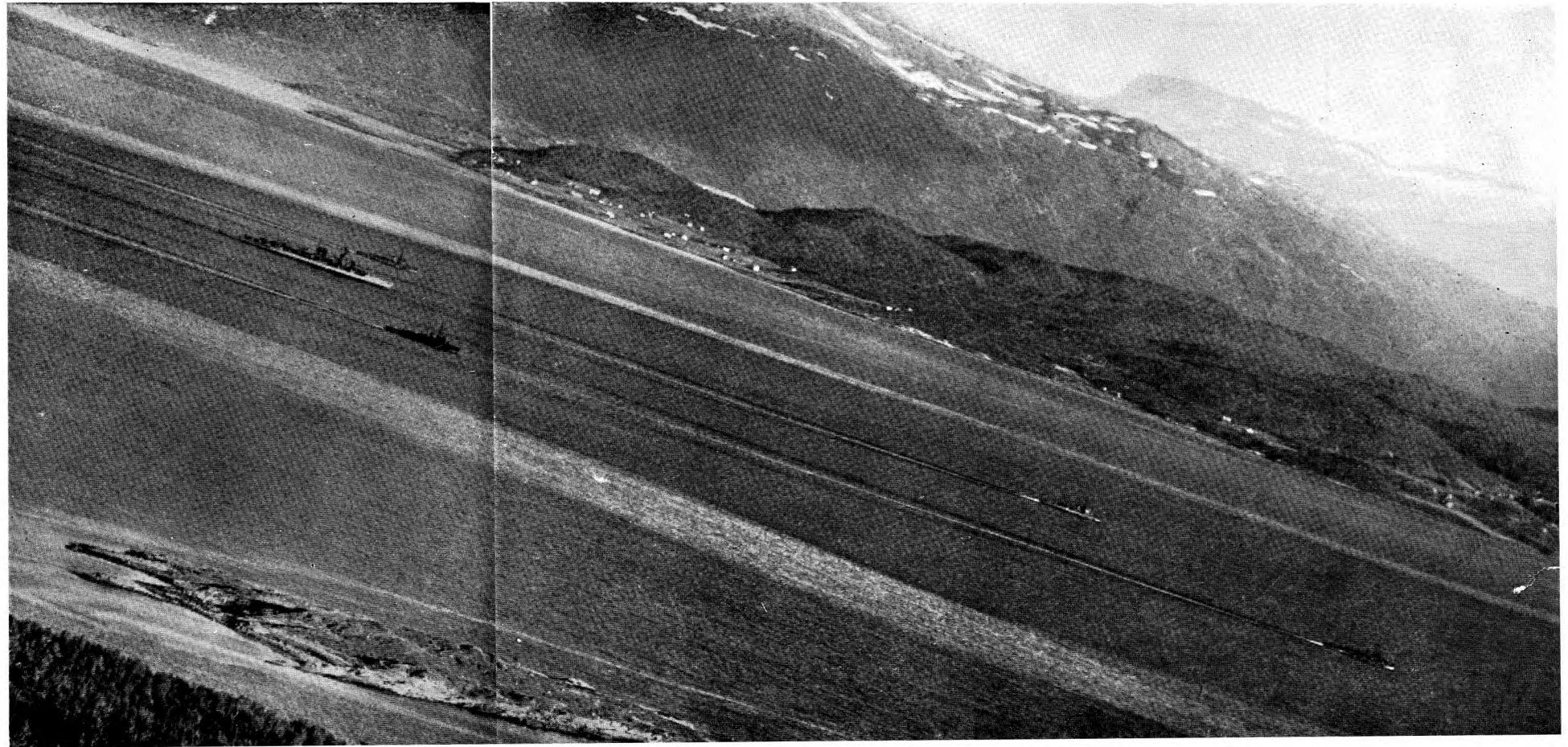
THE COASTS OF EUROPE TURNED HOSTILE, 1940



The frozen lake at Jonsvatnet, used by the Germans as a makeshift airfield. A Wellington spotted 22 enemy aircraft on it. As a result, the lake was bombed—"with excellent effect."

after seeing five Messerschmitts taking off from Stavanger. At 16.10 observed 18 seaplanes (Bloem and Voss) in the harbour, also 20 Heinkels and 15 Messerschmitts on the aerodrome. Two Heinkels and three Bloem and Voss seaplanes were raked with machine-gun fire from a height of a hundred feet. One Heinkel was destroyed by an explosion and the other damaged. A Bowser pump was set on fire whilst filling a large bomber. 2,000 rounds in all were fired. At 16.20 the Blenheim aircraft set course for Bergen, but failed to locate it. At 18.15 (on the way home) a Ju.88 was attacked in a position 135 miles from (North coast of Scotland); 500 rounds were fired, which put the port engine and rear gunner out of action, and it is doubtful whether the enemy aircraft could have reached its base. Heavy anti-aircraft fire was encountered at Stavanger and our aircraft was hit by explosive bullets. Undercarriage partially collapsed on landing, rendering aircraft unserviceable. The pilot was slightly injured in the hand from splintered glass caused by enemy fire."

At dawn on 17th April the aerodrome was shelled by H.M.S. 'Suffolk'; a Hudson spotted for her and had to fight a Ju.88 over the target. Despite many attacks it was



impossible with the forces at our disposal to do more than make the aerodrome uncomfortable and dangerous to use. It could not be knocked out, and this was equally true of the other important aerodrome at Vaernes.

Though seizing every opportunity to attack, Coastal Command continued throughout April and May to play its main role, that of reconnaissance. Patrols were flown whenever possible up and down the coasts of Norway. Hudsons from Scotland had a particularly gruelling time. Their efforts were reinforced by those of long-range Blenheims which had begun to join the Command in small numbers. They were at that time the only aircraft which could be used as fighters over Norway with the exception of the naval Skuas which operated from aircraft carriers of the Royal Navy.

The Blenheims shared with the Hudsons the task of attacking an enemy air force greatly superior in numbers and possessed of bases in the area of combat. To reach this our own aircraft had to fly between 300 and 400 miles, and when the patrol was over they had to return over the same distance. This meant that the Blenheims had at most an hour at their disposal during which they could provide air cover to our naval units and, as the campaign developed, to our troops engaged in battle in the regions of Namsos and Aandsnes. As was to be expected, they and the Hudsons met heavy opposition and combats were frequent.

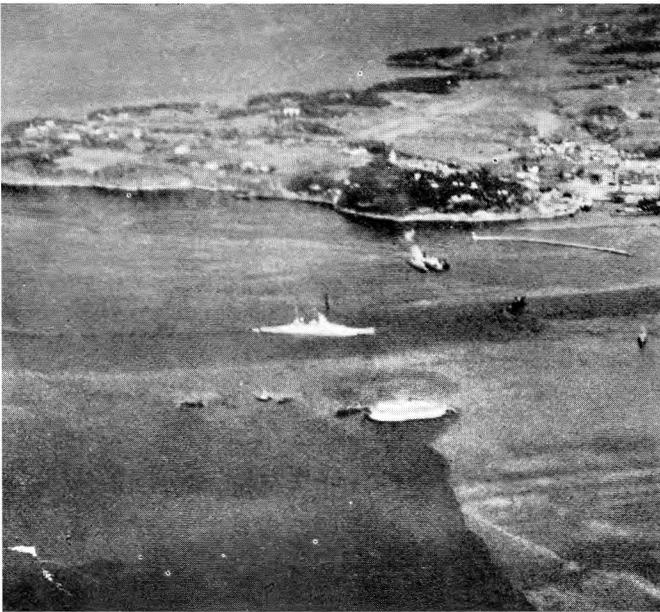
The closing days of the month saw the withdrawal of the British forces from Namsos and Aandsnes. These evacuations were

Norway—the new battle area. Low-flying reconnaissance caught this "Nürnberg" class cruiser steaming with four mine-sweepers off Narvik.

carried out by the Royal Navy covered by naval aircraft and by Coastal Command. This entailed an increase in escort duties which put a considerable strain on its resources, for it must be borne in mind that the Norwegian campaign was not allowed to interfere with the normal routine of Coastal Command.

Though we had had to withdraw at Aandalsnes and Namsos, Allied troops still remained in the neighbourhood of Narvik, which was besieged and finally captured on 8th June. For the success of this operation it was necessary to construct aerodromes and set up a wireless station in the region of Bodo. A number of technical experts were needed and were brought there by two flying boats, the "Cabot" and the "Caribou," which had been taken off the Atlantic service of British Overseas Airways and lent for this purpose. There is little doubt that their presence very soon became known to the German Intelligence Service, who may have

The "Scharnhorst," sighted in Trondhjem Fjord on June 10th, 1940, became the target of a series of attacks by Coastal Command and the Fleet Air Arm. The damage inflicted during these hard-fought engagements kept her out of action for eight months



obtained the information from local quislings. The flying boats were both destroyed before they could be refuelled for the return journey.

Not all the efforts of the Royal Air Force or of the aircraft of the Royal Navy could prevent the enemy from winning the mastery of the Norwegian air. It was, indeed, physically impossible to prevent him. The numbers of aircraft at the disposal of both Services were too small; the distance they had to fly too great. This was not altogether true of the naval aircraft, for the carriers from which most of them operated went in dangerously close so as to enable the Skuas to remain as long as possible over the areas in which fighting was taking place. But there were not nearly enough of them, and they were much slower than the Messerschmitt 109 and 110 at the lavish disposal of the enemy. Nevertheless their efforts and those of Coastal Command to strike the enemy did not cease with the withdrawal of the British and French troops.

On 10th June, two days after the evacuation of Narvik, a Blenheim, one of three on reconnaissance over Trondhjem Fjord, sighted the "Scharnhorst" and two cruisers, one of which they thought might not be a cruiser but a pocket-battleship of the "Deutschland" class. The warships were back from their successful encounter with the "Glorious" two days before. It was decided to assault them where they lay at anchor near a supply ship, and twelve Hudsons carried out a pattern bombing attack from 15,000 feet. They dropped 36 250-lb. armour-piercing bombs, losing one of their number to anti-aircraft fire and another to an enemy fighter. The "Scharnhorst" was probably missed, but both the cruisers and the supply ship received direct hits. This was on 11th June.

On the night of the 13th/14th naval aircraft took a hand. The "Ark Royal," escorted by the "Nelson" and other units of the Home Fleet, arrived at a position 170 miles off Trondhjem. At midnight fifteen Skuas took off for the attack. Long-range Coastal Command Blenheims provided fighter cover over the objective, while Beauforts of the same Command created a diversion by attacking the nearby aerodrome at Vaernes in order to prevent, if they could, German fighters from taking off to engage the Skuas. At that time



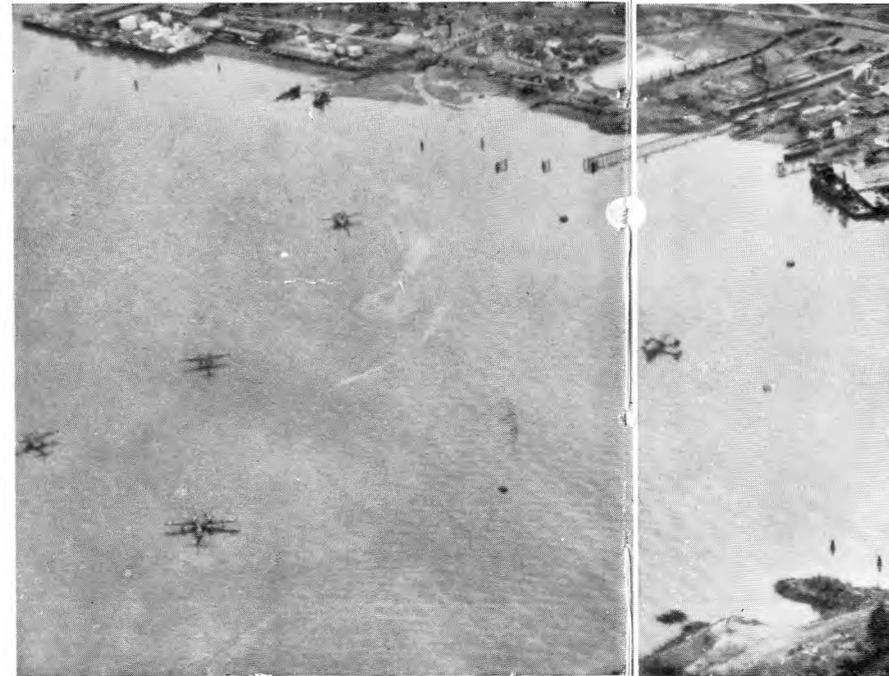
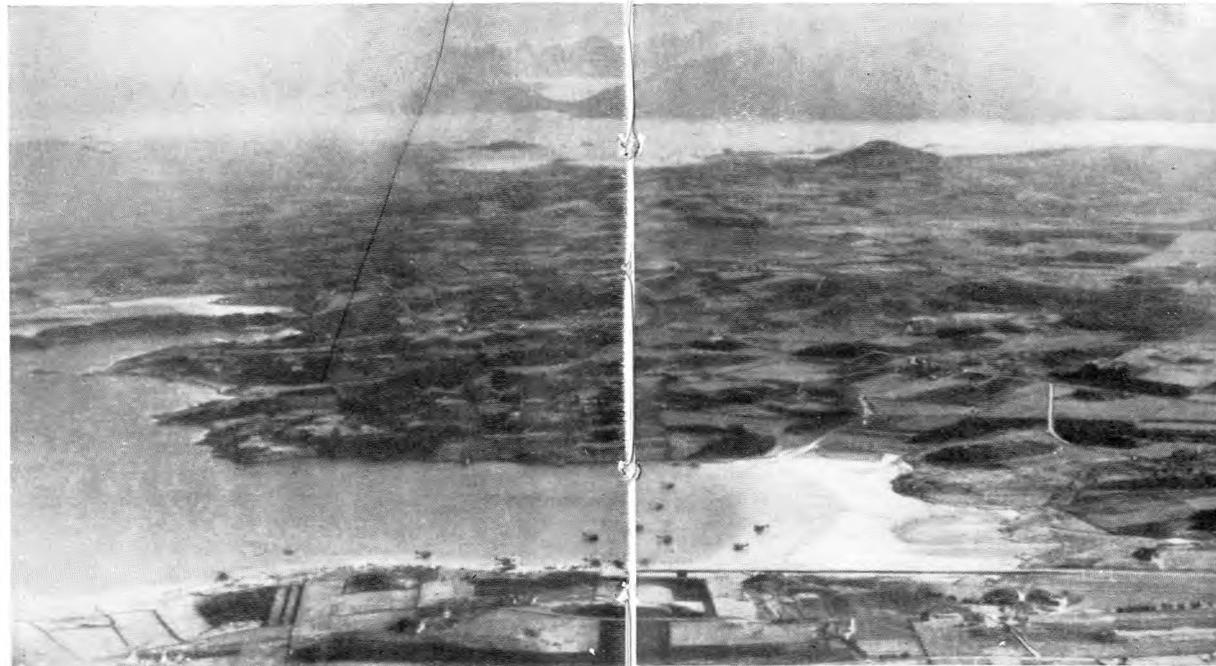
Bergen harbour, crowded with German transports and supply ships, one of which is burning at the quayside after an attack by the R.A.F.

of the year, and in that latitude, daylight is perpetual. It was not possible, therefore, to effect surprise. The enemy were prepared and waiting. The Skuas pressed their attack with the greatest determination. Eight of them—more than half—were shot down, but two hits were scored on the "Scharnhorst."

Two days later a reconnaissance showed that she was still at Trondhjem. On 16th and 17th June two attempts by Coastal Command were made to attack her, but clouds, lower than the hill-tops, obscured the harbour. It was not until 21st June that the "Scharnhorst" was again sighted. This time she was at sea—eight miles West of the Utyoer lighthouse—steaming South at 25 knots, with an escort of destroyers. After an unsuccessful attempt by three Blenheims to find her, she was picked up at 2.45 in the afternoon by a Sunderland. The flying boat was at once attacked by heavy fire which endured for an hour. During this time its crew watched a torpedo attack by six naval Swordfish, of which one was shot down. Shortly afterwards they found themselves engaged with four Me.109s. Their captain was that same officer who had piloted the Sunderland which had fought six Ju.88s when protecting a convoy on 3rd April. The combat lasted about half an hour. All the Messerschmitts were hit and one fell in flames to the sea.

The Sunderland, which was slightly damaged, made off for its base shortly before the arrival soon after 4.30 p.m. of nine Coastal Command Beauforts. They belonged to a squadron which had been grounded because of trouble with their engines. On hearing that the "Scharnhorst" was at sea every pilot volunteered to take up his aircraft. They were allowed to make the attack. When they saw these Beauforts, it is probable that the Germans thought that, like the Swordfish, they were carrying torpedoes and that another torpedo attack was imminent. The destroyer escort was seen to deploy so as to intercept, if they could, the torpedoes launched against the capital ship.

The Beauforts, however, were loaded with armour-piercing bombs and, flying in a crescent formation, made a dive-bombing attack. At least three bombs hit the "Scharnhorst," one on its stern, another nearly amidships

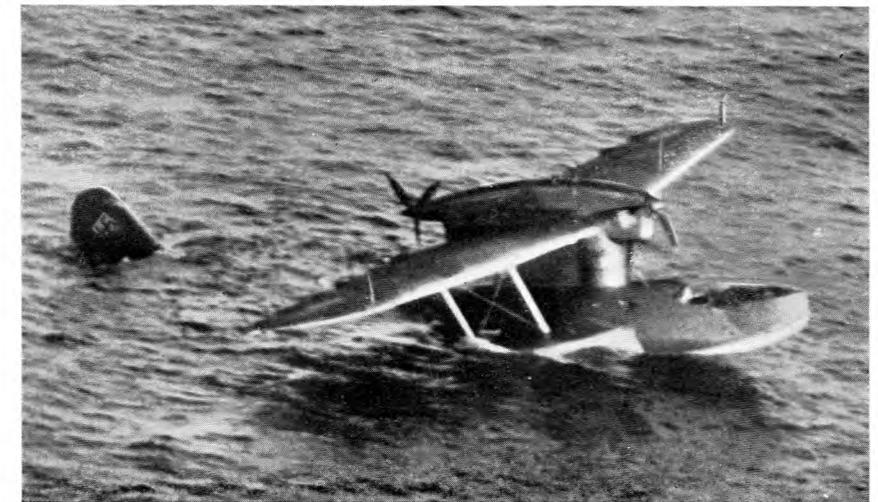


and the third forward on the port side. The Beauforts were forthwith attacked by Me.109s in number from 45 to 50. Three were shot down; the rest got back to their base. There were no cases of engine failure. Hudsons, one of which was lost, renewed the attack, but encountered fierce opposition from an enemy now fully ready to meet them, for the warships were by then only 25 miles from Stavanger. In this action five aircraft were lost altogether, but the "Scharnhorst" had received sufficient damage to cause her to retire to a floating dock at Kiel. She remained out of action for the rest of the year and did not put to sea again until early in 1941.

The part played by Coastal Command in operations against her during 1941 will be set forth later. It is now time to go back to the early days of May and to move from the wild and solemn beauty of Norway, from gleaming fjords and sombre mountains where flying is at once a delight and a peril, southwards to placid, open lands.

On 10th May Germany invaded Holland, Belgium and Northern France.

German aircraft bases. *Above*, Stavanger, only 300 miles from the coast of Britain, menaced our own naval bases and was frequently attacked by Coastal Command. *Left*, the seaplane base at Trondhjem. *Below*, a Dornier flying boat, brought down, after an engagement of 35 seconds, by a Hudson off the coast of Norway.



6: Heinkel-haunted Skies

THE ATTACK IN THE WEST

THE GERMAN ATTACK on Norway added to the labours of Coastal Command in more ways than one. The number of reconnaissances over the Frisian Islands and the Heligoland Bight had also to be increased. Thus on 12th April a Hudson made a reconnaissance of Texel, Borkum and the other neighbouring islands, and thereafter more and more of these patrols were flown as this faster type of aircraft with its longer range took the place of the slower and shorter ranged Ansons.

In order to fulfil their task the Hudsons had soon to engage in combat; for the enemy was vigilant and active. An account of one of these duels must suffice. On 3rd May a Hudson was attacked near Borkum by three Me.109s. One of them was shot down by the rear gunner, who was killed almost immediately afterwards. His body jammed the turret, and the Hudson, defenceless from the rear, made off hotly pursued by the remaining Messerschmitts, who fired repeated bursts at it until their ammunition gave out. By this time the Hudson, which had gone down to within a few feet of the water, was riddled—242 bullet and 12 cannon-shell holes were counted when it landed—its pilot and navigator were wounded but the engines were untouched. The Messerschmitts flew for some time in formation with it and rocked their wings in appreciation of the valour of its crew. Once free of the enemy the pilot showed signs of collapse. The automatic control was switched on and while the pilot was recovering the navigator and the wireless operator withdrew from the turret the dead air gunner and laid him on the floor of the aircraft. So they brought him home.

It was becoming increasingly obvious in



Crash-landings on Kattewijk beach, observed by our reconnaissance on 10th May, 1940, were one of the first signs that the invasion of Holland had begun.

the first days of May that something was in the wind. On the 7th of that month all telephone and telegraphic communications between Holland and the U.S.A. were suspended. A considerable amount of German shipping, including a cruiser, had been observed by Hudson patrols off the Frisian Islands. On the same day Beauforts on reconnaissance attacked the cruiser. Enemy destroyers were also observed plying busily along the North-West coasts of Germany.

The 10th May did not therefore find the Command unprepared. Blenheims on reconnaissance early that morning reported eleven German aircraft crashed on the beach just South of the spot where the Amsterdam Canal joins the sea, and eleven Ju.88s on the aerodrome at The Hague, which was strewn with the abandoned parachutes of German paratroops.

The 12th May was full of incident. Three Blenheims fought eight Me.109s while giving cover to British destroyers engaged in landing marines at the Hook. Two of the Blenheims were lost, but the third accounted for two of the enemy. A little later three more Blenheims attacked about twenty-four Ju.88s and Heinkel 111s seeking to bomb an ammunition ship in Flushing Harbour. The battle, fought at heights

which varied from 5,000 to 500 feet, lasted forty minutes. The ammunition ship remained unscathed. Finally, a Swordfish and four Beau-forts bombed Waalhaven aerodrome and a fifth the football ground next door, the attack being repeated by Hudsons after nightfall.

By that time "a great pall of smoke was drifting across blazing Rotterdam, and more fires had started at Dordrecht and the Hook." The water in the canals of The Hague gleamed livid in the light of burning oil tanks and in the brighter glare of the warehouses and buildings behind the neat, well-ordered quays. So the flame of war swept over the Netherlands. The pilots of Coastal Command watched its fiery progress from Heinkel-haunted skies. They were flying and fighting over a scene of destruction and chaos. Harbours were filling with sunken ships, aerodromes and beaches with wrecked aircraft, roads with herded refugees. The enemy was everywhere. By the evening of 13th May the Dutch Air Force, which had fought with gallant fury since dawn on the 10th, was literally no more. Of its total

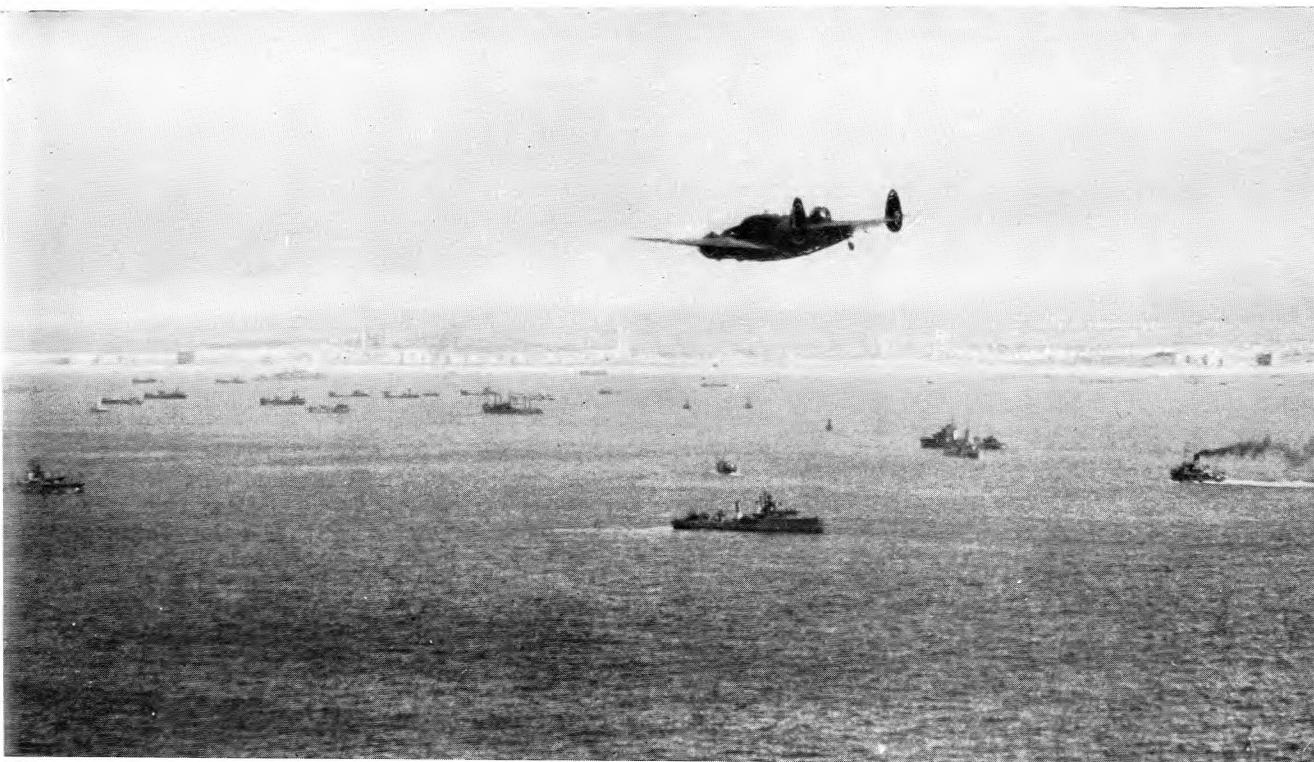
strength of 248 aircraft there was left not one. On 15th May, at 11.0 a.m., Holland, overwhelmed, capitulated.

For Coastal Command the centre of interest was now shifted Southward. For five days it had fought over Holland and escorted ships moving to and from that country with troops and refugees.

The part played by Coastal Command in the Battle of France was shared by naval Swordfish, Albacores, Skuas and Rocs disembarked from carriers. The targets were enemy motorised columns engaged in the great drive which formed so important a role of those columns. On 24th May the slow-flying Swordfish twice attacked an enemy tank column on the road between Calais and Gravelines. They lost one of their number to heavy anti-aircraft fire from a nearby wood, but they destroyed three tanks and made five direct hits on the road.

Ansons of the Command were also very busy. They were on constant watch for enemy E-boats which, now that the Dutch ports were in the hands of the enemy, were seeking to

The armada of little ships that evacuated our army from Dunkirk. The Hudson flying above them was one of the Coastal Command aircraft which made 327 sorties over this area in four days.



run down into the Narrow Seas and prey upon our shipping. On 20th May they were in action against E-boats off Texel, and there was much activity during the next few days. On the 25th, for example, four miles off the Maas, an Anson blew an E-boat to pieces with an anti-submarine bomb, and two more were raked with machine-gun fire. Altogether in the thirty-three days between 20th May, when the first E-boat was attacked, and 21st June, when France and Germany signed an Armistice, 17 attacks on E-boats were made by aircraft of the Command.

Meanwhile, at night Hudsons and Beauforts delivered a series of attacks on the oil tanks and plant at Rotterdam. On 20th May several tanks were hit and fired, the smoke of their burning rising to 7,000 feet, and by 31st May the Group to which these aircraft belonged was able to report: "It appears that all oil tanks are now destroyed." Another attack on oil targets may here be mentioned, though it took place somewhat later. On the 9th June, seven Beauforts bombed the oil tanks at Ghent, causing huge fires. They came down to four hundred feet and added to the destruction by machine-gunning those tanks not hit by bombs. "I saw Germans round the oil containers," said one of the navigators, "running about like confused hens. They were the first enemy I had seen. We used armour-piercing bullets followed by incendiary, and the tanks flared up like torches."

The activity of the Command can be judged by the number of patrols flown in daylight. Ninety-four of varying strength were carried out over Holland, Belgium and Northern France in the first twenty days of the battle. This number was to be exceeded not in the next twenty, but in the next seven days. From 30th May to 4th June 135 patrols were flown. On 30th May the evacuation of the British Army and the French Northern Army from Dunkirk was begun.

In this operation it was the part of Coastal Command to cover the area of the Narrow Seas while Fighter Command provided closer protection. Coastal Command gave to its orders the widest interpretation. Not only were German bombers and their escorts attacked, but also, where possible, German troops. It is not necessarily in the actual area where an operation by land and naval forces is in progress that the most effective air support can be given ;

much can be done by attacking the oncoming armies of the enemy.

Thus, on 31st May, ten Albacores and nine Skuas, under the direction of Coastal Command, bombed pontoon bridges over the Nieuport Canal and piers on the foreshore. Direct hits were made. Going home, the Skuas, their ammunition exhausted, ran into twelve Me. 109s. Two Skuas were lost, but the remainder got away, for the Messerschmitts turned upon three Hudsons on patrol. The Hudsons closed up into tight formation and went down low over the sea. There they fought out the battle driving off their far swifter opponents and shooting down one of them with no loss to themselves. On the next day the same three Hudsons attacked about forty enemy aircraft near Dunkirk. They shot down, again without loss, two Ju.88s and one Ju.87 for certain and severely damaged four more.

One of three Ansons, after an action off Zeebrugge, landed in the sea short of petrol forty yards from a destroyer. The crew, confidently awaiting rescue, observed with some dismay a hundred or more naval ratings suddenly cast themselves from the destroyer's deck into the water. "We are sinking," shouted the pilot. "So are we," was the answer. The crews of both craft were rescued by another destroyer brought to the scene by another Anson.

On the last day of May and the first three days of June, when the evacuation operations were at their height, one Group of the Command made 327 sorties over or near Dunkirk. It must be remembered that this severe fighting was being conducted by General Reconnaissance pilots and crews with no specialised fighter training, flying aircraft neither designed for the purpose nor possessed of the great speed of their adversaries. It was found, however, that the British types, especially the Ansons, showed great powers of manœuvre. Their pilots, by keeping in a tight turn in the direction of their faster flying enemy, were able not only to avoid his fire but also to bring their own to bear with good effect.

Aircraft of Coastal Command were able to help in the rescue of men in small boats or struggling in the sea. On 1st June escort vessels were guided to soldiers seen clinging to wreckage, and later on that day tugs were

brought to two heavily-laden lifeboats, while enemy aircraft which appeared on the scene were driven off. On 5th June a motor-boat and dinghy with French troops on board were sighted and a French destroyer informed. It picked them up. A high-speed launch, five seaplane tenders and a pinnace, all belonging to the fleet of water-borne craft at the disposal of Coastal Command for the Air-Sea Rescue Service and for other purposes, also played a part. Their exploits are best described in the words of the official report :

“ The seaplane tenders proceeded to Dunkirk under the command of a Pilot Officer at dawn on the 31st May, and were thereafter engaged on the very difficult task of ferrying soldiers from the beach to larger vessels lying off. Some 500 men were taken off ; two tenders were lost in the process, but their crews were saved. . . . During this operation the crew of

Seaplane Tender No. 276 showed great bravery and resource. After being bombed and machine-gunned and having the starboard engine throttle control carried away by a shot, they carried on to Dunkirk, completed their task, and returned to Dover on one engine. During their voyage a gun-mounting was improvised out of a towing-bollard, an engine starting-handle, a tube and some rope. From this lash-up they were able to maintain a high rate of fire with their Lewis gun.”

When the evacuation of Dunkirk was ended the activities of the Command over Holland, Belgium and France became fewer. This, in the circumstances, is not hard to understand. The strain on its resources had been very great, and some relaxation, now that so much of the British Force in France had been successfully withdrawn, was necessary. Operations were still directed against German E-boats with such

“ They were flying and fighting over a scene of destruction and chaos.”





Air reconnaissance became vital after Hitler occupied the Channel ports. *Left*, an electrically-operated camera on a British flying boat; *right*, invasion barges massed in Boulogne harbour.

Air reconnaissance became of even greater value than before. It was indeed indispensable. A series of anti-invasion patrols were instituted and these were flown daily up and down the coast-line of the occupied countries.

On 13th June there was added to these patrols another series flown with the design to photograph everything in the ports and thus to discover hostile movements from which the probable intentions of the German High Command could be deduced. The aircraft which carried them out often flew as low as 500 feet in order to obtain clear and well-defined pictures. Both kinds of patrol very soon became offensive.

As the days went by Coastal Command bombed the enemy more and more frequently, making raids on Den Helder, Ijmuiden, Willemsoord, Rotterdam, Calais, Boulogne, Cherbourg, Le Havre, Lorient, and other places in Holland, Belgium and France. The objectives were for the most part barges and docks. The places most often visited were Boulogne, which was bombed 21 times up to the end of October, and Cherbourg, which was bombed 24 times. The Command was especially active in September, its aircraft being over these and other enemy bases on all but three days of that month. These attacks were all made to hinder the preparations for invasion. Bomber Command was at that time engaged on a similar task, but much of its strength was being used on targets farther afield, such as Hamburg, Bremen and other German ports, and also on the centres of Germany's war industries.

Nor were aerodromes in enemy occupation neglected. Coastal Command attacked them 41 times during the same period, the places bombed ranging from Aalborg in Denmark to Cherbourg in France.

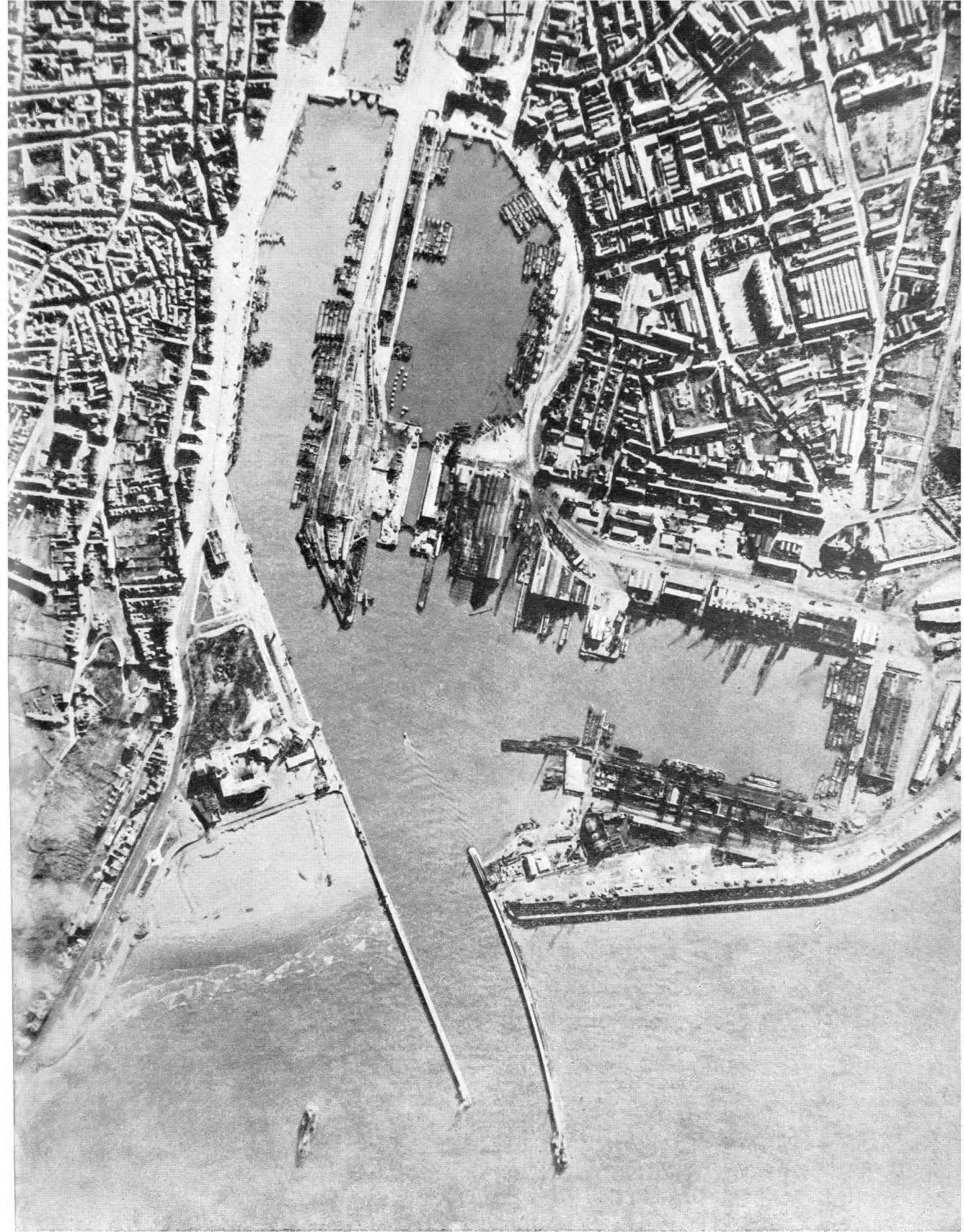
Altogether from the opening of the German offensive Coastal Command delivered 251 attacks on land targets and barges in or near harbour. Their scale was not, however, formidable. It could not be, for the Command

effect that after a time they tended to fight shy of waters patrolled by aircraft of the Command.

By the end of the first week of June British naval vessels, troopships and merchant vessels were moving away towards England. On the 18th air patrols "saw troop transports, armed trawlers, hospital ships, drifters, barges with floating cranes, lightships, sailing vessels with a few troops on board, all making for Southampton. The procession continued all day." The last escort patrol took place on 20th June, when protection was given to cross-Channel steamers carrying civilians away from Jersey and Guernsey. Throughout these days no German aircraft attacked any of this shipping.

So ended the immediate part played by Coastal Command in the battle of the Netherlands, Belgium and France.

As it progressed it became more and more obvious that an attempt to invade Great Britain would be made as soon as the Germans had completed their subjugation of Western Europe. As early as 6th June, 1940, therefore, measures were taken by Coastal Command to keep a close watch on all ports from which a fleet of invasion might be expected to sail.



did not have the necessary strength in aircraft. But what was lacking in numbers was made up in skill and determination. It soon became the practice to allow our pilots, when they had completed a routine patrol, to attack selected targets if circumstances permitted. On 28th June, for example, the gas-works at Willemsoord were blown up by a single aircraft on its way back from a reconnaissance. This permission our pilots regarded as a privilege, and they availed themselves of it as often as they could.

From the end of the first week in August to the 31st October, 1940, Fighter Command was engaged with all its strength in the Battle of Britain. Those weeks were critical. Had that battle been lost, aircraft of Coastal Command patrolling off Norwegian fjords, off Danish and Dutch sandbanks and islands, off the grey shores of Belgium and the iron coast of Northern France might well have had to report that the German Armada was standing out to sea.

7 : Seeking the Raider in his Lair

ON 9TH APRIL, 1940, the problems of Coastal Command became of larger consequence by reason of the German invasion of Norway. From that date the enemy began with increasing speed to possess himself of bases not, indeed, invulnerable, but well protected by nature from assault by sea and air, and so situated that his conduct of the Battle of the Atlantic became a simpler task. His U-boats and surface raiders could now move out from their harbours in the North Sea or the Baltic up the long Norwegian coast close inshore, through waters among the most sheltered in the world,

into the Atlantic, where an area of battle vast in extent, and therefore very difficult to patrol, awaited them. To their number was soon to be added a third menace, the four-engined Focke-Wulf Kurier.

In a short month the enemy brought his advanced air and sea bases to within 350 miles of Britain. But worse was soon to follow. By the end of May he had acquired all the bases of Holland and Belgium. On 17th June France sued for an Armistice and on the 21st its terms were signed. Under them Germany obtained, among much else, the right to occupy the whole coast-line of France with all its harbours, roadsteads, estuaries and ports from Dunkirk in the North to Bordeaux in the South. Thus, before June 1940 was out, the Germans had the whole coast-line of Western Europe under their control, with the exception of that of Spain and Portugal. The second and grimmer phase of the Battle of the Atlantic was about to begin. It seemed that the advantage lay all with the enemy.

Reduced to its simplest form the problem of countering the activities of surface raiders, U-boats and long-range bombers consists in destroying them either in their bases or when they are out looking for shipping to attack. After the fall of France, Coastal Command increased its reconnaissance activities, and patrols were established and maintained from the North of Norway to the Spanish border. They were, and are, an addition to the normal convoy patrols, which altered in character after the German occupation of so much of Europe's coast-line had very greatly increased the danger of air attack upon convoys sailing through the Channel.

This work of reconnaissance is not carried out without opposition. There have been many encounters with the Luftwaffe, who are able to use short-range fighters for the defence of their country's ill-gotten gains, whereas we must send out Hudsons, Blenheims, Beauforts and flying boats because of the distance separating this island from the areas to be reconnoitred. This disadvantage, while it adds to the difficulties and dangers of the task, has not prevented its fulfilment. It is performed in all weathers, though in daylight cloud cover is almost essential. "By skilful use of a diffused layer of cloud, which was at

7,000 feet, he succeeded in entering the port of Brest, obtaining his photographs and dropping his bombs. . . ." " In brilliant sun the three aircraft set out on their patrol to Cherbourg. Just outside they encountered six of the enemy. The three Blenheims turned into the sun, forming line astern, but one failed to close into formation successfully. This machine was engaged by the enemy and when last seen was diving steeply towards the sea with smoke pouring from both engines. . . ." There are many such reports. They illustrate clearly enough the importance of cloud cover.

Flying boats have also been used and have made some remarkable flights. On 21st January, 1941, a Sunderland flew up the Norwegian coast from Trondhjem to Narvik. Twenty miles from that town German soldiers were seen on parade. They received a general purpose bomb and the rest of the load was dropped on a barracks, a motor convoy and a large ship in the harbour of Narvik. Immediately afterwards the Sunderland was hit by

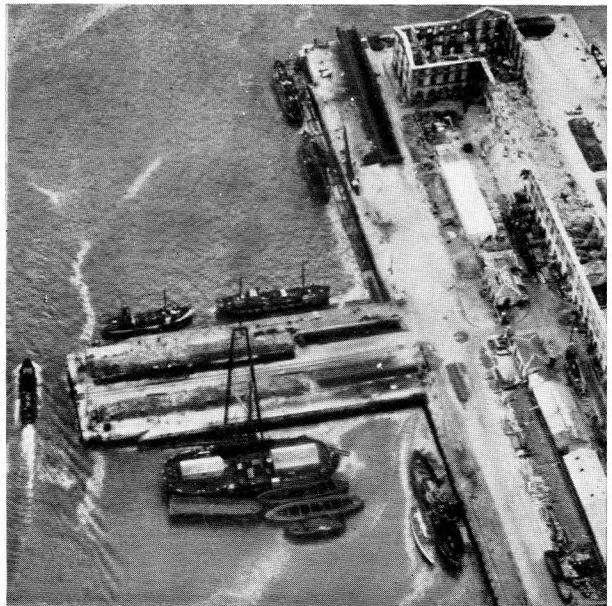
two bursts of A.A. fire, the first putting both front and rear turrets out of action, the second damaging the tail-plane. On the way home, as the flying boat was nearing Scotland, the clouds closed right down. A landing was made on the sea near an island and the boat had to be taxied up and down in the lee of a cliff for the whole night, thirty-one vain attempts being made to get the anchor to hold. The Sunderland was towed at dawn to a nearby cove and beached. Its subsequent adventures included a duel with a Me.110, which it beat off, though armed only with a borrowed tommy-gun, when on passage to the South of England for final repairs.

These examples by no means represent the whole duty of Coastal Command. Obviously, if a submarine or surface raider can be dealt with in harbour, it will not be able to play an active part in the Battle of the Atlantic. To attack them there is work for the Royal Navy and for Bomber Command, but Coastal Command has had a hand in the business

Dieppe, showing block-ships sunk by the British at the harbour mouth, at the entrance to the Inner Channel, and in the Bassin de Paris.



Cherbourg. A low-level reconnaissance photograph showing great damage to warehouses and quayside installations.





St. Nazaire, a U-boat nest frequently raided by Coastal Command during 1940-1941. 1. The dock-gate later destroyed by H.M.S. "Campbeltown" in the Combined Operations raid. 2. "M" Class Minesweepers in the Outer Harbour. 3. U-boat Pens under construction. 4. Shipyards. 5. French aircraft carrier "Joffre," dismantling in dry-dock.

from the beginning. No time was lost in opening the attack, although, as with the invasion ports, the assault was not on a heavy scale. Coastal Command is not exclusively equipped for bombing. Nevertheless it made 682 attacks on land targets between 21st June, 1940, the date of the Armistice between France and Germany, and the end of December 1941.

Excluding aerodromes, which the Command attacked 130 times in France, 30 times in the Low Countries, 44 times in Norway and thrice in Germany, there were during that period 28 attacks on French fuel dumps and electrical power plants, 36 attacks on Dutch oil installations and eight on Norwegian. There were also 69 attacks on other miscellaneous targets. The bulk of the effort, however, was naturally directed against docks and harbours and the shipping in them. Brest heads the list with 62 attacks; Boulogne follows with 50. Then comes Lorient with 30, Cherbourg with 28, St. Nazaire with 21, Le Havre with 16, Calais with 13 and Nantes with five. Many other places containing such targets have also been attacked less frequently.

The raids have been made mostly at night. To describe them in detail is impossible within the compass of a short account. They were, and are, harassing operations designed to destroy valuable stores and necessities for the prosecution of the battle and to interfere as much as possible with the lives of men on garrison duty in foreign and hostile lands. As such they have been very successful, and if their scale is now diminished, it is because that work can now be performed by Bomber Command, of which the strength is steadily increasing. More and more of the offensive power of Coastal Command is now being directed against shipping, as will be explained in due course. At the beginning, that is to say after the fall of France, the effort made by Coastal Command was not inconsiderable having regard to the numbers of aircraft available. One squadron alone, for example, made 28 attacks on French ports, involving 136 individual sorties, in six weeks.

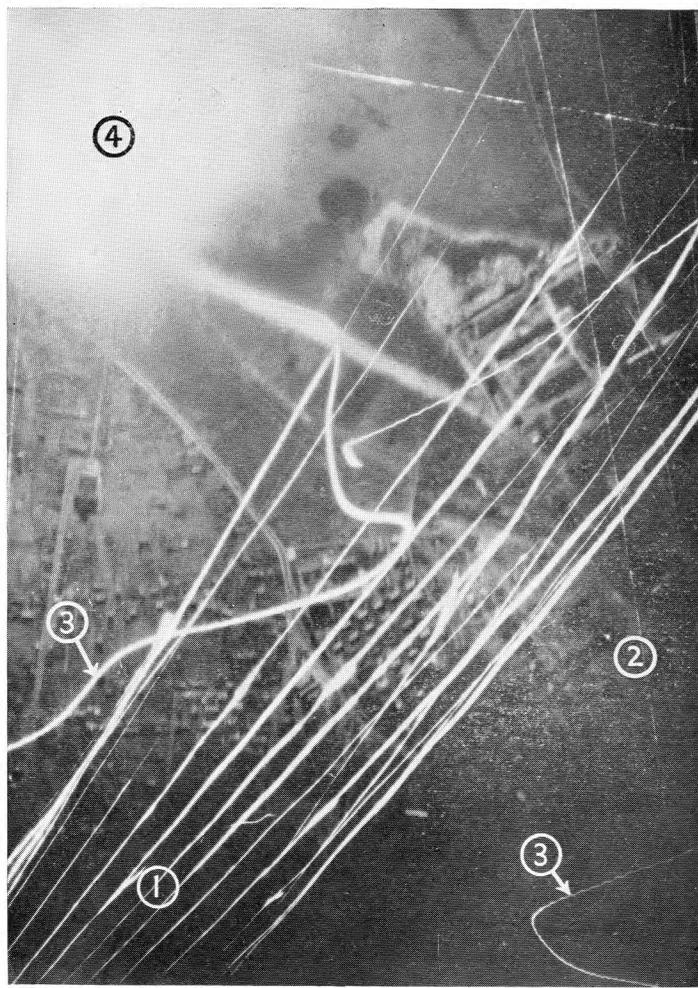
In the early days Ansons, too, played a part before they were relegated to training Groups. In the fortnight following 23rd September, 1940, an Anson Squadron carried out a series of attacks on Brest, dropping their bombs

from heights as low as 2,000 feet and then diving to 500 feet to shoot out searchlights. They were often accompanied by Albacores of the Royal Navy awaiting the completion of the aircraft carrier which was to be their home. Lorient, too, came to be important, for it was soon made one of the main bases for German submarines. The primary target was at first the power station and later on the submarine moorings. Blenheims attacked both on 8th, 13th and 17th October, and again on 7th and 8th November, being accompanied on these last two raids by Beauforts and Swordfish. The attack on the 13th was very successful and large fires were caused. In December German submarines were discovered farther South in the Gironde, near Bordeaux. They were attacked by Beauforts carrying land-mines on 8th and 13th December. Large explosions and fires followed.

The pilots who carried out such attacks are only slightly less laconic than the official reports. "The bombs caused an enormous explosion," said one of them who flew a Beaufort in an attack on Brest on 13th January, 1941, "which shook the aircraft so violently that the crew thought they had received a direct hit from anti-aircraft fire. Showers of sparks accompanied the explosion, which sent up a column of smoke to the height at which the aircraft was flying—10,000 feet." During a raid on St. Nazaire a Blenheim looped the loop when an anti-aircraft shell exploded immediately beneath its fuselage. "The concussion stunned the second pilot, knocked out the rear gunner and left the pilot dazed." When they recovered consciousness the Blenheim was in a dive from which the pilot was unable to pull out until 500 feet from the ground. On regaining a level keel it was found that all the instruments were out of order and that everything loose on the navigator's table, including his charts, had disappeared, flung out of a hatch which had been forced open. The pilot succeeded in climbing up to 8,000 feet. "The Blenheim was see-sawing up and down like a switchback and we thought we should have to bale out." He was able, however, to keep control until a patrolling Beaufighter was sighted off the English coast in the dawn. The Beaufighter escorted the Blenheim to an aerodrome where it made a safe landing.

Sometimes attacks were made by day. On one occasion a Beaufort was off La Pallice at 9,000 feet. "Alongside the wharf," says the observer, "we could see a ship of about 7,000 tons discharging cargo. The crew were busy on the deck and workmen were coming and going about the wharf. The pilot pointed to the ship and said: 'Shall we bomb it?' I nodded, thinking he meant to do a little high-level bombing. The next thing I knew was that I was flat on my back. The pilot had put the nose right down in the steepest dive I have ever been in. We dropped from 9,000 to 100 feet. At the bottom we let go the bombs and then began to pull out, dodging between the cranes on the wharf. For a moment

Night raid on St. Nazaire. 1. Light flak. 2. Tracer bullets. 3. Searchlight beams—they appear as wavy lines because the aircraft that took the photograph was jinking to avoid the flak. 4. A big fire in the dock area.



we were actually flying under the German flag, for as we beat it over the dock I saw out of the corner of my eye a swastika flag hanging from a staff about fifty feet above us. The ship's stern was wreathed in smoke as we left."

Inevitably as time went on attacks became concentrated on Brest, especially after the last week in March 1941, when the "Scharnhorst" and the "Gneisenau," or "Salmon and Gluckstein," as they are known throughout the Royal Air Force, took refuge in that naval base on their return from commerce-raiding in the Atlantic. Coastal Command attacked them, either alone or as part of an operation by Bomber Command, 63 times in 1941, including an attack on the "Scharnhorst" on the 23rd July when she had sought temporary refuge at La Pallice. The defences of Brest, always formidable, grew stronger and stronger.

On one occasion a Blenheim was forced by the failure of both engines to glide through them. It circled slowly round above the harbour while the pilot still tried to get into a good position from which to drop his bombs. "It looked as though we should come down in enemy territory," he said, "so I thought we might as well drop our bombs in the best place possible." The first attempt did not succeed, and before releasing its load the Blenheim glided three times round the docks, each time going lower and lower. At last a good target came into the bomb-sight and the bombs were dropped at the very moment when both the engines picked up simultaneously. The Blenheim reached base unscathed.

One attack must be specially mentioned. It was made by a torpedo-carrying Beaufort of Coastal Command at first light on 6th April, 1941. Six Beauforts were given the task of torpedoing one of the battle-cruisers known to be lying alongside the quay in the Rade Abri at Brest. The aerodrome in the South-West of England from which they started was rain-soaked and three of them became bogged when trying to take off. These took no part in the operation. The fourth failed to find Brest in the haze which preceded the dawn and returned with its torpedo. The fifth went in to attack a few minutes too late. "When I

arrived at Brest," reported its pilot, "it was full daylight. I crossed the spit of land at the South-West corner of the harbour, coming under fire from shore batteries. I then came down to a few feet above the water and flew towards the mole protecting the Rade Abri, behind which the battle-cruiser lay. I passed three flak-ships . . . and nearly reached the mole itself. By then I was being fired at from batteries all round the harbour. . . . Continuous streams of fire seemed to be coming from every direction. It was by far the worst flak I have ever encountered. When I was nearly up to the mole I saw that the battle-cruiser herself was completely hidden from me by a bank of haze. I therefore turned away to the East and climbed into cloud." The sixth and last Beaufort had attacked a few minutes before. It crossed the same spit of land South-West of the harbour entrance at a low height and found an enemy battle-cruiser, almost certainly the "Gneisenau," lying alongside the quay on the North shore, where it was protected by a stone mole curving round from the West. The Beaufort came in very low and was at once under the fire of some 270 anti-aircraft guns of varying calibres established on the rising ground behind the ship and on the two arms of land which encircled the outer harbour. To the formidable concentration of fire which these guns immediately produced was added the barrage from the guns of the warship itself and from those of the three flak-ships already mentioned. Moreover, having penetrated these formidable defences, the Beaufort, after delivering its low-level attack, would have had the greatest difficulty in avoiding the rising ground behind the harbour. All these obstacles were known to the pilot, who, "despising the heavy odds, went cheerfully and resolutely to the task." He passed the anti-aircraft ships at less than mast height, flying into the very mouths of their guns. Skimming over the mole, a torpedo was launched point-blank at a range of some 500 yards. The battle-cruiser was hit and damaged below the water-line. Subsequent photographs showed that she was undergoing repairs.

The Beaufort did not return. There is a story that it fell on the deck of its quarry. It was manned by a graduate of Cambridge University, a Canadian from Toronto, a farmer



Brest. A Coastal Command aircraft, diving out of low cloud, flew at 500 feet over the most heavily defended harbour on the Continent to take this photograph of a "Hipper" class cruiser in dock.

from Somerset and a chauffeur from North London. They are of that company—

“ Who wore on their hearts the fire’s centre ;
Born of the sun they travelled a short while
towards the sun,
And left the vivid air signed with their
honour.”

Their ranks were joined on 12th February, 1942, by the crews of those naval Swordfish which on that day attacked the same ship and her consorts in the English Channel. The pilot of the Beaufort and the leader of the Swordfish were each posthumously awarded the Victoria Cross.

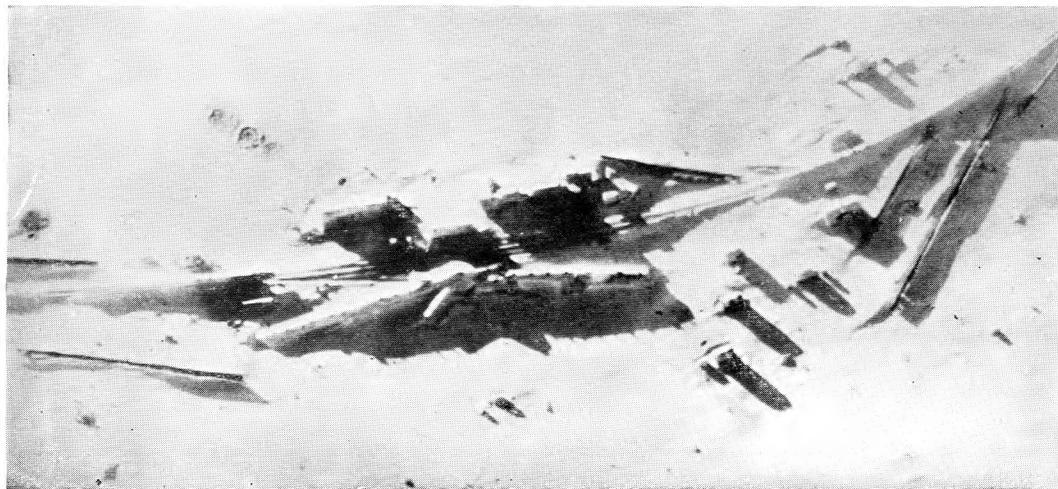
One of the objects of Coastal Command in attacking fringe targets is to prevent, if it can, German sailors and airmen who are taking an active part in the Battle of the Atlantic from obtaining the rest they need. Another is to harass the German troops in occupied countries.

Finse in Norway is a well-known winter sports centre. It consists of a small railway station with an hotel near by, and a few mountain huts and chalets. The railway passing through it is protected from avalanches by a number of snow-sheds, which are wooden tunnels some hundreds of yards in length. It was

known that the hotel contained a large number of German officers and Norwegian quislings enjoying a ski-ing holiday. There were thus two objectives: to destroy or damage the sheds, which would interrupt communications of great importance almost certainly for the whole of the winter, and to put out of action a number of the enemy and of the traitors helping them.

Three attacks were made—on 18th, 20th and 22nd December, 1940. So that the crews taking part in them should have as clear an idea as possible of the nature and look of the place, they had been shown a pre-war travel film containing excellent shots of the station, the hotel and the surrounding slopes of snow. The first attack was only in part successful, for despite the film which they had seen and the special maps which they carried, several of the crews did not find the target. Two nights later it was repeated and Beauforts scored direct hits on the snow-sheds and the railway line. A train in the station took refuge in a shed from which it did not emerge. In the third attack the hotel was hit. It was subsequently discovered that two mechanical snow-ploughs had been destroyed in the railway station and that the line was, in consequence, blocked for many weeks. The leader of the

Finse. Attacks by Beauforts upon this Norwegian sports centre, used as a holiday resort by German officers, destroyed the hotel, damaged the station and blocked the railway line for many weeks.



first attack, carried out by Hudsons, flew up and down above the target with his navigation lights on, in order to show the way to the rest.

The part played by Coastal Command in the Combined Operations raid on Vaagso on 27th December, 1941, may be mentioned, for this operation was an attack on a fringe target carried out by the Royal Navy and the Army. It was the task of Blenheim fighters and Beaufighters of the Command to provide protection from the air while Blenheims of Bomber Command made an attack on enemy aerodromes within range. The sky was clear and the Beaufighters, which were over the target about 1.0 p.m., successfully prevented the German Air Force from interfering. Several combats took place; four He.111s were shot down for the loss of three Beaufighters.

One Blenheim returned to base with the observer and rear gunner both badly wounded. It fought two Me.109s over the ships and during this engagement the rear gunner was put out of action. It turned for home when it encountered a Me.110 very low over the water. The observer was attending the wounded rear gunner, whom he had taken from the turret. He manned the guns, but was himself wounded a moment later by a burst of fire from the Me.110. "Just then," reported the pilot, "I heard a swishing noise and spray flew in from my open side-window. An engine began to cough. I had hit the water with one propeller, but fortunately, beyond bending it a bit, there was no serious damage and the engine picked up again." Within 50 miles of base the observer succeeded in reaching the wireless set, though it took him ten minutes to cover the six feet separating him from it, and sent out a distress signal. The Blenheim, with flaps and undercarriage unserviceable, made a successful belly landing. The crew survived.

This account of attacks on land targets is best ended by the story of the Beaufort raid on the docks of Nantes on the night of 26th/27th October, 1941. The Beauforts set out in formation and flew a hundred feet above a stormy sea.

"We were so low," says the leader of the attack, "that when we reached the French coast I had to pull up sharply to avoid the sand-dunes. Every time we came to a clump of trees we leap-frogged over them and then

went down almost to the ground again. . . . It grew darker as we went farther inland and then began the most surprising experience of all. It was as though the whole of that part of France were turning out to welcome us. Every village we went over became a blaze of light. People threw open their doors and came out to watch us skim their chimney-pots. In other places hamlets would suddenly light up as if the people had torn the blackout down when they heard us coming. . . . I remember one house with a courtyard fully lit up. I saw a woman come out of the house, look up at us, wave, and then go back. She switched off the outside lights and then I saw a yellow light from inside stream out as she opened the door."

The docks were bombed from 300 feet. Then the Beauforts turned for home just above the roof-tops of Nantes, which, in the bright moonlight, "looked like a city of the dead." "Then I began to see white pin-points on the ground and one by one lights appeared as we raced over the chimney-pots. . . . We were at top speed, but even so we could see doors opening and people coming out. I felt that we had brought some comfort to the people of Nantes." They were in need of it. A cordon of German troops had for some days surrounded the city, and within there were fifty hostages awaiting execution as a reprisal for the killing of the German governor. These were shot the next morning. Yet the lights which were switched on that night have been seen on subsequent raids. Through them shines the indomitable spirit of the Bretons.

Attacks on land targets by Coastal Command have yielded in the last months to attacks on shipping. The work of dealing with U-boats and surface raiders in their lairs is now for the most part being performed by Bomber Command. Yet those earlier days when Blenheims, Hudsons, Beauforts and flying boats went in to the attack must not be forgotten. They harassed the enemy—some 6,000 metric tons of fuel oil were destroyed in two attacks on St. Nazaire alone, sufficient to fuel a U-boat for six to eight sorties—and prevented him from developing his full strength in the Western Approaches to Great Britain.

What is being done to attack the enemy lurking in the depths or in the skies of the broad Atlantic must now be considered.

PROTECTING THE OCEAN CONVOYS



From Arctic to Equator, from Biscay to the American shores, the Battle of the Atlantic is being fought. In defence of our shipping, Coastal Command patrols more than half of this huge battlefield.

8: Ten Million Miles of Sea

THE BATTLE of the Atlantic is being fought over somewhat more than ten and a half million square miles of sea. The rough boundaries of this area are, to the North a line of latitude beyond the Arctic Circle, to the South the Equator, to the East the coasts of Western Europe and of part of Western Africa, to the West the Eastern coasts of Canada, Newfoundland, the U.S.A., the Central and certain of the South American States. Across this vast expanse of ocean, convoys carrying our vital supplies pass to and fro. They are escorted by ships of the Royal Navy and, in addition, as soon as they come within range, by aircraft of Coastal Command, which are the eyes of the ships and the arrows of the defence.

"Since the collapse of France," reported the Commander-in-Chief of Coastal Command in July 1940, "the activity of main importance has been air and submarine attacks on shipping. Germany's ability to make use of air bases along the whole of the Northern coasts of France has rendered shipping routes in the Channel and Western Approaches extremely vulnerable to air attack and has resulted in drastic alterations in the routing of convoys. . . . In Coastal Command the effect has been to change the main centre of convoy activity to an area off the North-West coast of Northern Ireland and to give prominence to our bases in that part of the British Isles."

Steps were immediately taken to increase the number of bases and to make more use of those already in operation. Their importance may be judged from the fact that at one base in Northern Ireland alone 25,591 hours were flown on patrol between July 1940 and

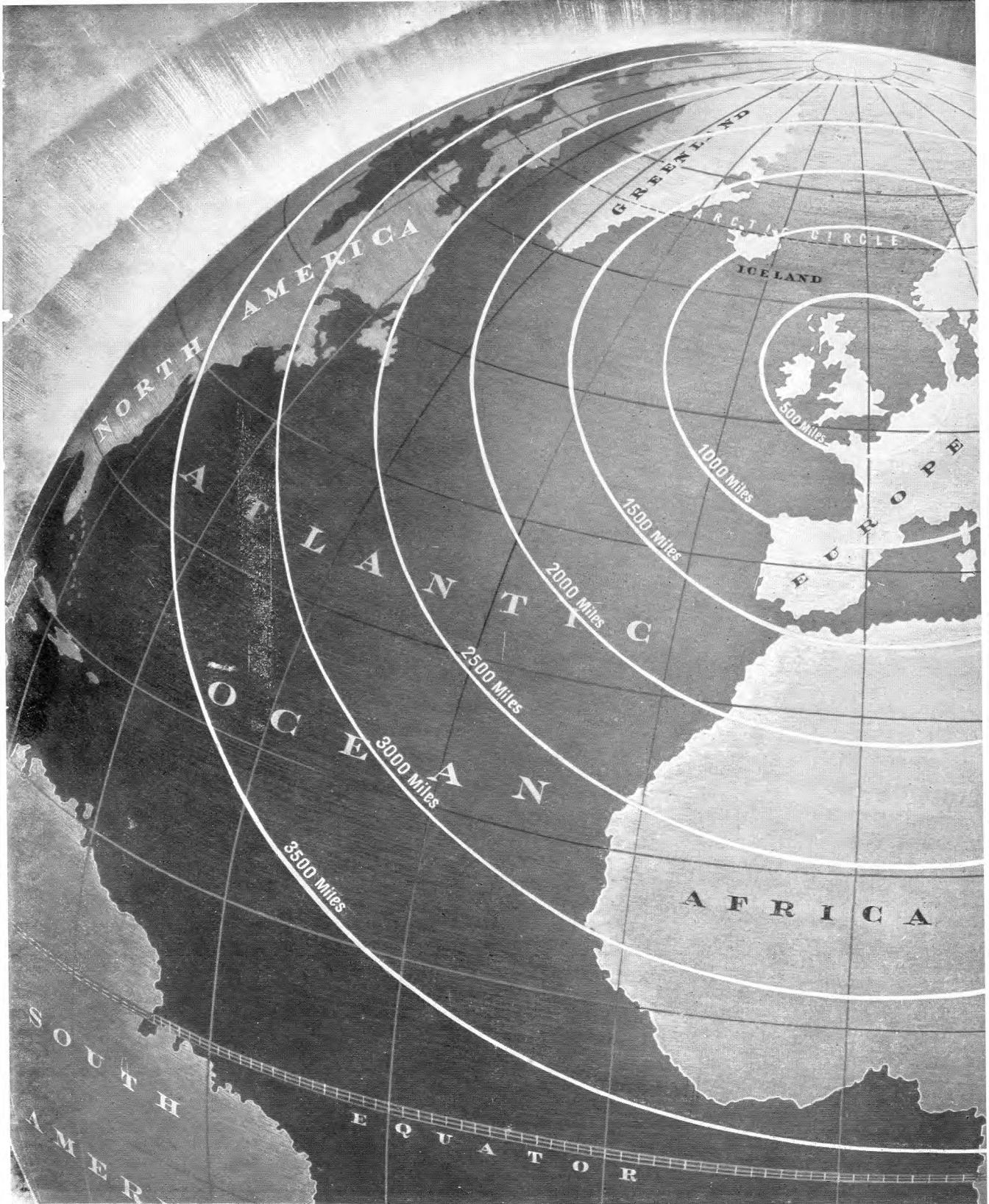
November 1941. These bases form the Southern bastion of our Northern air defence. Its Northern bastion is elsewhere, in a foreign land whose shores, in places, cut the Arctic Circle.

It was realised that Scottish and Northern Irish bases alone would not be sufficient. Others had to be found from which to cover the North Atlantic. Coastal Command reached out and established itself in Iceland. That island, larger than Ireland, was occupied by British troops on 10th May, 1940. It was not, however, until 27th August that half a squadron of Battles landed near a little fishing village on its South-Western shores. The other half arrived on 14th September.

Their flight, though uneventful, was none the less remarkable, if the limited endurance of this type of aircraft is remembered. It had been necessary to wait several weeks for favourable weather, for the endurance of a Battle would not permit it to cross the seven hundred odd miles of sea separating Scotland from Iceland unless there was a tail wind or no wind at all. They flew in two groups of nine preceded and followed by a Sunderland to ensure that there would be no navigational difficulties. Before the eyes of the pilots as they drew near stretched a line of black hills bearing no trace of trees or vegetation save for an irregular pattern inscribed upon their dark flanks in streaks of yellowish-green moss. Beyond, seemingly but twenty, in fact some sixty miles away, the shapes of high mountains and the foot of a glacier a hundred miles long were to be perceived, now dim and hesitant, now clear cut and bold against a sky whose colour and texture were in constant movement.

On this land of savage yet delicate beauty the Battles alighted by the mouth of a river flowing through a desolate marsh of lava and grey tussocky grass which divides the dark hills from the sullen sea. They began at once to take their part in the fight, a part subsequently played by aircraft more suited to the purpose. Thus by September 1940 the Northern bases had been increased and reinforced.

In the West and South-West of these islands our bases have remained unchanged in number. Their activities, however, were intensified, so much so that in August 1941 the aircraft using them were finding and attacking U-boats at



TEN MILLION SQUARE MILES OF SEA

the rate of one every other day in addition to maintaining patrols off Brest and the other French ports on the Atlantic seaboard to watch for any surface raider seeking to break out.

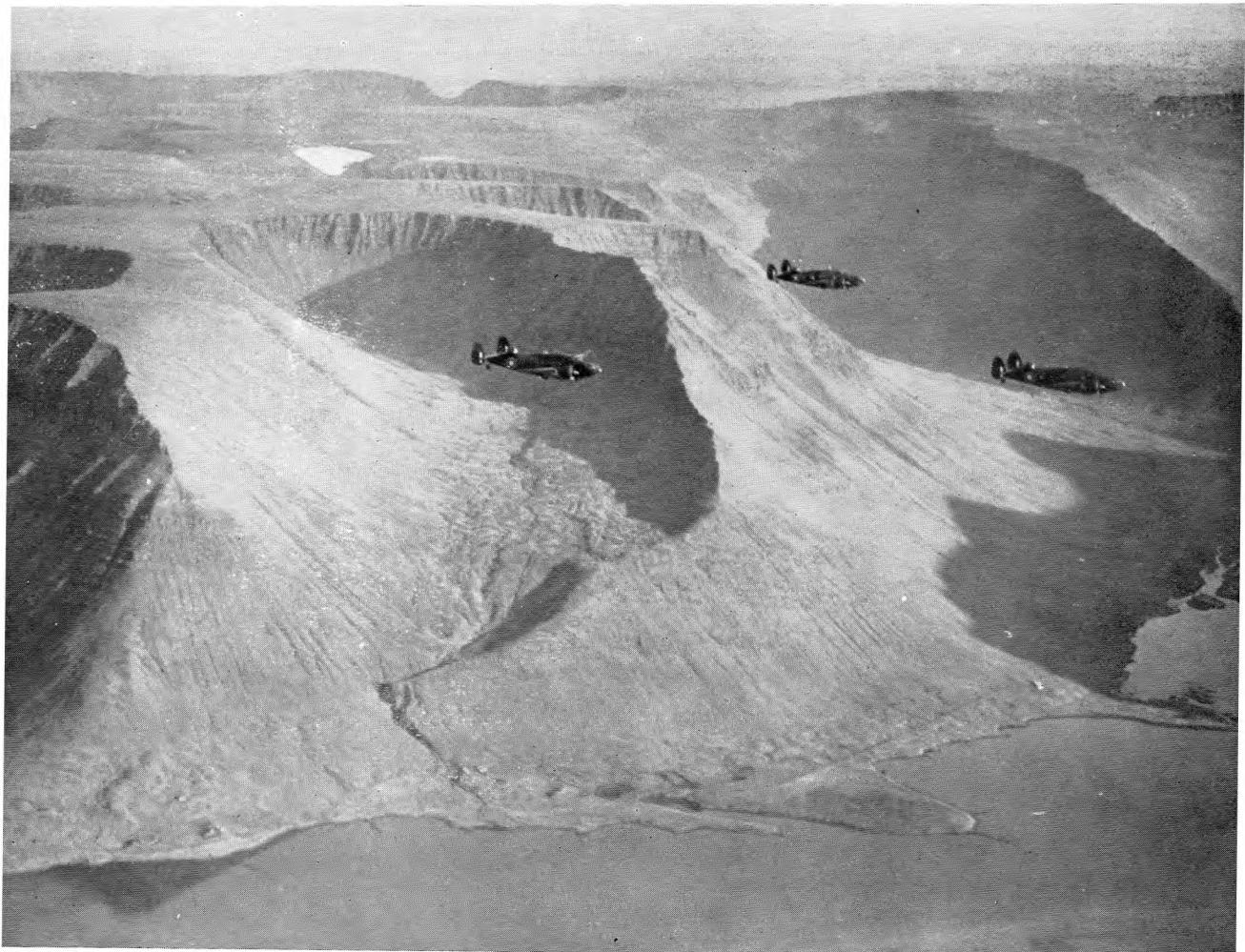
Coastal Command presently moved much farther South, a two days' flight from England, and in the first months of 1941 established a base on the West coast of Africa with a port of call at Gibraltar, which has been an outpost for flying boats since October 1939. Here, in the mouth of a wide river fringed with mangrove swamps and palm scrub, Sunderlands were stationed.

By the spring of 1941, therefore, it will be seen that much had been done to counter the

greatly increased striking power of the enemy. Aircraft of Coastal Command were established at various points along the Eastern boundary of the battle area from the hot South to the cold North.

Conditions in the North of this far flung battle line, which touches the Arctic Circle, differ appreciably from those in the South where it touches the Equator. At one station in Iceland the average temperature in December is 30 degrees Fahrenheit, falling sometimes to as low as minus 6 degrees, while at another in West Africa the average during the same month is 81 degrees in the shade, rising on occasions to 95 degrees. Yet the operational problem

Coastal Command in the far North. Hudsons flying over the stark and inscrutable face of Iceland—"black hills bearing no trace of trees or vegetation."





Wind-breaks, built of lava and turf, protect our aircraft from the fierce Icelandic gales.

is the same at any point along this front of some 3,540 miles.

Come first to Iceland. It is of vital importance in the battle. Were it a base for enemy U-boats the toll which Germany would take of our North Atlantic convoys would be many times greater than it is. A glance at the map shows how convenient is its situation. It is, to quote the Admiral in command there, "the Clapham Junction of the North Atlantic." As such it is heavily garrisoned by American and British troops and protected by units of the Navy and Air Force of both Allies. It is a strange country, warm and inviting in summer, at all other times stark and inscrutable. Within the whole circle of its coasts there is hardly a tree. In summer almost without darkness, in winter almost without light, it guards the secret of its sombre mountains, its still active volcanoes, its geysers and its glaciers, silent and aloof under the Northern Lights.

Aerodromes have been built in the lava swamps on which the Battles landed in August 1940 and elsewhere. The runways have been made of concrete and lava dust laid on a bed of stones. The aircraft are protected from the fierce and sudden winds by "breaks" fifteen feet high built in the Icelandic fashion of lava

faced with sods of turf. The crews and ground staff live in Nissen huts, their chief enemy in autumn and winter being mud, in summer lava dust which spreads over everything, causes sore throats, and severely shortens the life of clothing and boots. The roads, of the consistency of a hard tennis court after heavy rain, are vile. Yet vehicles contrive to average a



Hacking on native ponies is a favourite recreation of Coastal Command airmen in Southern Iceland.



Bad weather is Coastal Command's most persistent enemy. In these northern latitudes, fog comes up quickly, obscuring airfields and grounding the aircraft for days on end.

thousand miles a month. Major repairs—the driver of a car and the officer with him once removed a broken back axle and fitted a new one, dropped from the air by parachute, with the aid of a hammer, chisel and three spanners—have often to be carried out by the roadside.

For recreation in the South of the island there is salmon and trout fishing, shooting in the marshes, duck, mallard and snipe for the most part, and hacking on sturdy Icelandic ponies, the most robust of the robust natives of the island. In the North such amenities are more rare. Football and other games are played, one strongly contested match which took place in winter lasting from dawn to dusk, a period of little more than an hour. The Army and the Royal Air Force exchange concert parties, and in the long, dark evenings of the Icelandic winter the men carve bracelets and rings from the perspex fittings of crashed aircraft. Officers and men do their own washing and darning, and all available packing-cases are turned into furniture for the huts.

The Battles were replaced by Hudsons in June 1941 for anti-submarine and convoy patrol. Sunderland and Catalina flying boats, Northrop float-planes, Wellingtons and Whitleys have operated from Iceland or are doing so. Their task is not easy, for weather conditions in and around that island are among the most variable in the world. It is almost possible to see the depressions off Iceland, in peace time so

prominent and disheartening a feature of the daily Press. Fog is frequent and clouds will move down upon an aerodrome faster than a galloping horse.

Above all there are the winds. These can reach more than gale force in a matter of minutes. At one aerodrome the wind once began to blow at 62 miles an hour. An hour later it was blowing at 76 miles and an hour after that at 89 miles an hour. The maximum velocity of the gusts reached 133 miles an hour. This hurricane turned the Guard Room on its side, took the roof off the Flying Control Headquarters, and caused six Whitleys to move along the runway from their dispersal point, each dragging with it six 300-lb. concrete blocks. "A Nissen hut took off at 10.00 hours," says the report, "and reached an estimated height of sixty feet before crash-landing on an adjacent runway. At another aerodrome near by the anemometer broke down after recording a velocity of 90 miles an hour. . . . The propellers of Hudsons were seen to be turning although the engines were completely cold." No aircraft was lost or damaged.

Despite the hostility of the climate the average number of hours spent each month in flying has been high. To ease the strain the time of patrols is reduced when possible. Other difficulties concern the behaviour of compasses, which vary often by as much as eleven degrees, and of wireless installations, which not infre-

quently fade out entirely. It is, moreover, difficult to divert aircraft if their bases are obscured by fog or ten-tenths cloud, for landing grounds are few and far between. Once a Hudson was diverted to an emergency ground near the shore and it was ten days before it could take off again. During that time the crew consumed ninety-two tins of meat and vegetable ration and on their return regarded

bully-beef and biscuits with much the same feelings as the Israelites displayed towards the fleshpots of Egypt.

In addition to convoy and anti-submarine patrols and sweeps there is also the ice patrol over the Denmark Strait as far as Greenland and back. This is flown at frequent intervals in order to find out the extent and movement of the pack-ice. Fog is often troublesome and

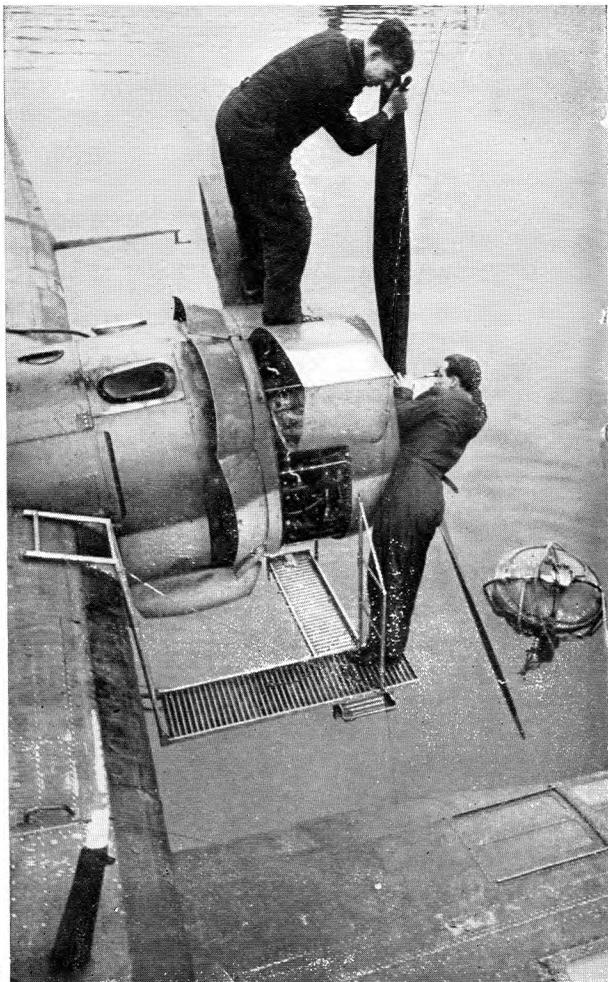
An ice patrol is flown over the Denmark Strait to Greenland, to investigate the movement of pack-ice and provide data for the calculations of the Meteorological Officers.



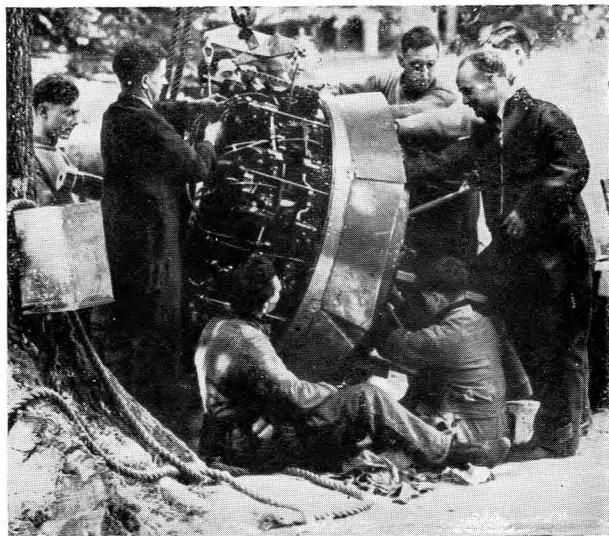
more than one pilot has seen an iceberg loom suddenly up on his port or starboard bow. Some of these are as much as seven hundred feet high. This patrol has of late been flown by our American allies, a detachment of whose air force has now been in Iceland for some time. Their desire to learn the conditions governing war-time, as distinct from peace-time, flying is equalled only by the modesty of their bearing and their eagerness to engage the enemy. They have become in a very short space as close comrades of the Royal Air Force as are the pilots and crews of the Norwegian Naval Air Arm. These men—most of them were once sailors—fly Northrop float-planes and have shown themselves to excel in the difficult art of navigation in Icelandic latitudes. The air forces in Iceland now form a separate group which works, as do all others in the Command, in close co-operation with the Navy

Some eight hundred miles to the South-East lie the next group of bases from which the battle is being fought. They comprise aerodrome and flying-boat bases and are situated on the West coast of Scotland and in Northern Ireland. Here the climate, though less rigorous than farther North, is very rainy and in winter can be severe. In that season blizzards make operations difficult, while at other times mud takes the place of snow. Much of the surface of Northern Ireland, and still more of the West coast and islands of Scotland, is unsuitable for aerodromes. Of those that have been constructed some are of necessity set close under ranges of hills, and this makes landing at night or in thick weather difficult and often hazardous. They are, however, the best available and are in constant use. At some the crews live in concrete huts widely dispersed, at others in hotels or country houses.

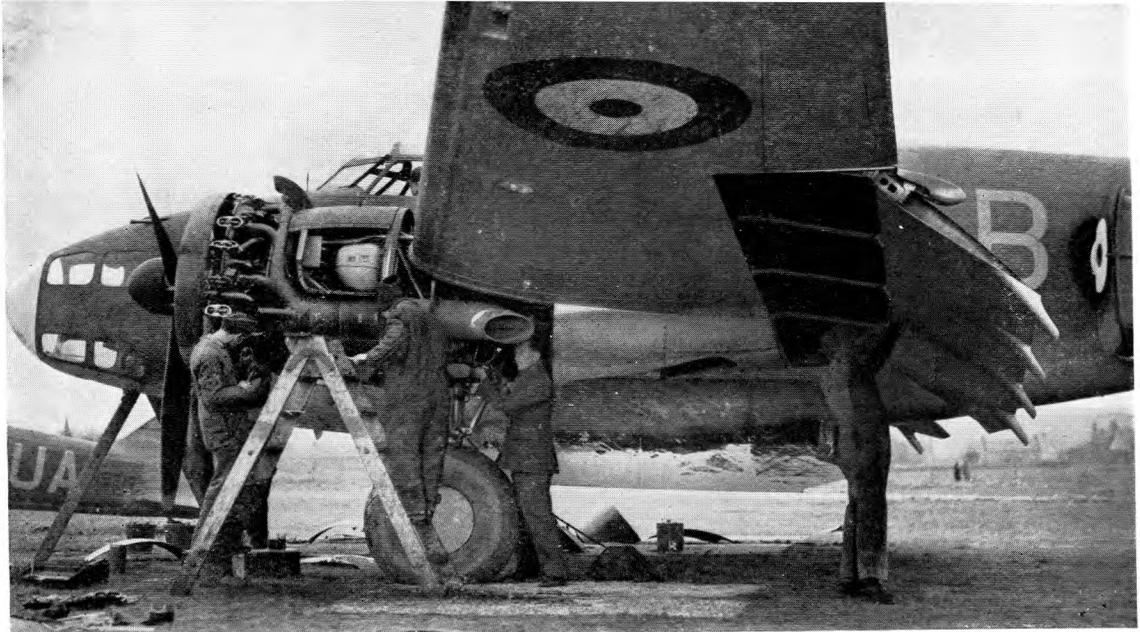
At one flying-boat station, hidden in gardens of grand design now half-wild and overgrown, amid a vast profusion of laurels, rhododendron bushes, oak and beech trees, stand Nissen huts, cook-houses, repair shops, officers', sergeants' and airmen's messes—all the varied buildings which house a station on active service. In the lough near by, which local tradition asserts contains as many islands as there are days in the year, Catalinas and Sunderlands swing at their moorings. They are serviced by ground technicians known as the maintenance "gang."



1



2



3

The men who keep the aircraft flying. On the work of the maintenance gang depends in the last resort the safety and success of the air crew.

1. Fitters, working on a platform high above the water, carry out their inspection.

2. Slung from a tree, the engine of a Catalina undergoes repair.

3. Servicing a Hudson : its tail is raised to the flying position so that the guns may be checked.

4. Only for major repairs are aircraft brought into the hangar.



4



A lough in Northern Ireland, used as a base for our flying boats, is another link in Coastal Command's chain of operations.

It is convenient at this point to explain the work they do at all flying-boat stations. Engineers on flying boats keep a diary of the behaviour of the engines. Thus there is available at any moment a complete picture of an engine. Its cylinder temperatures, pressures, petrol consumption—all are recorded, and any fault is at once dealt with by the N.C.O. in charge of the "gang," acting under the Engineer Officer of the unit. The engine inspection is carried out by fitters standing on a platform fifteen inches wide slung some twelve feet above the surface of the water. They do their work in all weathers without protection from rain or wind, and in winter it is often necessary to relieve them every hour. There is no "lee" side to a flying boat, for when moored it will always ride into wind. They must be very careful to hold on to their spanners and other tools; if they drop one it cannot be retrieved.

While the engines are being overhauled the riggers are busy inspecting wings, hull, tail-plane and the more remote parts of the boat. To avoid overcrowding, and therefore loss of efficiency, everyone works in turns according to a schedule. Thus the electricians will test all the bomb circuits before the armourer puts the load of bombs and depth-charges into position; the instrument repairers will check the instruments in the cockpit while the rigger is at work

elsewhere. When they have finished he takes their place and inspects the pilot's controls.

The "gangs" must be, and are, ready to cope with any sudden emergency. Once a Sunderland taxi-ing to moorings struck an uncharted rock. The pumps were started; the "gang" bailed with anything they could find and the boat was successfully beached just before she became waterlogged. The split in the hull was caulked with plasticine and pitch, and the boat was refloated and subsequently made serviceable. On another occasion a Sunderland was successfully prevented from sinking by lashing empty herring barrels to the hull. On the efficient performance of their duties by the maintenance "gangs" everything in the last resort depends.

In all this ground activity the part played by the Women's Auxiliary Air Force must not be forgotten. Passing references to their work have been made. Here, described by one of them, is some account of their many duties in Coastal Command.

"Just before he left the R.A.F., in a letter dated 4th January, 1935, AC/1 338171 T. E. Shaw, better known to the world as Lawrence of Arabia, wrote to a friend telling him that he had originally enlisted in the R.A.F. because it was the nearest modern equivalent of going into a monastery in the Middle Ages. That

was right in more than one sense. Being a mechanic cuts one off from all real communications with women. There are no women in the machines—in any machine. No woman, I believe, can understand a mechanic's happiness in serving his bits and pieces. Had he survived his road crash a month later and returned to his old Station to-day he would have found over 300 W.A.A.F. there, accepted by the R.A.F. as a normal part of Station life.

“The specific operational duties carried out by Coastal Command affect the work of the W.A.A.F. employed as Special Duties Clerks, in the Signals branches, and in the Intelligence branches.

“The part played in the staff side of operations is considerable. In a large and lofty room in the Command Operations Block a W.A.A.F. officer sits at a long table writing and making calculations. She is the Operations Room Plotter and she receives a constant stream of signals covering patrols, convoy escorts, reconnaissance flights and U-boats warfare. At her elbow are a number of large-scale charts covering the wide area over which Coastal Command operates. As the signals with coded map references pour in she translates the data into plots in latitude and longitude. Using compasses, parallel rulers and protractor, she pin-points the chart, drawing pencil lines which ‘lay off’ courses and bearings of ships and aircraft and indicate areas to be patrolled. The chart may be a complete picture of the Battle of the Atlantic or other Coastal activities kept up to date minute by minute, showing the latest movements of ships and aircraft.

“Teleprinters are used to send and receive signals. When operating them the W.A.A.F. have to be absolutely accurate. One letter wrong in a coded signal can make the difference of several miles in direction finding—the difference between the crew of a Sunderland which has come to grief over the sea being lost or saved. Station signals are sorted and checked in the Traffic Room, where sit two airwomen whose job it is to log all Station signals and to see that all incoming signals are delivered to the right people with the minimum of delay. In the Command Operations Room are also to be found the W.A.A.F. Wireless Operators. They receive and transmit Morse messages to and from the aircraft.

“There are many additional duties. The care of maps and charts is one of them. The W.A.A.F. clerk will produce those required by a crew for the operation they have been detailed to carry out. She has been selected for her knowledge of geography. She must know the quickest route, the most dangerous, or the safest to any part of the world. Relief maps used by air crews are coloured in gradations of purple. It is the easiest colour to see in the dim light of a cockpit.

“On a number of Coastal Stations the Code and Cipher officers have been made responsible for giving the air crews their code books and identification signals before they take off on operations. The Waaf's attitude to air crews with whom she may come in direct contact at moments like these is rather like a nurse's attitude to a young surgeon about to perform an operation—a kind of clinical good humour.

“The Post Office has proved that, as a general rule, a woman has a better telephone voice than a man. They have found this in the R.A.F. too. Hence the W.A.A.F. Radio Telephonists who speak to the pilots and radio operators of air-borne craft and give them their bearings and landing directions.

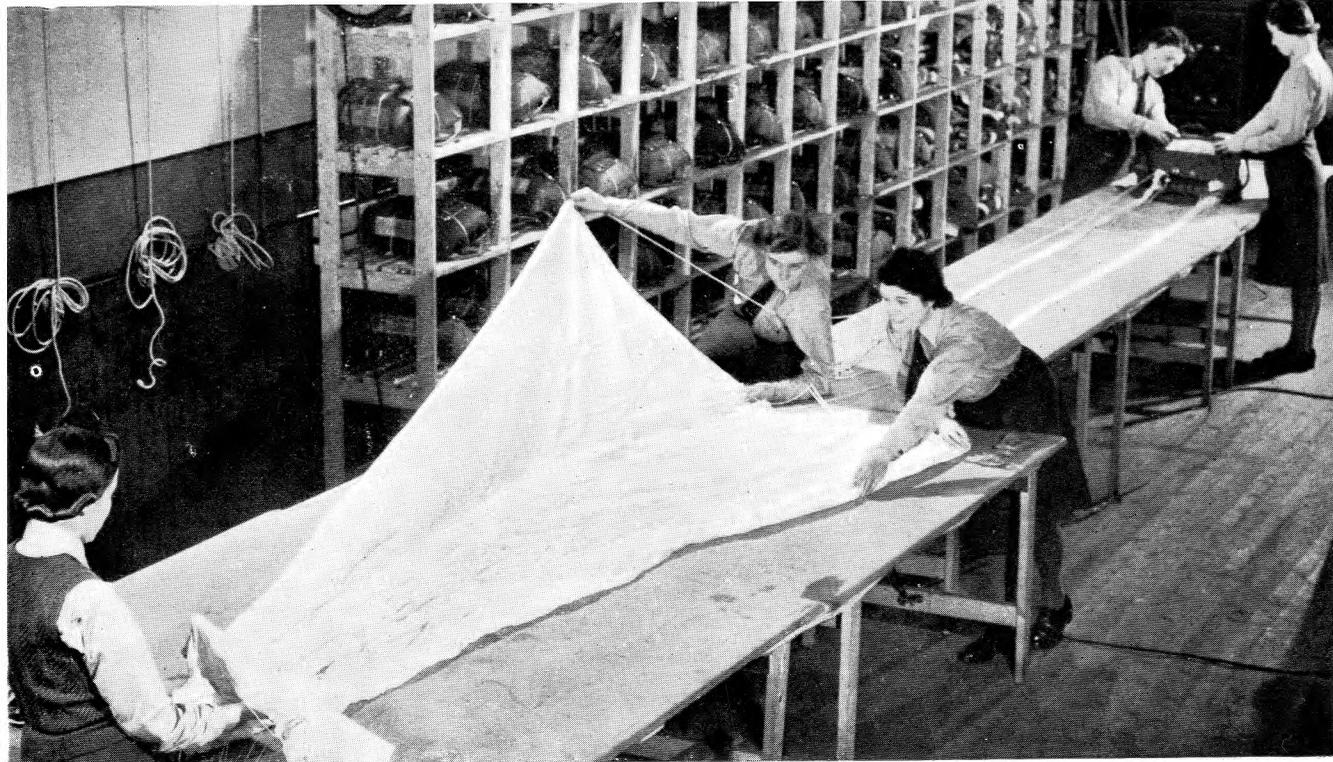
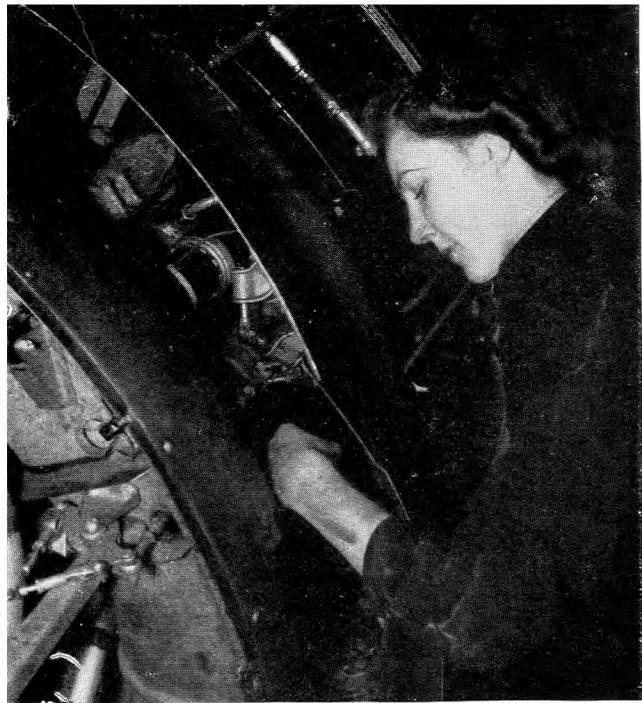
“On another part of the Coastal Command Station, probably near the Operations and Crew Rooms, is the Ration Store. Here air crews collect their rations, which are prepared and issued by W.A.A.F.

“On all operational Stations in Coastal Command there is a parachute packing section. Parachutes are packed in a room like a squash court. They are hung from the ceiling for several hours to remove creases before packing—60 yards of white silk. The R.A.F. Corporal in charge says that parachutes can be packed in half an hour, but no one is encouraged to do this in under forty minutes. The airwomen “on the job” half sit, half lie on the long, polished tables, and do not smoke or talk while they work. If a parachute is packed incorrectly or carelessly it might not open properly when the rip-cord is pulled.

“One of the strangest jobs that W.A.A.F. do in Coastal Command is pigeon-keeping. Homing pigeons are used for emergency messages from aircraft and a W.A.A.F. must be able to train and handle the birds and also to instruct the air crew how to manage them



The W.A.A.F. turn their hands to many jobs in Coastal Command—putting the air crew's equipment aboard, testing sparking-plugs, cooking for the mess, packing parachutes



and care for the equipment on Service flights.

“ In the Photographic Interpretation section of Coastal Command there are W.A.A.F. Intelligence Officers who examine all photographs taken. Their interpretation is a very specialised job, and the officers must have a comprehensive knowledge of maps, charts and geographical plotting. From almost microscopic bird's-eye views they build up accurate reports on the enemy's armed forces, communications and industry.

“ When the Station is situated on the sea and there is a Marine section you will find the W.A.A.F. employed in the direction of the launches and pinnaces that ply between the flying boats and the land. At night they are responsible for the movement of the dinghies that are used for the water flare-path.

“ In the hangars are W.A.A.F. Charging Board Operators, whose task it is to charge the accumulators in the sheds or in small caravans which may be moved from hangar to hangar. These girls must be robust, as the accumulators are heavy.

“ Fabric Workers spray the camouflage paint on aircraft, stitch the wing fabric, make new parachute cases, and generally do most of the

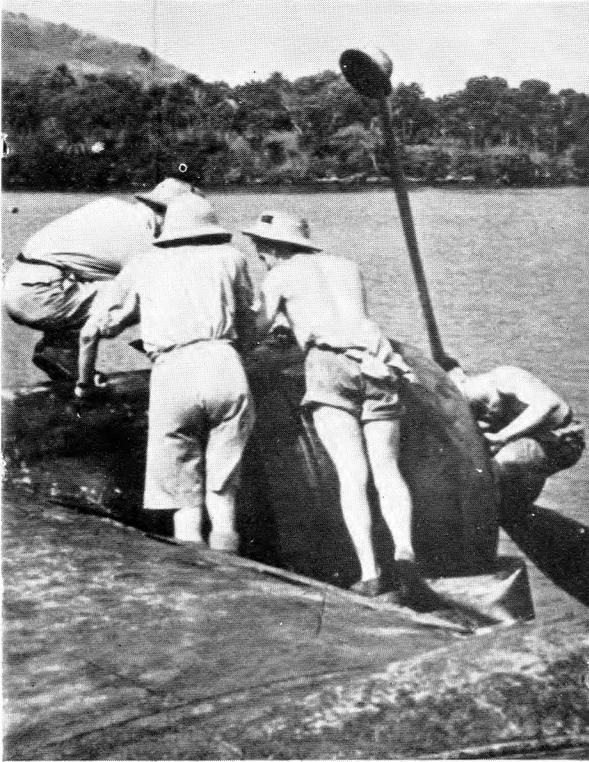
patching, making and repairing that is to be done on a Station.

“ Finally there are the Sparking Plug Testers. Who can see them at work without appreciating how well these W.A.A.F. understand a mechanic's happiness at serving her 'bits and pieces' ? ”

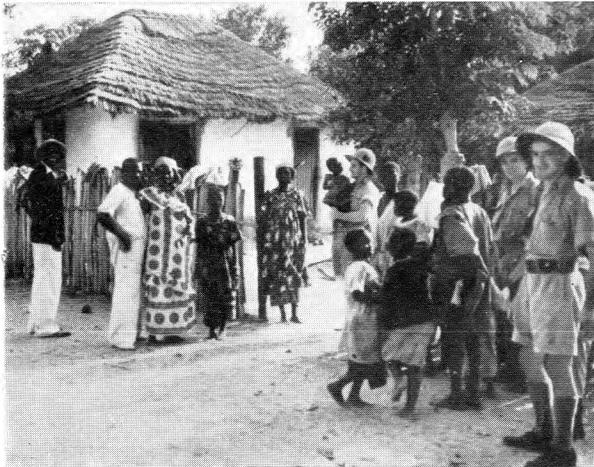
South from Northern Ireland the next bases are to be found in South Wales and the South-West of England. Here the climate is better and the number of days when, as far as the weather goes, patrols are often a delight is therefore larger. The work is the same. Some stations are the permanent homes of Coastal Command squadrons. Of these there is one where the bond between the Royal Navy and Coastal Command is especially strong. On the waters of its harbour Sunderlands ride at their buoys where the “ Golden Hind ” dropped anchor, where Admiral Montague landed after the Glorious First of June, and where “ Ajax ” and “ Exeter ” were acclaimed after the battle of the River Plate. From this base patrols have been maintained since the early days of the war over what was then known as the Western Approaches and into the Atlantic as far as the coasts of Spain. The pilots and crews stationed



African villages, huddling between surf and jungle, were a familiar sight to Coastal Command.



Maintenance work at the West African bases, owing to the climate and the difficulty of getting spare parts, taxed all the ingenuity of the ground crews.



The natives are friendly.

at other bases in this area, flying Hudsons, Blenheims and Beauforts, know the Western and South-Western coasts of France as intimately as those of Devon and Cornwall. For many of them the battle means constant patrols off France and close acquaintance with the Bay of Biscay.

So much for the centre of the long line. At its extreme Southern end there are the West African bases of the Command.* On the way there is Gibraltar, where a flying-boat base was established within the first month of the war. It is a useful and important port of call, and many patrols are still flown from it. Sunderlands first arrived in West Africa in the spring of 1941. They were joined by Hudsons in the middle of June. The crews and ground staff lived in tents till one night these were washed away. They found refuge in a church. In the rainy season water penetrates everywhere, even through the hulls of the flying boats. Malaria and mosquitoes are ever-present and eager foes. From the first, difficulties of maintenance, though severe, were not allowed to retard or hamper operations.

The Sunderlands began the work of convoy escort immediately. They were badly needed. The main difficulty in those days was to obtain sufficient quantity of spare parts to keep the flying boats serviced. Much ingenuity was shown. Oil for the hydraulic gear was obtained from ground-nuts; packing-box nails took the place of split-pins; brown paper was used to pack pipe-line joints, toilet paper for oil filters.

The Hudsons also carried out many patrols. They flew the first of them twelve days after their arrival, and in less than a fortnight the crews and ground staff had constructed a base out of what was little better than a tropical wilderness where the grass was eight feet high and the inhabitants mostly aggressive and hungry mosquitoes. Their flight to West Africa was in itself a remarkable achievement, for they had had to cover more than 1,800 miles without alighting. In a hundred and fifty-four days they carried out a hundred and forty-one patrols. In October one of them scored a hit on the deck of a U-boat trying to crash-dive. It disappeared leaving a trail of oil and bubbles and was considered destroyed.

* These have recently been transferred to another Command.

9: Ocean Rendezvous

IN THE EARLY DAYS of the war our convoys were covered by Coastal Command either when approaching these shores or when sailing coastwise. With the increase in the range and number of the aircraft at its disposal, Fighter Command can now give protection to ships within a certain distance of the shore by means of a "fighter umbrella." This need not always be spread above the ships but can be opened when necessary. Coastal Command has, in consequence, been able for many months past to concentrate on giving more distant cover. The first to meet the convoys are the Catalinas. They do so many hundreds of miles out in the Atlantic, for the normal duration of their patrol is, in summer eighteen, in winter fourteen hours, and it is possible for them to remain air-borne for considerably more than twenty-four hours. Close behind them come the Liberators and the Sunderland flying boats. Then the Whitleys take charge, followed by the Wellingtons and, as the long journey nears its end, the Hudsons, the long-range fighter Blenheims and Beauforts, and until lately the Ansons.

Thus, in theory, the protection afforded to convoys from the air, once they have reached a certain point, is in daylight continuous and more intense as they near our coasts. In practice this is not always so for a reason which is easily apparent. A convoy keeps wireless silence. It must do so if it is to preserve the secret of its whereabouts. Unfortunately, this is hidden alike from friend and foe. True, the Admiralty knows its port of departure, its speed, course and destination. Where it is can therefore be plotted on the great wall maps in Whitehall, at Coastal Command and at the Area Combined Headquarters. There is, how-



The men who sail the ships. At the convoy conference, Merchant Navy skippers receive detailed instructions on enemy tactics and the methods

ever, one factor which cannot be exactly calculated or known. It is the weather.

When a convoy runs into heavy weather its progress becomes slower. This, however, is not immediately known in this country. An aircraft, therefore, sent to find the convoy and given the position in which it ought to be may not find it there and may have to search sometimes for hours. On one occasion, for example, nine aircraft were sent out from a station in Northern Ireland to cover a convoy which was, in fact, several hours ahead of the moment at which it was scheduled to pass a given point. They did not find it, but a long-range Hudson, sent out later, did so after searching for six hours. It had time to signal that it was going back to base and then had immediately to do so, petrol being low. Once a Catalina from Northern Ireland was sent to meet a convoy having the code name "Child." After some hours the Controller at base received the



by which to combat them. Co-operation between merchant vessels and their naval and air escorts has been brought to a fine art.



The men who protect the convoys. A Catalina crew goes out to the aircraft in a launch.



They climb aboard through one of the glass "blisters" in the hull.

message "Pregnant" followed by the position.

The successful meeting of aircraft and convoy is the responsibility of the navigator. His task and difficulties merit examination. In the crews of Coastal Command the navigator is perhaps even more than in Bomber Command the key man. He is faced with a set of navigational problems which change literally with the changing wind. His craft is not moving in an element of which the tides and currents have been known, charted, and tabled for hundreds of years. He has no such exact information but must rely upon a weather report and forecast. Changes in the direction and speed of the wind through which he is to fly cannot be recorded accurately in advance. Temperatures and pressures vary with every change in the cloud formation. Each flight is indeed a navigational adventure. The problems of navigation are much the same when flying over the Atlantic as were those which beset Columbus when sailing upon its surface, though in place of the saliva spat by a seaman over the bows of the "Santa Maria," by the behaviour of which the Admiral was wont to calculate the drift of the ship, the navigator of an aircraft of Coastal

Command has drift sights and flame floats to aid him.

To keep the aircraft on its proper course the navigator must know two things: the extent to which the wind is causing it to drift from the track plotted on the chart, in other words, the angle between the course actually flown and the course plotted (track), and the true speed at which the aircraft is flying, that is the speed at which it is, in fact, passing over the sea. The calculation of these two factors enables him to navigate by Dead Reckoning, the method in universal use by the Command.

To find the amount of drift, the navigator makes use of the bomb-sight, the tail drift sight or the observer's bearing compass. The drift wires of the bomb-sight, for example, are aligned on some object in the sea, such as a wave cap, until that object appears to travel directly along the drift wires. The drift of the aircraft is then read off on a scale. The tail drift sight, used more often at night, is constructed on the same principle as the periscope. It passes through the floor and is directed astern. Objects passing directly below the



The navigator is responsible for the successful rendezvous between aircraft and convoy at a prearranged point in the vast wilderness of water. Every patrol is a navigational feat.

navigator are picked up, followed astern and kept between the drift lines of the instrument by moving it to port or starboard. The degree of this movement is read off on a scale similar to that of the bomb-sight. Sometimes, especially in very calm weather, smoke or flame floats are used as objects on which to train this sight.

There is also the bearing—wind—compass. This is sighted on the wind "lanes" appearing on the surface as the wind strikes the water. Whatever method is used, one phenomenon is noticeable—from an aircraft, the spume of a wave always seems to move up-wind, for the wave is travelling faster than the spume.

To calculate the ground speed as distinct from the air speed, the true direction and speed of the wind, the Wind Velocity, as it is called, must be found. Several methods are in use. In one the aircraft alters course three times. During its progress along each new course the navigator takes a drift and from this the wind velocity can be calculated. In another the wind lanes are used in a way similar to that already mentioned. With practice, very accurate results are achieved.

So much for Dead Reckoning. There are other ways of navigating. First by wireless bearings or a "fix," which is the intersection of two or more bearings or "position lines," as they are called. These are obtained from the shore, but as wireless silence is the rule, they are never asked for except when the aircraft is well away from a convoy or has encountered very thick weather and cannot make a landfall. The navigator can, however, obtain his position lines without breaking wireless silence with the aid of the Loop Aerial, by which he takes a bearing from the various wireless beacons situated round our coasts.

There is finally astro-navigation, the taking with a sextant of sights of the sun by day and of the heavenly bodies by night. This method is much used by the flying boats on their way out to a convoy and back from it.

All observations, by whatever means they are made, must be transposed by mathematics into a simple order to the pilot to alter course so many degrees. The pilot has a very important part to play, for he must be able to steer an accurate course at a given height, since height, temperature and barometric pressure have all



The pilot of a Coastal Command aircraft must fly an accurate course, through constant changes of wind and weather. His work is exacting, monotonous, seldom dramatic.



On patrol. The midship gunners of the flying boat are alert at their stations. Below, in the crew's quarters, the "watch off" takes it easy.



The flight engineer watches his instrument board, which tells him how the engines are behaving. Any fault must be corrected instantly, when an aircraft is so far from land.

to be taken into exact account. The height is altered from time to time to allow for every phase of weather through which the aircraft may have to pass.

Every alteration of course and the record of every calculation of drift is recorded in the Navigator's Log. A specimen page, slightly altered for reasons of security, is reproduced with this chapter.

It will at once be apparent that navigation needs knowledge and skill. When both are displayed the results, to a layman, are remarkable. A civilian on passage to Iceland found the aircraft to be forty seconds ahead of the estimated time of arrival after more than six hours' flight out of sight of land, while on the return journey he first saw land through the mists of an autumn afternoon two minutes earlier than had been promised five hours before though the aircraft had had to fly against a wind estimated by the navigator to be blowing at sixty-seven miles an hour, enveloped in cloud reaching down to within fifty feet of the surface of the sea.

The first Catalina to fly to Russia made landfall at a landmark indicated to the navigator seventeen hours before in the Operations Room at base. Such feats of navigation pass almost unnoticed in the Command. They are the rule, not the exception.

With the tasks and responsibilities of the navigator in mind it is time to come out in a Catalina flying boat on convoy patrol. That is the best way to appreciate the significance, the monotony and the importance of this operation. It is repeated day in and day out except in weather so bad as to make flying out of the question. Of all the duties performed by the Command it is the least spectacular and the most vital.

You will be on duty one way and another for some twenty-two hours. Wakened, say, at midnight, the crew breakfast twenty minutes later. If the Catalina carries her full complement they should number ten—two pilots, one observer-navigator, two fitters, one of whom is a flight engineer, two riggers and three wireless operators. All of them, in addition to the special duties they perform, are trained air gunners. While the captain, navigator and senior wireless operator go for briefing to the Operations Room the rest of the crew collect

the rations, get on board and prepare for departure. They are joined by the others about 1.15 a.m. At the briefing, which has not taken long, they have received the Form Green. The orders on it are complete but laconic: L for London, in which aircraft you are about to fly, has been detailed to give "anti-submarine escort" to convoy ZW65. It is made up of 49 merchant vessels moving at a speed of x knots. Particulars of the naval escort accompanying it are given and the position in which it should be found at dawn.

A quarter of an hour after the captain and his companions have come on board, the rigger prepares to let go the moorings. One of the fitters then starts first one, then the other engine by means of the auxiliary power unit. This

The front gunner of a Catalina. He must be incessantly watchful, though many months may pass before he gets a Focke-Wulf in his sights.





The radio operator has a specially responsible task in Coastal Command, so much of whose work is reconnaissance.

fills the boat with fumes, which will disperse when she is in the air. The engines are warmed up one after the other, so that the flying boat turns in circles first one way, then the other, like a mayfly in the eddy of a stream. The Catalina then taxis slowly to the flare-path laid out on the surface of the harbour, loch, or estuary where the squadron is based. It consists usually of three dinghies, decked and crewless, bearing each a six-foot pole on which are two lights, one dim for use on clear nights and the other bright, to be turned on when the air near the surface of the ground is thick and misty. The flare-path dinghies are moored in positions which vary according to the direction of the wind. At 1.55, after the rigger has reported that all hatches are closed, the klaxon sounds. The Catalina moves slowly at first, then with swiftly-gathered speed. The take-off has begun.

To the right from the cockpit windows, low down and hardly to be discerned in the darkness, two paths of foam appear, the outer a

white gash made by the starboard float on the black surface of the water, the inner a broad ribbon faintly luminous beneath the rushing hull. As soon as the flying boat has lifted on to the "step" which divides her bottom into two parts, the floats are retracted, thus increasing her speed and the lift of her hundred-and-four-foot wing. If the boat be heavily laden or the weather conditions poor, fifty to sixty seconds or even more may pass before the flying boat is air-borne. In favourable conditions that time is much less.

The pilot takes her off the water ; while he is doing so the navigator gives the course to be steered. One fitter is now keeping the first engineer's watch, his eyes on the panel, partially duplicated in the pilot's cockpit, which shows by means of dials and gauges the manner in which the twin engines set close together above the hull are performing their office. Sometimes it may happen that one or more of these instruments may register an engine fault, such as



At 6.30 a.m. one of the riggers serves breakfast. Much thought has gone to discovering the ideal diet for these long, fatiguing patrols.

falling oil pressure. When this is so it is the duty of the fitter to make sure that the fault thus indicated is in the engine itself and not, as sometimes happens, in the recording instrument. He communicates with the pilot by means of a small electric telegraph similar in principle to that used on shipboard. The other fitter is off duty resting together with one of the wireless operators on the bunks, of which there are four, situated in the after cabin. One wireless operator is on watch.

If conditions are favourable and the aircraft be given a steady course, the pilot may relax and throw in the automatic pilot—"handing over to George," as it is called. The "blisters" are manned each by a man. Presently a cup of tea, coffee, cocoa, or meat extract is drunk and afterwards the second pilot relieves the first, for the Catalina has now been flying two hours and that length of time is the normal spell of duty for all alike.

At 6.30 a.m. one of the riggers, if possible a married man, for married men make the better cooks, serves breakfast. It is the first of the four main meals which you will eat during the course of the patrol. The feeding of flying crews has been the subject of close attention on the part of the medical profession. It has taken some time to discover an ideal diet. In the early days the crew drew rations in bulk and these consisted

* Here is a typical menu for one sortie :—

Breakfast

Cereal
Bacon and sausage
Tea
Bread and butter or margarine

Lunch

Soup
Half the quantity of steak carried cubed and stewed
Potatoes and vegetables
Dried fruit
Orange

Tea

Poached or scrambled egg
Bread and butter
Tea

Supper

Remainder of steak fried
Potatoes and vegetables
Bread and butter and cheese

of whatever was immediately available. It was presently noticed that the fatigue from which they suffered on returning from the long sorties they made was severe. The time it took them to concentrate their thoughts and reply to questions during their interrogation was considerable and there were many complaints of air sickness.

To overcome these troubles it was decided to give them a full and balanced diet similar to that available on Sunderlands, which possess better cooking facilities. Between the four hot meals chocolate and barley sugar are eaten, and cocoa, tea or other hot drinks are provided by the cook, so that the crew can eat or drink something every two hours. The introduction of this balanced diet led to an immediate and very

great improvement in the physical well-being of the crews.*

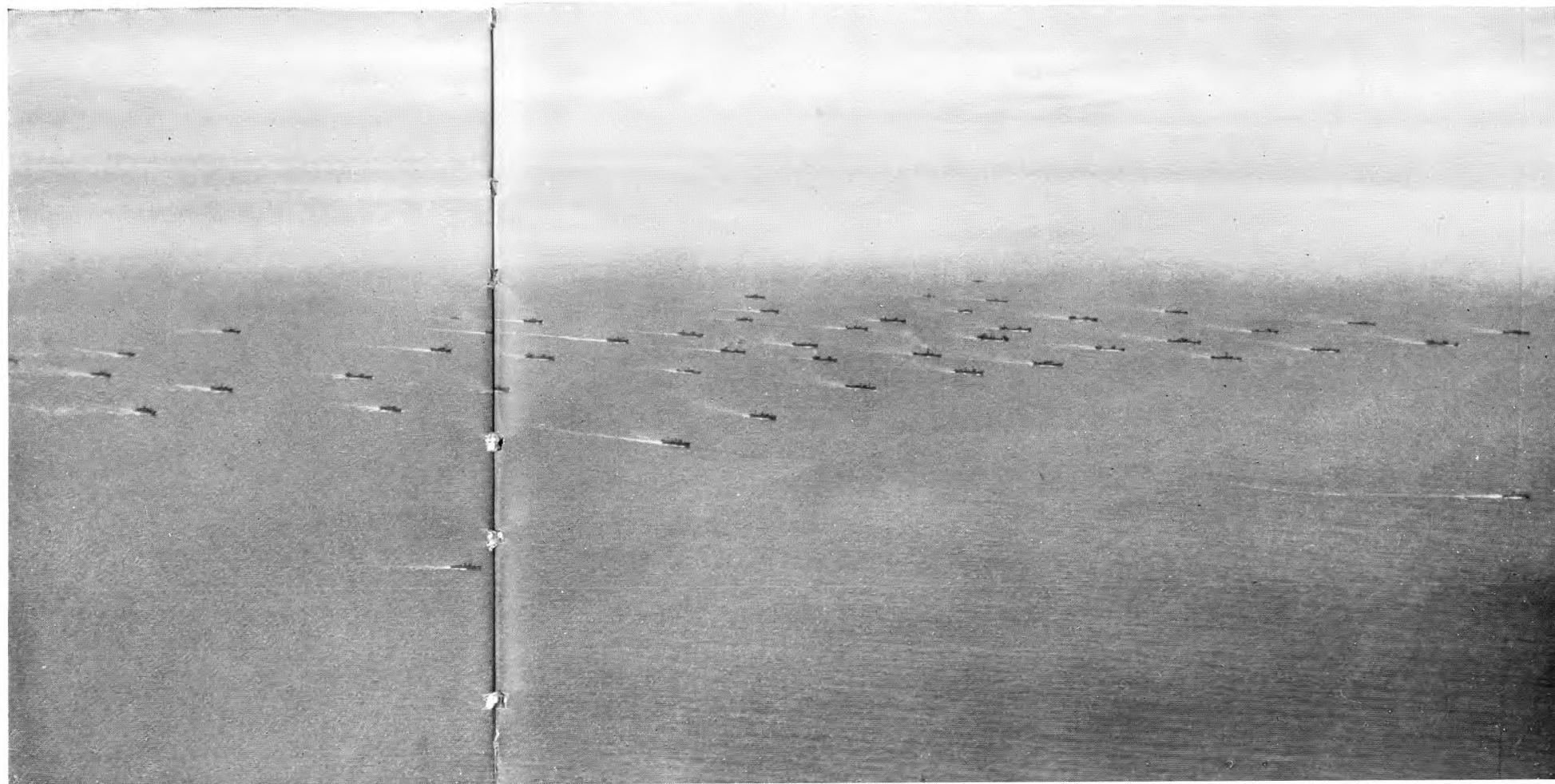
At first light, all who are not resting are maintaining a keen look-out for the convoy, which the navigator expects to sight at 7.30. A little colour has come back into the sea; not much, but with dawn it is no longer a dull black to be perceived now and again as a background to a wave crest itself barely visible. It has changed to grey, for this morning a screen of cloud is spread above the Atlantic. From 1,000 feet the sea looks as grey and solid as the mud-flats of an estuary and the white streaks painted on its surface by the wind seem like the pools and rivulets left on these weary expanses by the retreating tide. Here and there—for at moments the sunlight pierces or filters through

the screen of cloud—patches of emerald green are to be perceived, changing even as the eye catches them to the colour of a peacock's wing. This weather will endure until the afternoon, when a "warm front" will be met with on the return home. The cloud screen will then become a veil trailing over sullen waters.

At 7.53 a.m. numbers of smoke trails are visible fifty miles away. These grow in shape and volume until the ships from which they rise can clearly be seen steaming in three long lines with their naval escort beside them. The convoy has been found. Let a pilot who has seen many describe the scene.

"These Atlantic convoys," he says, "are always a grand sight when you come upon them in the early morning. The daylight is filtering

"These Atlantic convoys are a grand sight when you come upon them in the early morning. The ships in their neat formation have a sort of waking-up appearance—like some trim little village at dawn."





A recognition signal is flashed by Aldis lamp as soon as aircraft makes contact with convoy.

now through the thick cloud, and the ships in their neat formation have a sort of waking-up appearance to them—rather like the feel of some trim little village you come across at dawn having driven along darkened roads all night, curtains being drawn back from cottage windows, a labourer whistling as he turns towards the farmyard, a freshness about the flower-beds in the gardens. . . . You have the feeling that the convoy is stretching itself, shaking its shoulders and preparing for another long day.”

The recognition procedure is put into immediate operation. The light from the mast-head of a corvette or a destroyer begins to wink. This procedure is very necessary, for the men on board the ships have vigilant eyes and light fingers. They carry aircraft silhouette cards on the bridge and they know the type of aircraft they ought to see in the neighbourhood of their convoy. But they take no chances; and rightly so. “Shoot first and argue afterwards” is an excellent motto in a battle such as this, all the more so since the pilots and

crews of Coastal Command know what to expect and act accordingly.

Merchant captains and their second officers have learnt what British aircraft are likely to be on patrol at a conference which they attend before setting out on the round trip to and from these shores. Among other information they are told what are the areas in which air attack may be expected, what tactics the Luftwaffe is using and how to combat them, the best ranges at which to open fire with the type of armament their ships carry, and much else of a secret nature. Above all it is impressed on them that the aircraft of Coastal Command are on patrol above their heads not only to give warning of the approach of a U-boat or to drive away a Focke-Wulf, but also to help them in any way they can.

Such conferences have proved their worth. They are an important means of establishing and maintaining mutual confidence between the men on the sea and the men in the air.

The correct signals have been exchanged; the Catalina has been duly recognised. This done, it begins a patrol which lasts for between six and seven hours. Perhaps it may give the convoy its position, for the ships may have experienced thick weather and have been unable to take sights for some time. This is a service much valued and appreciated.

Up and down, round and round it flies, watching and watched. That wake three miles to port may after all turn out to be the wash of a periscope. But as the Catalina approaches hope pines and dies. It is the track of a whale or a porpoise, which are to be found in the North Atlantic more commonly than is generally supposed. No Kurier breaks the screen of cloud or is to be seen weaving over the water towards the convoy. This is to be one more of those sorties with nothing much to report at the end of them, another eighteen hours or so to add to the hundreds already to the credit of the crew. But you perceive, as these hours pass, that monotony has not bred contempt, and it becomes clear to you that the vigilance so constantly and so quietly exercised is of the same pure quality as it was when a patrol such as this was a new adventure, the beginning of an operational career.

At 12.30 lunch is served. You eat it with the plate balanced on your knees, or if the navigator

is not too busy, on his table. There is not so much room in the Catalina as there is in the Sunderland which will take over at 3.0 p.m. In that boat there is a saloon with portholes and a table which can be laid with crockery, and next door is a big galley with two primus stoves and beyond a cabin for the crew hardly smaller than the saloon. Presently it is to be seen approaching. The letter of the day is flashed; "Returning to base. Good luck," is signalled to the convoy, and the long journey home begins.

It differs but little from the journey out except that most of it is performed in daylight which presently becomes murky and half-hearted, for the "warm front" has come up as the Met. Officer prophesied. The Catalina moves forward through the whorls of vapour, swaying a little to the now risen wind. The navigator spends much of his time gazing through the bomb-sight at the bearded seas

moving past beneath. As you draw nearer to land he makes frequent use of bearings obtained for him by the wireless operator from the different wireless beacons available. Soon after 7.0 p.m. the captain and the second pilot are seen to be relaxing. Their gaze is no longer straining through the sloped perspex of the cockpit. Their airman's and their seaman's sense perceive the loom of the land. When its presence is announced they shift a little in their seats, eat an apple, and presently take over from "George."

At 8.0 p.m. the Catalina is over base. It circles the control point till the look-out acknowledges its signal and flashes a green light to signify permission to land. This manoeuvre can be carried out in one of two ways according to the state of the water. If it is rough the captain will make a glide approach into wind and go down to within a few feet of the water.

A naval escort vessel has swept out to investigate the aircraft. The men on these ships have vigilant eyes and light fingers.



He will then flatten out before touching down at about 80 knots. In a glide landing the sound of the water against the hull is the same, many times magnified, as that made by sand-paper rubbed along wood. If the surface of the sea is smooth and glassy he will make a long, flat approach with his engines partially opened up and will only ease back the throttles after he has touched down. This is known as "flying on."

When the Catalina begins to taxi to its moorings a rigger, having dismantled the forward gun, stands by in the nose to pick them up and two members of the crew man the drogues used to check the speed and thus to make the operation of mooring easier. As soon as it is completed the engines are stopped; a pinnacle to take off the captain and observer for interrogation comes alongside. The patrol is over.

Of the perils encountered by the aircraft of Coastal Command engaged in their long and unremitting task little has been said. It is a temptation to take them for granted, as do the pilots and crews. The chief of them is not flak

nor fighters but weather. However skilful may be the Met. forecasters, they cannot be infallible. When they err, or when, rather, they do not foresee everything, an aircraft or a flying boat may not return.

On 20th October, 1940, a Sunderland set out at 5.0 p.m. from a Scottish base on a special mission closely connected with the battle. Two hours later a magnetic storm of the first magnitude developed. This put the wireless set partly out of action and gravely affected the compass. After seven and a half hours the Sunderland succeeded in making a signal saying that it was returning to base. It received none of the replies sent in return. Five hours later an S O S followed by a request for bearings was picked up at base and Group Headquarters. By then it was six in the morning but still dark. The Sunderland, its compass unserviceable, was lost and had no fuel left. The captain decided to alight.

The gale was now blowing at eighty miles an hour and the navigator judged the waves to be more than twenty feet high. Three flame-floats were dropped, but they did not burn, and the



"While returning to its base, the aircraft ran into bad weather."

Time	Reqd. True Track	Distance Run	True Course	Mag. Course	OBSERVATION
					Carried out attack with Depth Charges, one hit anticipated. Sea marker dropped in position of attack.
1020					U-boat's Course and Speed and details of attack reported to S.N.O. escort.
					M.T.B. II
1025.					M.T.B. III
1030.					Message from S.N.O. "2 E's sent to port. E.T.A. 1200"
1035.					Large oil patch observed in area of attack.
					Widening beam.
1155.					2 E's commenced hunt.
1230.					Message from S.N.O. "Enemy A approaching from SE"
1232					3 - for Convoy.
1242.					U-boat's large fuel engine identified as Focke-Wulf.
1245					Attacked by enemy aircraft from astern - fire returned and track observed entering starboard wing. Enemy aircraft broke off action climbing into cloud cover - thick smoke pouring from starboard wing.
1300					M.T.B. IV reporting engagement.
1305.					Message from S.N.O. "Nice work - any casualties?"
1310.					Replied "O.K. slight damage to wing."
1315.					Continued patrol.
1408.					Hq. Sun 46°40'. (Meridional Passage). Pos. line shows U-boat astern of us D.R.P. Pos. latitude 56°22'N. S.N.O. informed.
1530					W/V 210/20 Wind lines + bearing.
1620.					Message from Base "Weather unfit here. Retain to KATHLINE ISLANDS immediately. Inform S.N.O. "Retaining Base - Good Night - Good Luck."
1630					S.N.O. replied "Many thanks - God Bless."
1642	275	-	105	124	S/C from Pos. 55°43'N; 117°25'W to TORY ISLAND Lt. 1000. Temp F 12°C. I.A.S. 114 KTS. T.A.S. 115 KTS. G/S 121 KTS. E.T.A. 1918
1700	095	82	105	124	Defeat by C.S.B.S. 9°P, unrelentably, bumpy.
1725	095	87	105	124	Long heading Beadon 2 090°. Not used. Visibility uncertain. Conditions very bumpy.

Nice work! A specimen page from a navigator's log, slightly altered for security reasons.

direction of the wind was gauged by a parachute flare. The captain brought the flying boat down in the trough between two waves. It was lifted up by one of them, so large and powerful that it took all flying speed away from the boat, which came to a halt with both wing-tip floats intact. The crew were at once prostrated by violent sea-sickness and this endured for many hours. The wireless operators began to send out signals, not knowing if any would be received. One was, and they presently picked up a message telling them that a warship would arrive in eight hours.

The Sunderland continued to drift in tumultuous seas at a speed of about eight miles an hour. How long she would endure the buffeting it was hard to say. The wireless set was dismantled, repaired and reassembled. The signals subsequently made were picked up by the warship, faint at first, but strong after midday. At 2.20 p.m. the Sunderland signalled: "Hurry, cracking up." Fifteen minutes later she was sighted and the look-out on the bridge of the warship read the word "hurry" flashed by a lamp. At that moment as the crew caught sight of the warship a wave larger than the rest struck the Sunderland head on. She began to break up and the crew—there were thirteen of them—were flung into the water.

The captain of the warship manœuvred her so as to approach the wreckage of the flying boat from the lee quarter. He took the way off his ship as the crew swept past abreast of, and almost as high as, his bridge. A Naval Commander and twelve ratings with lines secured to them went over the side and pulled on board nine of the crew, who had then been fifty minutes in the sea. The other four were lost. The Sunderland had remained afloat in a full gale for not quite nine hours. The name of the warship was H.M.A.S. "Australia."

Next to weather and a long way behind in importance is the danger of engine failure. This is comparatively rare, for design and craftsmanship have improved almost beyond measure since the last war. Even modern engines, however, cannot always be relied upon to stand up to the great strains put upon them by constant use in all conditions of weather. Moreover, some of the bombers which it is necessary for Coastal Command to employ in reconnaissance duties must continue unflinchingly to

patrol at an average height much lower than that at which they were designed to fly. Overheating is sometimes the result.

On 24th October, 1941, at 7.30 a.m., for example, a Whitley far out over the Atlantic developed trouble in its port engine. Height was maintained on the starboard engine for two and a half hours by running it at 2,600 revolutions and plus six boost.* At the end of this time "the solder was running out of both engines," reports the pilot. "I attempted to land into the wind at right angles to the swell," he continues. "This was where I made my mistake. I touched the swell amidships; then the nose of the aircraft struck it, smashing the gun-turret, which suddenly appeared through my windscreen. . . . For the two and a half hours during which I kept the aircraft in the air we were constantly sending out messages indicating our position." So accurate was the navigation of the observer that aircraft sent to the rescue found the Whitley five miles only from the position it had last indicated. The crew were picked up.

In the same month, many hundreds of miles to the South, a Hudson was forced to alight in the sea 135 miles from the coast of West Africa. "The crew swam to the dinghy, which was still not inflated and on arrival was found to be inverted. . . . Almost immediately after this two sharks arrived and circled, one with fin above the water and the other well below the surface. In driving them off the dinghy pump was lost. For some time no further action was taken with regard to the dinghy as our attention was fully occupied with the sharks; clinging to the dinghy and so positioned that each could see behind his opposite number, a good watch was kept. The sharks were frequently driven off by splashing." The crew eventually succeeded in boarding the dinghy, from which they were rescued some forty-eight hours later.

There is also the Whitley on patrol two hundred miles off Iceland on Christmas Eve, 1941. At 3.49 p.m. its base received the following message: "S O S. Am landing in sea. Merry Christmas." It is pleasant to record that the Whitley got back on one engine and landed safely.

One other danger must be mentioned,

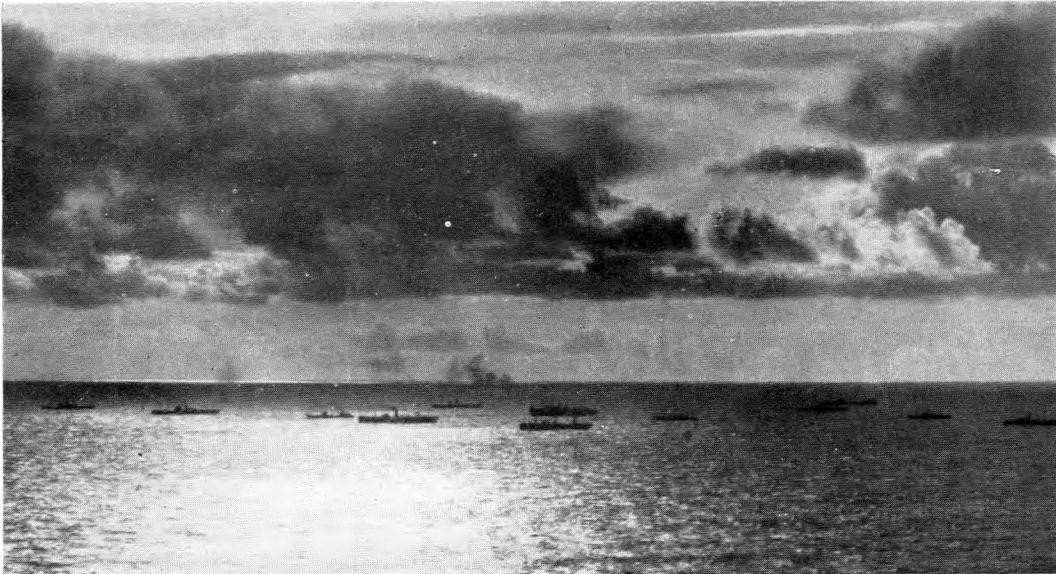
* Supercharger.

intangible and difficult to assess though it be. It is the effect on pilots and crews of the monotony of their task. This monotony results in strain which sometimes has a curious effect on the mind. "I have more than once found myself making a sudden, steep bank when 500 miles out in the Atlantic under the impression that I was avoiding a mountain," confesses a General Reconnaissance pilot. "One of my friends, shortly before he went on his rest, swore he saw a man riding a motor-bicycle 450 miles off the West coast of Ireland."

"With luck," writes another with eleven hundred flying hours to his credit, describing the daily round, "we arrive at our patrol area in six hours. On the other coast of England the bombers are arriving home. Our work is just beginning—the hunt for submarines. . . . Sometimes we imagine they are a myth. It is not easy to go on believing in something you have never seen. . . . We are for ever searching for signs of the enemy. But nothing appears. Even the waves are formalised into the monotony: each one exactly like its predecessor. The wireless operator is receiving and sending, but his woodpecker taps are drowned by the engines. The navigator is bent over the chart table, plotting courses—some-

times going for'ard to check the aircraft's drift. One of the fitters is working on the clocks and gauges, noting down temperatures, pressures, and petrol consumption. The air gunners lead the most frustrated existence of all. They sit and wait and watch and wait, hour after hour, day after day, month after month. They lean on their guns praying for a glimpse of the enemy." But the same pilot adds: "We have helped twenty great ships to-day to bring armaments and food to England. That is our reward."

It is indeed, and the words of the Master of a merchant vessel may serve to confirm those of the pilot. "The first flying boat to appear on this recent occasion," he writes, "found the convoy in the early hours of the morning while it was quite dark and we still had, as escort, the pleasant company of a Sunderland at midnight the same day. I know it must be very monotonous at times to the men of the Royal Air Force Coastal Command being on patrol duty, but I would like them to know what a thrill it is to us seamen—I know I speak for all—to see them around us and what confidence it gives us. I would also add that we enjoy their company after trudging along at slow speed for twenty days or more; it heartens us."



surface of the water. The aircraft will then report the result of the attack.

The gear carried by the crews includes, among other things, charts, pictures of surface vessels, silhouettes and photographs of German and Italian submarines and aircraft, descriptions of suspect vessels, and a list of aerodromes to which the aircraft may be diverted if the weather is too bad over its base to make a landing possible. From this it will be realised that the crews of Coastal Command take much of the Station Intelligence Room with them in their aircraft.

The duration of the patrol is governed by the weather conditions and the endurance of the aircraft. During it a log is kept by the navigator recording everything seen, any incident or alteration of course, and other matters worthy of note.

Back at base the crews are at once interrogated, the questions being based on a standard form. They report what surface craft they have seen, the state of the weather and of the sea. If a U-boat has been sighted and attacked the interrogation is searching and severe.

Very great care is taken to collect the evidence and then to sift and weigh it. It is recorded in the form of a special questionnaire which in some Groups is supplemented by what is called an "Inquest" Form.

Even with all this care, however, the assessment of the results achieved by an attack on a U-boat is exceedingly difficult. Accuracy is, indeed, almost impossible except on those occasions when survivors are recovered. The attack is so swift and the results, if any, so prompt that the surface of the sea has closed like a curtain too swiftly for them to be accurately perceived and recorded. This must inevitably be so. Though great patches of oil have stained the sea, though bubbles have formed and burst upon it, the U-boat may not be stricken to death. It may still be able to limp back to one of the numerous bases at its disposal for a refuge between the North of Norway and the South-West of France. On the other hand, it is equally possible that the opposite may have occurred and that the bombs or depth charges, of which only the explosion and the disturbance of the water

Briefing for an anti-submarine patrol is less elaborate and detailed than for a bomber raid. The captain must use his judgment in carrying out circuits over the allotted area up to the "prudent limit of endurance."



caused by it are seen, may have accomplished their purpose and that the U-boat went down on the long slant to destruction, manned by a crew of choked and drowning men.

The cross-over patrol system was established and flown shortly before the war. Its length has gradually been extended both in distance and in time as more powerful aircraft have become available. An examination of the figures for the number of hours flown shows a steady if fluctuating increase over the first twenty-six months of war. The number and length of the patrols are naturally higher in summer, when the hours of daylight are more numerous and the weather conditions more stable. In July 1940, for example, the number of hours flown by our flying boats on patrol was almost trebled.

Though U-boats have frequently been sighted and attacked, the work more often than not is of great monotony. To keep an unblinking and vigilant look-out from the turrets and side-windows of a Sunderland or from the blisters of a Catalina flying over what seems an illimitable stretch of sea demands physical and mental endurance of a high order. Sometimes a fishing vessel, British, Spanish, French, Norwegian, Icelandic, is seen; sometimes a raft, more rarely a periscope with a spume of foam about it. When that is sighted or when the submarine is seen on the surface, the klaxon sounds and the crew get ready for immediate action. Both bombs and depth charges are used to destroy the enemy.

"A Sunderland attacked an enemy submarine in a position 285° Cape Finisterre 210 miles. Bombs were dropped within twenty feet when the submarine was at periscope depth and a large oil patch with air bubbles was observed. Later more bubbles appeared in the centre of the patch. After twenty minutes the oil patch extended with bubbles continuing to rise. The aircraft remained in the vicinity for three and a half hours." . . . "Two 100-lb. high-explosive bombs were dropped which fell a few yards from the periscope. It is considered that the submarine was hit. Two large brown patches and a pale blue patch appeared on the surface about seven minutes afterwards." . . . "One Sunderland reported attacking an enemy submarine U.26 in a position 240 Bishop's Rock 204 miles, forcing the enemy submarine

to the surface. . . . Bombs were dropped, one of which obtained a direct hit on the stern, causing the submarine to sink. Forty-one survivors were being picked up by a naval unit when the aircraft left." . . . "A Lerwick on convoy escort attacked an enemy submarine and claims a direct hit on the conning-tower. Oil and air bubbles were seen after the attack."

Passages such as these are to be found in plenty in the reports prepared by the Air Ministry War Room.

Little can be said of the second method—the use of sweeps over chosen stretches of ocean by one or more aircraft. The manner in which this method is used and the organisation required must still remain a secret. A single positive result, one out of many, may be described in detail.

The following attack ended in an event at present unique in this war. On 27th August, 1941, a Hudson patrolling from Iceland sighted "the swirl and wake of a U-boat" about 800 yards ahead. It was then a little after 6.30 a.m. "No actual part of the U-boat was seen," reported the captain, "and vision was very limited owing to rain-squall. Marked position with smoke floats . . . and made a submarine sighting report to base." The Hudson cruised round for a little less than an hour, when it again sighted the submarine, this time on the surface a mile away on the port bow. It attacked, but its depth-charges hung up and the submarine dived. A second sighting report was sent. Three hours passed and then another Hudson from the same squadron appeared, having been sent out on "strike." The submarine—it was U-boat 570—had by this time surfaced again and was seen at once 1,200 yards away to port.

The second Hudson dived upon it and released its depth charges just as the U-boat was starting to submerge. "The U-boat was completely enveloped by the explosions and shortly afterwards submerged completely." Two minutes later it shot to the surface, where it remained while "ten or twelve of its crew wearing yellow life-jackets appeared on the conning-tower and came down on deck." The Hudson dived and fired all its guns in turn when each could be brought to bear as it swept in tight turns round the submarine. "The U-boat crew at once scrambled into the conning-



(1) **The target that every Coastal Command crew prays for :** a U-boat, stationary on the surface, blowing its tanks.



(2) **Crash dive.** Will the U-boat submerge before the aircraft can manoeuvre into the best position for attack ?



(4) **Direct hit !** A bomb has burst on the track of an Italian submarine, whose destruction was confirmed.



(5) **It is not easy to prove the destruction of a submarine.** Bombs may straddle its track, without destroying it.



(3) **Attack!** An anti-submarine bomb, released from 50 feet above sea-level, is a weapon of precision.



(6) **But sometimes there's no doubt about it.** The crew of a sunk U-boat swim to the side of a British vessel.

tower and went below." Seven minutes later "a white flag was seen to be waved . . . the crew also brought out what appeared to be a white board and held this up on the deck." The white flag was subsequently found to be the captain's shirt. It was lightly starched and had frills down the front.

The Hudson at once reported to base and asked for surface craft to be sent to take off the crew who had surrendered to it. While awaiting the arrival of a relieving aircraft the Hudson kept the U-boat covered with its guns. Throughout the rest of the day Hudsons and Catalinas took turns in guarding the prize, being over it for about eleven hours and a half. Dusk began to fall and no vessel had yet arrived.

"If it appears surface craft unable to reach position before dark," said an order issued at sunset, "after giving due warning you should sink U-boat." It was found possible, however, to arrange for aircraft to remain in relays over the submarine all night and to keep it in view by dropping flares. Its crew were to be ordered to remain on deck and to show a light throughout the hours of darkness under penalty of destruction if they did not comply. Before this order could be executed a naval trawler arrived in the gathered dusk and sought in heavy seas to take the U-boat in tow. At dawn a destroyer came up and the submarine was eventually brought safely to Iceland escorted all the way by aircraft.

The reason why the U-boat surrendered and the motives of her crew in so doing are not without interest. When she was hit, a rush of water into the hull began to generate chlorine gas. The engine-room crew immediately rushed on deck and refused to go back to their stations. They huddled round the conning-tower and remained there all day and all the following night. It would seem that none of the men had ever before been on an operational sortie.

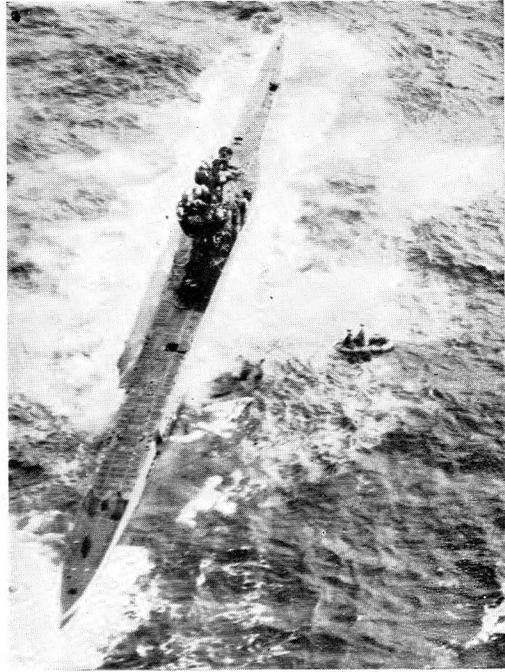
This captured submarine was almost certainly one of a large concentration discovered in Icelandic waters on 26th August, 1941. To attack them every serviceable aircraft of Coastal Command based in Iceland and the North of Scotland was dispatched in a series of sweeps maintained from first to last light. On 26th August 50 sorties were made, on 27th 34, on



U-boat surrenders to aircraft. 1. After an attack by Hudsons, the submarine surfaced and its crew waved the captain's dress-shirt as a white flag. 2. Naval officers, in a Carley float, take the surrender. 3. A prize crew brings the U-boat into a British port.

28th 84, and on 29th 56, a total of 224 in four days. Many attacks were made. One, carried out by a Catalina, well illustrates the fortunes of war. Its pilot saw a U-boat on the surface. He dived towards it, but hardly had he put the nose down when he saw another also on the surface but closer at hand. He diverted his attack to this second U-boat, and as he was delivering it, came under machine-gun fire from his original quarry. He carried on, got into a good position, but when he pressed the button his bombs hung up. Both submarines submerged. On landing at base it was found that the Catalina had been hit by one bullet only. It had severed the electrical connections of the bomb-release gear.

This was but an incident in four days of intensive and successful attacks. The shoal of U-boats was harassed and deprived of all offensive power. Its known losses were considerable, its suspected high. The operations against it showed what Coastal Command can achieve in an area within range of its aircraft by a series of well planned and organised sweeps.



2



3

11: The Big Bad Wulf

THE U-BOAT is not the only weapon which the enemy is using in his attempt to blockade this country. There are always the aircraft of the Luftwaffe. Hitherto they have played a large part in his victories. In the Battle of the Atlantic, however, as in the Battle of Britain, they may not prove quite so successful. He.111s, Ju.88s and Focke-Wulf 200s (Kuriers) are the principal aircraft used by the Germans for the purpose of commerce-raiding, though Dorniers have at times taken a hand. It is with the Focke-Wulf Kurier that this chapter is mainly concerned. The other German aircraft which

have played a part in the battle did so mainly in the Bristol Channel and the Irish Sea, where they are still to be met with, though of late in numbers and enterprise much reduced.

The Focke-Wulfs, with their long range which enables them to keep well away from shore-based fighters, prowl far out in the Atlantic. They are the chief threat from the air in the battle. It is probable that at one time they were setting out from Mérignac, the aerodrome of Bordeaux, flying in a wide half-circle and landing at Stavanger, whence they subsequently repeated the sortie in the opposite direction. The type at present in operation is an all-metal monoplane with a span of a hundred and eight feet and a length of seventy-eight. It has four engines; in a "blister" beneath its body there are cannon, machine-guns and bombs. It has little armour, and perhaps for this reason is known in the Luftwaffe as the "tin foil" bomber.

At first these Kondors—to give them the name by which they are usually known, though it applies strictly only to the civil version of the type—were used mainly to attack shipping.

"Suspicious aircraft approaching."



This phase in its intensity lasted somewhat less than six months. The steadily increasing skill with which the gunners of our merchantmen handle their guns, the anti-aircraft fire of the naval escorts to the convoys, the fighters manned by pilots of Fighter Command and of the Fleet Air Arm catapulted from the decks of ships, the patrolling aircraft of Coastal Command have all played their part in forcing the Kondor to adopt a passive rather than an active role.

At the outset the Focke-Wulfs found themselves at an advantage, but as the ships which were the objects of their attack became more heavily armed they were no longer able to face the mounting casualties to their line of battle. They began to abandon attack for reconnaissance. It became, and still is, their practice to try to discover a convoy, shadow it, and send out wireless signals giving its whereabouts so that it may be attacked by any U-boat within range. This co-operation between U-boat and Focke-Wulf first became evident in February 1941.

Before then, however, the Kondors had shown considerable enterprise on their own account, for they attacked seventy-eight ships in the first three months of 1940. Their daily activity was the subject of special concern on the part of the Commander-in-Chief, Coastal Command, the Admiralty and the Air Ministry, who took energetic steps to deal with a form of attack which threatened to increase in severity and to achieve striking results. Their efforts were not immediately successful, for 36 ships were attacked in the month of April.

Four days before the opening of that month a very determined duel had been fought between a Sunderland and a Focke-Wulf engaged on bombing a British merchantman. The enemy was first observed five miles away on the star-board quarter flying out of the sun and succeeded in delivering its first attack on the ship before the Sunderland, which, being a flying boat, was considerably slower than the Focke-Wulf, could come up. Two bombs hit the ship and the Kondor then went in to make a second attack while the Sunderland was preparing to engage a Ju.88 which had arrived on the scene. This second German aircraft joined the Kondor and both attacked the ship, but missed. The Sunderland was now within 800 yards of the



A Heinkel 111, port engine on fire, plunges down to destruction after a combat over the Atlantic.

In the drink. A Heinkel 111 shot down by an Anson.





Cannon and machine-gun ammunition for a Coastal Command Beaufighter.

Ju.88, which at once sheered off to port and was not seen again. The Kondor, however, showed more fight and closed head-on in a shallow dive, opening fire with cannon. The Sunderland replied with its front guns and then with its side guns. The result was uncertain, but the Kondor disappeared into the cloud, which was now down to sea-level, and was not seen again.

It was on the 6th May that the first encounter occurred between a Focke-Wulf and a Catalina. A running fight ensued, broken off at frequent intervals as the aircraft lost each other in the clouds. By the skilful use of cloud cover the Catalina twice got within range, on the second occasion silencing the enemy front gunner and scoring a number of hits. The Kondor replied but without much success, most of its fire going well below the Catalina. The German aircraft finally made off at 10.0 in the morning, some three hours after it had first been sighted.

The falling-off in attacks by Focke-Wulf Kuriers on shipping in the Atlantic began in May and continued with slight ups and downs

until the end of the year. Altogether 220 attacks were made during 1941 in the area of the Group mainly concerned with the Battle of the Atlantic. That they diminished as the year went on was largely due to the efforts of this Group. Not only were they attacked by our flying boats far out in the Atlantic, but the shorter range land aircraft played an important part. It was, indeed, not a little due to their efforts that the Focke-Wulfs were compelled to fly much farther afield, or rather "a-sea." To patrol too close to land was to risk a fight.

The story of one encounter between a Hudson and a Focke-Wulf on 23rd July can be told in the words of the Hudson's pilot. The Hudson had just taken leave of a convoy which it had been protecting throughout the morning. The usual farewell signals had been exchanged, when a naval corvette was seen flashing a signal with its lamp. "Suspicious aircraft to starboard," it read. The captain of the Hudson thought that in all probability the corvette had mistaken for an enemy a Wellington of Coastal Command known to be in the neighbourhood. When he himself caught sight of it he made the same error.

"I flew over," he said, "to have a look at her, pulling down my front gun sights just for practice. In fact, I was just remarking to Ernie (the navigator and second pilot) that we were in a lovely position, and that I had the Wellington beautifully in the sights, when he suddenly let out a wild Irish oath—Ernie is from Ulster—and shouted: 'It's a Kondor!'"

"Automatically I increased speed and he ran back to man one of the side guns. The wireless operator grabbed another. The rear gunner swung his turret round and trained his twin Brownings. Flying towards the convoy, at about a hundred feet above the sea, was one of the big Focke-Wulf Kondors. We were overhauling him fast. Whether he saw us or not I don't know, but at four hundred yards I opened up with about five bursts from my front guns. I don't think I hit him. He returned the fire at once from his top and bottom guns and I could see his tracer bullets whipping past the nose of the Hudson in little streaks of light. But he missed us and his pilot turned slightly to starboard and ran for it parallel to the course of the convoy.

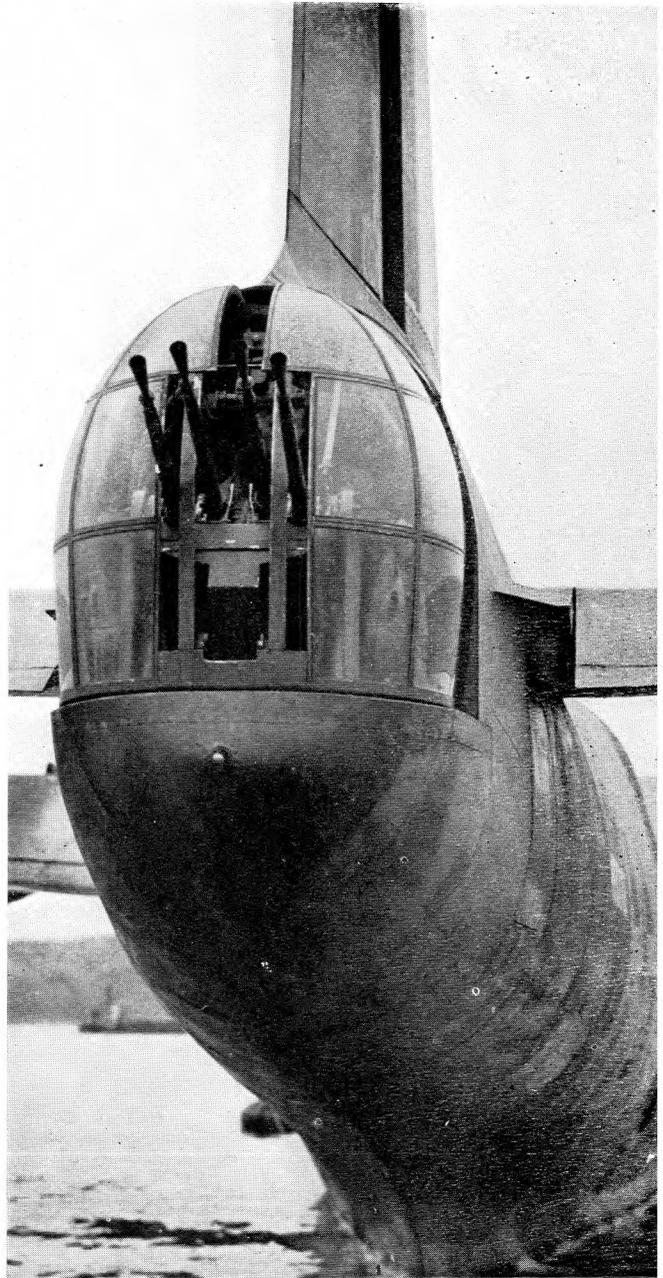
"We had the legs of him all right. We were

overhauling him very fast. Once he put his nose up a trifle, as though meditating a run for the clouds. He must have decided he couldn't make it and was safer where he was, right down on the sea. As we drew closer in my rear gunner opened fire. He was firing forward and I could see his tracer nipping over my wing. Ernie watched it flash straight past him as he waited with his side gun pointing through the window.

"We drew closer and closer. The Kondor began to look like the side of a house. At the end all I could see of it was part of the fuselage and two whacking big engines. My rear gunner was pumping bullets into him all the time. When we were separated by only forty feet I could see two of his engines beginning to glow. I throttled back a bit so as not to overshoot him or, what was more likely, crash into him. For one short moment Ernie saw a white face appear at one of the windows in the Kondor's side. Then it disappeared.

"Just then the Kondor began to turn away. His belly was exposed to us and Ernie opened fire with the side gun, the rear gunner keeping up his stream of bullets all the time. There was a wisp of smoke, a sudden belching of smoke, and then flames shot out from beneath his two port engines. He turned away to starboard and I made a tight turn to port ready to come round at him again. I remember vividly thinking that I must keep up, we were so close to the sea. We came out of the turn and I could see the Kondor again flying steadily away, seemingly unhurt. I was wild with disappointment. I thought he had got away with it. Then I saw he was getting lower and lower and next minute he hit the sea. I found myself yelling: 'We've got him! He's in the sea. Ernie, we've got him!' The gunner was yelling down the inter-com, too, great, strange, exultant Yorkshire oaths.

"It was only then that we realised how hard and how silently we had all been concentrating, and how full the Hudson was of cordite fumes, and how short of petrol we were getting. We flew over the Kondor—its wing-tips were just awash—and Ernie photographed him. Four of the crew were in the water, hanging on to their rubber dinghy, which was just inflating. A fifth man was scrambling along the fuselage. We learnt afterwards that a Met. man who had



There's a powerful sting in the tail of a Sunderland.

been aboard was shot through the heart. The others were all right. Two corvettes were rushing to pick them up and the whole crew seemed to be crowded on the deck of the leading one, waving and shouting to us. One man was waving his shirt. Another was in pyjamas. Our relief Hudson and the Wellington on U-boat search were circling round too, and as we made off for home we could see the white puffs of steam as all the ships in convoy sounded their sirens."

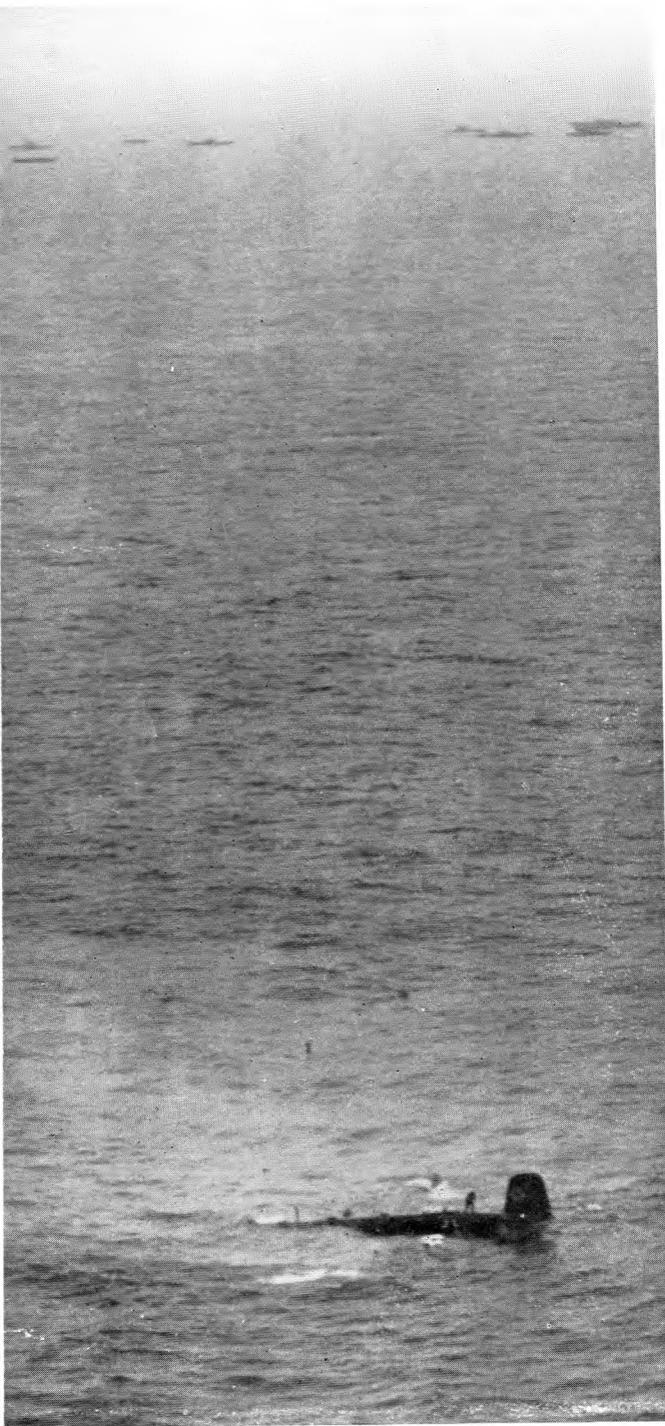
The capacity of the Focke-Wulf to do harm is

being reduced still further as more American four-engined Liberators come into service. These aircraft can compete on more than equal terms with the Kondor. They are heavily armed and can remain in the air up to twenty hours. A sortie made by one of them in October gives some indication of their possibilities.

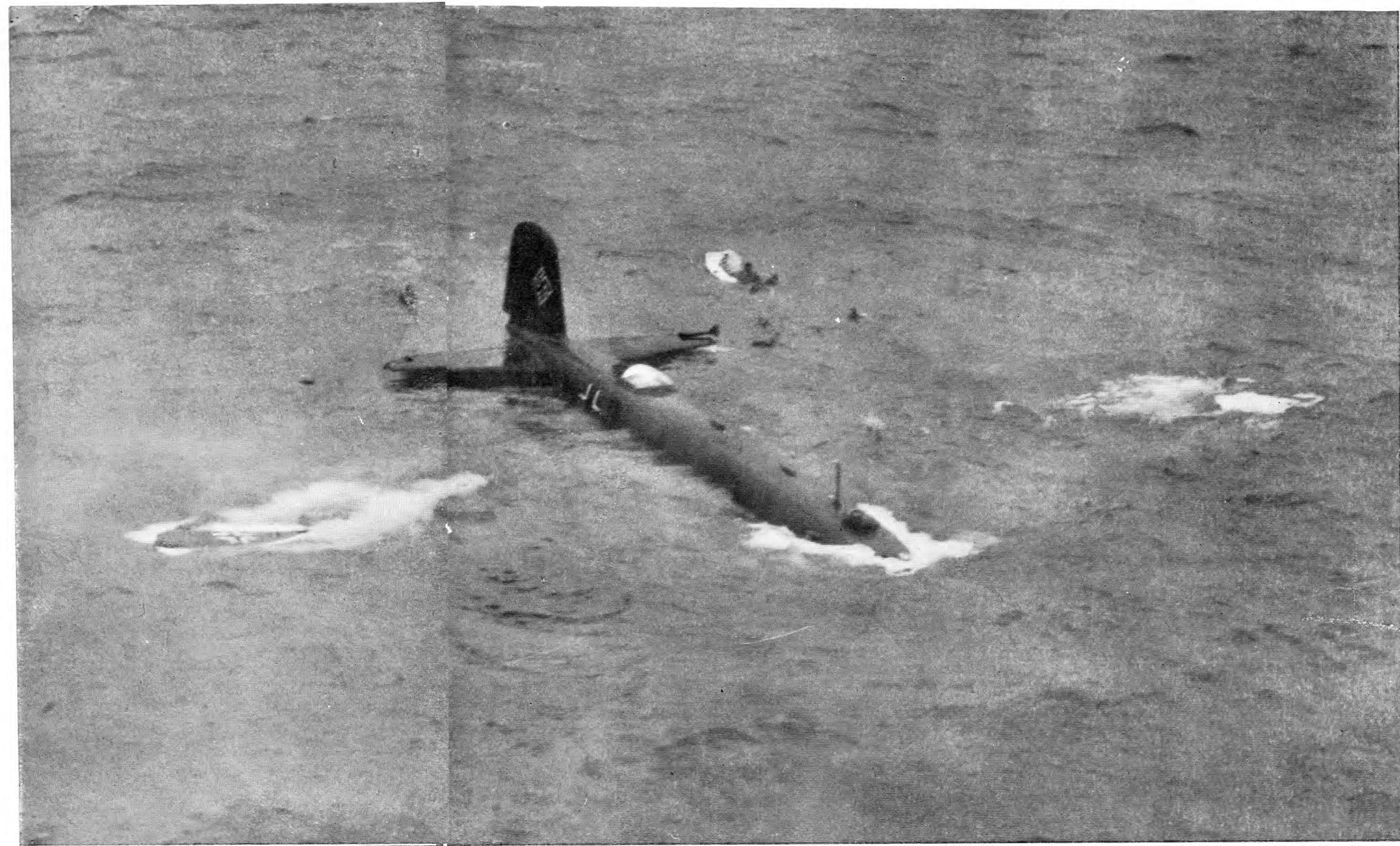
The Liberator took off at 5.0 a.m. and met the convoy it was detailed to protect at 8.30. It carried out its patrol until 1.0 p.m., when a signal from the convoy's Commodore sent it to investigate a suspicious aircraft seven miles

astern. It was a Kondor, and what is probably the first duel between two four-engined land aircraft took place. It lasted ten minutes. It was indecisive, the Kondor eventually turning sharply and crossing two hundred feet above the Liberator to disappear into cloud.

Some time later another Kondor, or possibly the first, was seen, but before the Liberator could get within range it, too, had sought the refuge of cloud cover. The Liberator went in pursuit, when the captain spotted a submarine on the surface three miles away on the port bow. He



"We flew over the Kondor—its wing-tips were just awash—and Ernie photographed him. Four of the crew were in the water, two hanging on to their rubber dinghy, which was just inflating."



abandoned the now invisible Kondor, dived from a height of 1,200 feet to 50 feet and dropped a stick of depth charges. There were three explosions throwing up huge columns of water and then, after a short interval, a fourth explosion underneath the surface.

"The sea shook and began to boil. A dark centre appeared and rings went out from it." The crew of the *Liberator* had hopes that they had caused the U-boat some hurt. On landing at base they discovered that only three of the four depth charges released had fallen. One had hung up. There had, however, been four explosions. A blade of one of the propellers was perforated, but this, too, was not discovered until after the *Liberator* had landed, no difference in the performance of the engines or propeller having been noticed during the flight.

The menace of the Focke-Wulf, though not eliminated, has been greatly reduced. Sunderlands, Catalinas and Hudsons, all of them far slower aircraft, have again and again gone into the attack without pause or thought of the odds. They are still doing so whenever they encounter the enemy and he stays to fight. "Who's afraid of the big bad Wulf" is inscribed on the walls of many of the Stations from which they set out. Their deeds supply the answer.

Some account of the Battle of the Atlantic has now been given. It is, of necessity, incomplete, for the end is not yet, nor in all probability will it be reached so long as fighting between ourselves and Germany continues. To speak, therefore, of a decision would be wrong, for none has as yet been achieved. From the beginning the Germans have been loud and lavish in their claims. On 28th January, 1941, Grand Admiral Raeder felt able to announce to the dockyard workers of Germany that the last traces of imports into Great Britain "are being dealt with everywhere in the Atlantic, in the Indian Ocean and in the Pacific." He went on to assure them that since the beginning of the war 6,300,000 tons of Allied merchant shipping had been sunk.

On 24th February, 1941, the Admiral's chief took up the tale. Hitler informed the Party in its Munich Beer Cellar that "the struggle by sea is only now beginning. . . . In the last two days surface vessels and U-boats have sunk 215,000 tons. 190,000 were sunk by

U-boats, 125,000 yesterday, in one convoy." A month later *Deutschlandsender* struck a more poetical note. "The wolf pack of the ocean," it said, "has got hold of another strongly protected convoy off the African coast. 77,000 tons of shipping were lost." During October 1941, according to the Donau wireless news, "the German Air Force sank 168,000 tons of British shipping in the waters around England." It was left to Radio Paris to complete the picture of our doom. "U-boats," it proclaimed on 15th November, 1941, "have been so successful in hunting British convoys that they find themselves rather idle."

It is, of course, possible that these and other claims have been made in good faith and that the German High Command when adding up the figures really believe what the U-boat and Focke-Wulf captains—those of them, that is, who return—tell them. It is also possible that they find it advisable to give the German public heartening news from time to time. Or perhaps they are adopting a more subtle plan and seek, by vaunting the prowess of the German Navy and Air Force, to provoke our own High Command into publishing the facts.

It is best, perhaps, to judge these claims by comparing them with those made concerning the losses inflicted on His Majesty's ships and vessels since the outbreak of war. If the Germans are correct they have sunk most of the Royal Navy more than once, and it is now keeping the seas with minus 29 capital ships and minus 13 aircraft carriers, escorted by minus 96 cruisers and minus 2 destroyers. The enemy's tale of our losses during the Battle of Britain may also be usefully remembered. Göring and Goebbels then boasted that 2,380 British aircraft were destroyed in combat alone in the space of 78 days. During that time we did, in fact, lose 758 aircraft. It is idle to follow the enemy into these realms of fancy. The ordinary citizen of this country has a very shrewd idea of the truth, for he can base his opinion on the circumstances of his own daily life, and that is enough for him.

Official secrecy, which has to be imposed in order to prevent the enemy from learning what he would much like to know, is not the only veil spread over this battle. There is a more tangible shroud—the surface of the sea itself.

Only the enemy can know the number of his submarines compelled to submerge because an aircraft of Coastal Command is quartering the sky overhead, and the number of hours thus spent in cruising at a speed only twenty-five per cent. of what it might have been. Even this knowledge cannot be complete and perfect, for not every U-boat that sets out returns. How many knots of speed they have lost, how many miles of sea they have failed to traverse, how many meetings with others of their kind have not been held at the scheduled hour and place must be a matter of constant speculation for Admiral Raeder and his staff.

It would, however, be a grave mistake to suppose that the Allies have as yet won the battle. To do so would be completely to misjudge the nature of the conflict. Such a struggle as this, carried on as it is over so vast an area, can have no rapid, no easy conclusion. Neither success nor failure has so far crowned our arms. The fight sways to and fro. The red line on the graphs recording the sinkings of merchant vessels, pinned to the walls of secret rooms in the Headquarters of the Naval or Air Commanders, rises and falls. One

month it may move upwards, the next downwards. The variations are often sharp; rarely does it run level.

On both sides of the Atlantic there are gathered millions who realise what is at stake and who wait, as once an Athenian army waited by the harbour of Syracuse, the issue of a mortal conflict. Unlike the troops of Nikias they are not passive spectators. They have it in their power to exercise a decisive influence on the combat, for they are at work producing the weapons of war and the ships which must carry them to the field. If victory is to be won they must identify themselves with the effort to achieve it.

The battle by air and sea is relentless and there is no pause. It is being fought by the Royal Navy, the Royal Canadian Navy, the Merchant Navy, the Royal Air Force and the Royal Canadian Air Force, to whom the puissant aid of the sea and air forces of America has of late been extended. In the air the brunt is being borne by Coastal Command. Nowhere better than over the Atlantic is its unofficial motto "We Search and Strike" more exactly followed.

Death of a Dornier. Yet another enemy is written off in the dour struggle between Coastal Command and the air-sea raiders.

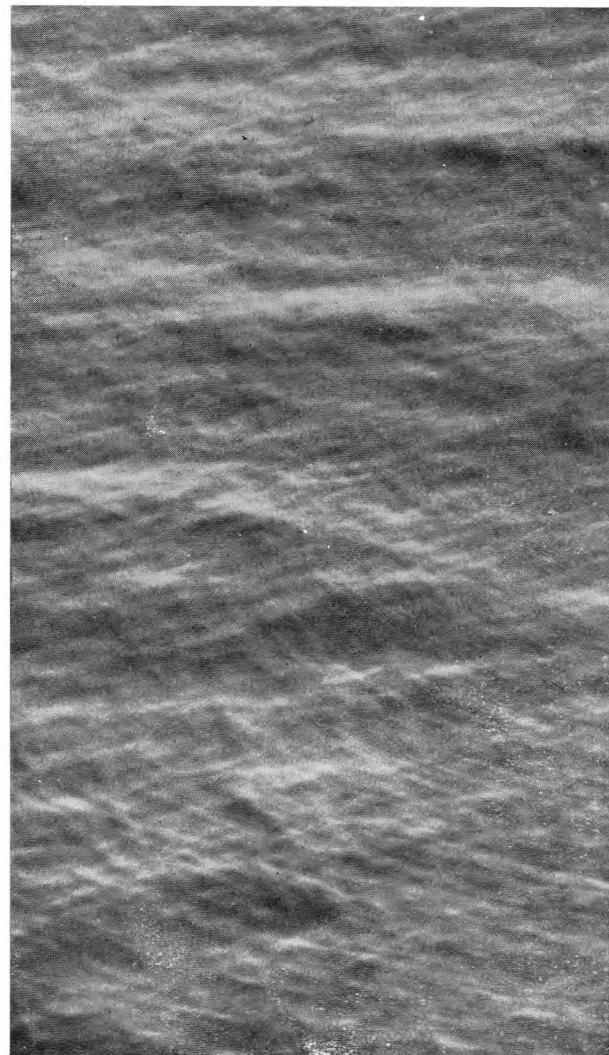


12: Rescue Flights and Secret Missions

THE PROTECTION from the air against the attacks of U-boats and of enemy aircraft given to the ships of the Royal Navy and the Merchant Navy, whether alone or in convoy, is not the only form of aid in the power of Coastal Command to bestow. There is also the assistance to be rendered to a vessel in danger or distress, and to her company if the worst has happened and she has been sunk by the enemy. Since they are able, as a general rule, to see a far greater distance than is possible from the deck or mast-head of a ship, the pilots and crews of Coastal Command are often in a position to give warning should a vessel be running into peril. Being about their business over large areas of ocean almost every day, they are usually at the scene of a disaster more quickly than anyone else. They can also go to the rescue of airmen adrift in dinghies after a forced landing on the sea.

The help which can be given to ships running into danger is best shown by a few examples. On several occasions ships steaming unwittingly into mine-fields have been given timely warning. Thus in March 1940 a number of mines were seen by a patrolling aircraft directly in the path of a Dutch vessel, the "Stadtschiedam." The visual signals made were ignored, but the merchant vessel was eventually induced to make the necessary change of course by bursts of machine-gun fire across her bows.

On 16th July of that year a Sunderland saw the masts and upper works of a destroyer and a merchant vessel protruding from thick fog which lay low over the sea off the inhospitable coast of North-East Scotland. The ships, which were making for a port anchorage, were



"One member of the crew survived."

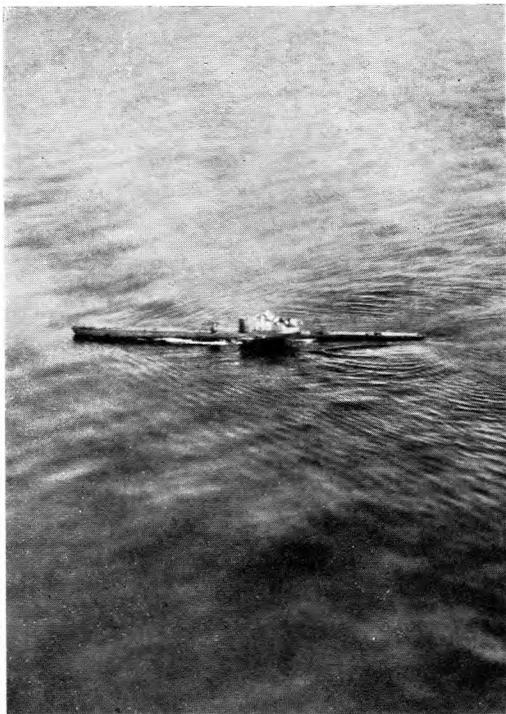
about to run into a small island, but the aircraft, flashing the international sign U-U-U, meaning "You are running into danger," and then the signal "Turn to port," enabled them to enter harbour in safety. Later that day the same Sunderland brought back a destroyer which had lost touch with its six companions.

Such shepherding is part of the routine work of convoy protection and needs no further description. Of equal, possibly greater, importance has been the help rendered to the submarines and surface craft of the Royal Navy which have suffered damage by mines or in action with the enemy.

On 27th November, 1939, the British submarine "Triad" reported that she was in difficulties off the Norwegian coast. She was found by three Hudsons sent out for that purpose, and though lost in vile weather, was picked up again by more Hudsons which gave protection to two destroyers and another submarine, the "Triumph," which had gone to her assistance. The "Triumph" herself needed help a month later when she struck a floating mine in the North Sea. On both occasions Hudsons drove off enemy aircraft seeking to bomb the submarines, which reached port in safety. About that time, too, air protection

was given to H.M.S. "Barham" while at sea in a damaged condition.

On the night of 10th/11th May, 1940, the destroyer H.M.S. "Kelly" was torpedoed in the North Sea during an engagement with enemy E-boats. She was part of a force proceeding to Terschelling to engage in operations off the Dutch coast. H.M.S. "Bulldog," which had rammed and sunk one of the E-boats, took her in tow. Air protection was requested and Hudsons found the disabled destroyer. By 6.0 a.m. the "Kelly" had listed so badly that her starboard decks were awash. Nevertheless she was not abandoned by her crew.



The Free French submarine "Rubis," in grave difficulties in an enemy minefield off Norway, was escorted to her base by aircraft of Coastal Command.

All that day Hudsons kept the guard of the skies in relays above her, leaving only when darkness fell. On the next day a Sunderland arrived at dawn and carried out an anti-submarine patrol. Admiralty tugs came up and took over the task of towing the "Kelly," and Hudsons once more gave protection throughout the day. Twice Heinkels tried to bomb the destroyer. The Hudsons failed to prevent them from dropping their bombs, but their presence forced the Heinkels to attack in a hurried, almost a furtive, manner and no bomb fell near their target. Throughout that day and half the next the air cover was maintained until the "Kelly" entered port, little more than her upper works being visible. The Royal Navy had saved their ship; the Royal Air Force had helped them to do so. That evening the Commander-in-Chief at Rosyth expressed his

thanks. Forty-nine aircraft took part in this operation, which was completed by 1.0 p.m. on 13th May.

In July 1940 an aircraft of Coastal Command discovered H.M.S. "Whirlwind" which had been badly damaged by a U-boat. It directed another destroyer to the scene and the crew were rescued. On 1st September of that year assistance was given to H.M.S. "Ivanhoe" and H.M.S. "Express."

Nearly a year later, on 22nd August, 1941, the Free French submarine "Rubis" was in grave difficulty off the coast of Norway. Blenheims of Coastal Command found her in the morning and constant patrols were maintained over her. On the next day she was seen to be stopped and reported by signal to a Beaufort that her batteries were destroyed but that she was water-tight. A Sunderland and two Catalinas were despatched to pick up the crew, for it was impossible for surface vessels to reach the "Rubis" with safety owing to the presence of an enemy mine-field. Such a rescue was not, however, necessary, for the "Rubis" succeeded in starting her surface engines and moving slowly towards her base. She eventually made port in safety escorted by units of the Royal Navy, protection from the air being maintained by Blenheims and Beaufighters.

By then the method of rescuing a ship's crew by flying boat was nothing new. It had first been successfully practised by three Sunderlands which went to the rescue of the S.S. "Kensington Court" on 18th September, 1939. The position of the sinking ship had been accurately given and the three aircraft converged upon her almost simultaneously. It was arranged that one should remain on guard above, keeping watch for the U-boat which had torpedoed the S.S. "Kensington Court," while the others landed to pick up the survivors. Of these there were 34 in two ships' boats, but the heavy swell prevented them from approaching the Sunderlands too closely. A shuttle service of rubber dinghies was established and all the survivors were got on board, 21 on the one and the remaining 13 on the other.

In the case of the "Kensington Court" the crew had only just taken to the boats. In that of the "Stangrant" they had been in them for three and a half days. It was on 16th

October, 1940, that the rescue was made. Two days before, a lifeboat with 21 men in it had been seen by a Sunderland, which dropped a container with food and cigarettes, for the condition of the sea made it impossible for the flying boat to alight. Two days later the Sunderland set out again.

"It was still dark," said the pilot, "when one of my gunners reported a red light on the sea some miles away. . . . Soon we could see the outline of a boat below us. We flew round for about a quarter of an hour waiting for daylight. . . . I discussed landing with my co-pilots. We decided that it could be done and I came down on what appeared to be the flattest area of sea in the neighbourhood." The flying boat landed safely, reached the boat, and took off the men. On the way back they were given a hot breakfast on board the Sunderland.

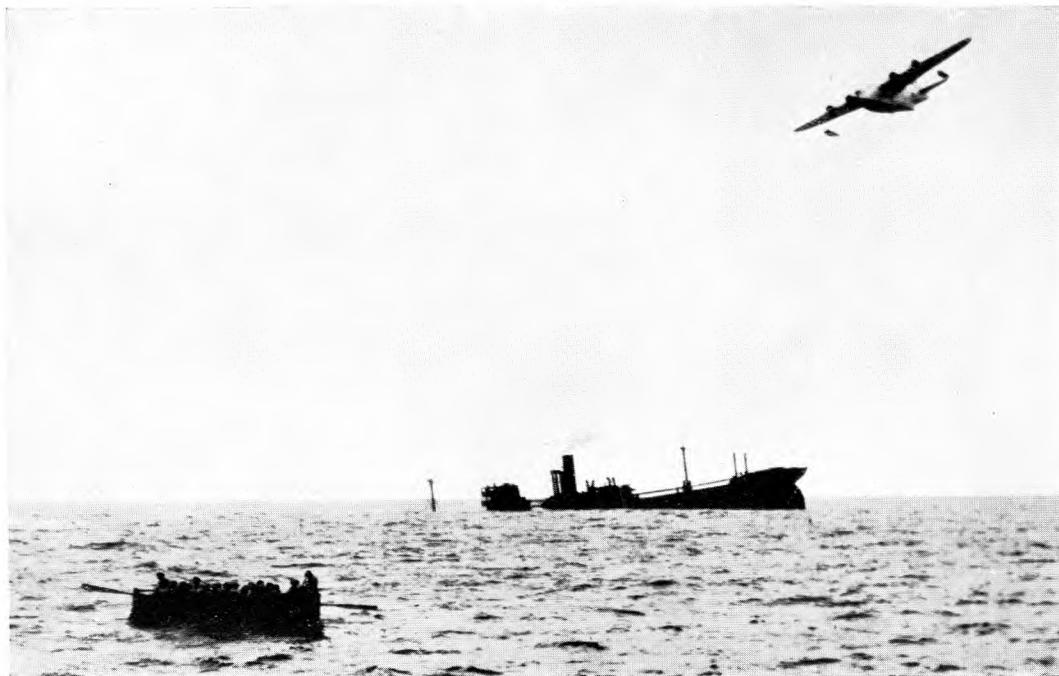
Some five weeks before this rescue a British submarine had held up the Norwegian vessel "Tropic Sea." On board was a German prize

crew seeking to take the vessel into a French port. On the appearance of the British submarine the "Tropic Sea" was scuttled, the Norwegian crew escaping in one boat and the German prize crew in another. A Sunderland with an armed crew was dispatched to pick up both the Norwegians and the Germans. They found only the Norwegians, whom they rescued.

Such air-borne rescues as these, however, form but a small proportion of the total which have been carried out through the instrumentality of Coastal Command. The crews of its aircraft are in a unique position to witness the triumphs and tragedies of the Battle of the Atlantic. Mute evidence of this long, enduring struggle—rafts, Carley floats, lifeboats, empty or manned only by the dead—drifts only too often beneath their eyes. It is when they are occupied that no time must be lost.

Coastal Command began early. In September 1939 the S.S. "Blairlogie," under fire from a U-boat, sent out an S O S. A Sunderland went

The S.S. "Kensington Court" sinking. Her crew were rescued by two Sunderlands which came down on the water, while a third circled above on guard.



to the rescue. Four and a half hours after leaving base and some 300 miles from the nearest land, the Sunderland found not the ship, which had sunk, but the crew in the boats. The aircraft brought an American vessel to the scene and stood by until the rescue had been made, returning late in the evening after a flight of more than 1,300 miles.

On 2nd December, 1939, a Hudson sighted seven people adrift on a raft over a hundred miles from the East coast of Scotland. In fog and mist it guided a Danish ship to the spot. A little later a Hudson found six survivors of the Swedish ship "Listor" clinging to its cargo, a quantity of timber, strewn over the surface of the sea. The Hudson, and subsequently its relief, remained above them for five hours until a destroyer arrived to pick them up.

On 2nd March the S.S. "Domala" was bombed and set on fire 14 miles off Selsey Bill in the Channel. A destroyer was led by an Anson to a raft, the only one of four with anyone on it. On 2nd July a Sunderland was dispatched to find the survivors of the "Arandora Star," torpedoed in the Atlantic when carrying a large number of enemy aliens for internment in Canada. Thirteen lifeboats packed with survivors were picked up soon after 11.0 a.m. Near by them, scattered over a wide area, were rafts, pieces of wood and other wreckage to which survivors were clinging. "Of these there were many score," reported the Sunderland, which dropped "Mae Wests," first-aid outfits and packages of food. Two hours later it found the destroyer "St. Laurent," of the Royal Canadian Navy, and brought it towards the lifeboats. The Sunderland then flew round and round for somewhat more than three hours guiding the destroyer's boats by means of flares to where the survivors were floating.

On 25th September, 1940, a Sunderland on escort duty was proceeding to base after carrying out an anti-submarine patrol round a convoy. After some time its crew sighted a lifeboat in the sea. Flying lower, the captain saw that some of the persons on board were children. One of them, a small boy, began slowly to wave a white rag, spelling out the letters "City of —." The captain knew the rest. This was a lifeboat of the "City of Benares," a liner

which had been torpedoed eight days before. It had been carrying children from this country to Canada. The Sunderland turned back towards the convoy which it had left, signalled to its relief, another Sunderland, and then, petrol being low, returned to base. The other Sunderland flew 50 miles to a warship and led it to the boat. Forty-six survivors were picked up.

A month later a Stranraer flying boat found a lifeboat with 25 survivors of the S.S. "Pacific Ranger" on board. Nineteen of them were rescued by a destroyer. On 26th October a Sunderland helped naval units to pick up survivors from the "Empress of Britain." During the operation three Blenheim fighters gave protection from enemy air attack. A similar office was performed by a Sunderland a few days later when all the survivors from the "Laurentic" were picked up.

In March 1941 a Whitley found survivors of the S.S. "Beaverbrae," the victim of an enemy aircraft. On 10th June two Wellingtons



Mute evidence of this long, enduring struggle.

of the Command each sighted a lifeboat with survivors off the coast of Northern Ireland. Over 40 men were saved by destroyers.

On 10th February, 1942, a Hudson sighted a raft with two survivors upon it. A trawler was directed to the spot and reached the raft on the next day, having been helped thither by a Catalina. The men were rescued. They were a Dane and a Swede, survivors from the S.S. "Yngarin," which had been torpedoed nearly a month before. The men were fit and well when picked up owing to the construction of the raft, a product of the ship's carpenter. It could float either way up and was well stocked with water, provisions and blankets. The men had been able to cook hot meals on it.

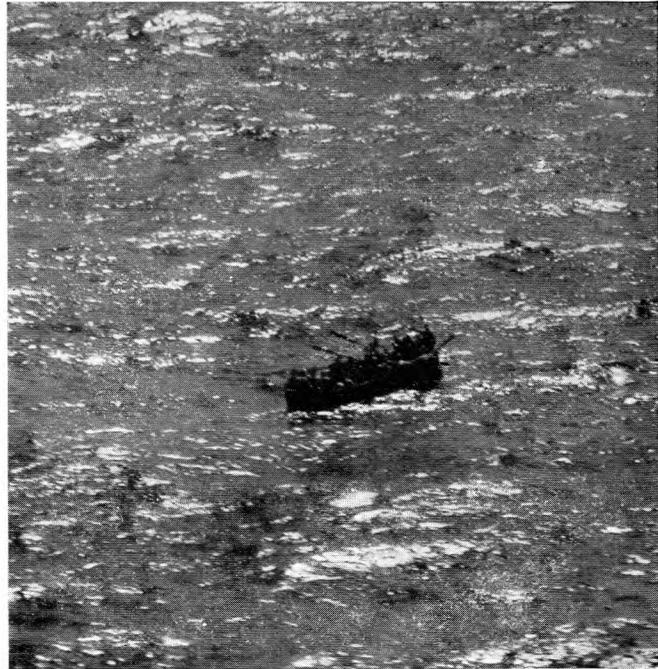
So this work goes on. It will end only when the war ends. About 3,000 persons adrift in the sea were sighted and helped by aircraft of Coastal Command in the first two years of war.

* * * * *

On 22nd June, 1941, Hitler launched his

attack on Russia. On the 24th two Catalinas arrived at a base in North-East Scotland and took on board an official Mission to the Government of the U.S.S.R. It included some high officers of the Army and the Royal Air Force, the British Ambassador to the Soviet Government and other important persons. The next day the two flying boats flew to Archangel. One of the passengers kept a diary in which he has recorded, in the manner of Mr. Jingle, his impressions of this long flight of over eighteen hours.

"For the most part out of sight of land. Never dark. Bright morning mist and fog on the sea. One scare—saw aircraft coming near us. Turned out to be other Catalina. . . . Became colder, overcast and raining. Difficult to avoid icing. . . . Catalina very cramped after normal passenger land plane, extra space being taken up by numerous apparatus, radio, machine-guns, rubber dinghy, sculls. . . . Sat for some time on rubber dinghy. At least elastic. . . . Navigation most accurate,



Sometimes only an upturned boat remains to tell the story. Sometimes the boat is packed with survivors, who wave to the aircraft.

as sun obscured after early morning. . . . Saw nothing all day, neither ships, birds, nor land, until about 4.15 p.m., when large patches of disintegrating, dirty, grey-green ice-floes showed we were leaving Gulf Stream and Barents Sea for White Sea. . . . Passed occasional islands. Flat, deserted, covered moss and seaweed. No apparent life, even birds. Very dreary. . . . Came down in subsidiary channel near an aerodrome. Difficulty in making buoy. Four shots. Much bad language. . . . Throughout the flight crew on duty. Worked very hard. Produced minute electric grid. Fried egg and bacon breakfast. Tinned soup and meat and vegetable ration and pineapple slice lunch, all under difficult circumstances. . . . After landing taken to moored river steamer. Ceremonial dinner. Good speech by General."

This flight was one of many trips which aircraft of Coastal Command have carried out during this war in order to take Government servants of all kinds to places all over the world. Such a ferry service became of special

importance during and after the collapse of France. On 18th June, 1940, for example, a Sunderland took the First Lord of the Admiralty and the First Sea Lord to Bordeaux and brought the First Sea Lord back on the next day. Some days later General Sikorski was taken to this country in a Hudson.

On 25th of that month, another Sunderland carried the Minister of Information and General Lord Gort, V.C., on a mission to Rabat. They were commissioned by His Majesty's Government to go to French Morocco, where several French statesmen, personal friends of Mr. Duff Cooper, were reported to have arrived, in order to discuss the new situation with them and with the local British representatives and to discover what were the prospects of continued resistance in French North Africa. The flying boat took off about 9.0 o'clock in the morning and reached Rabat at 7.0 that evening. The landing was made in difficult circumstances, for the river on which the Sunderland had to alight was not



Sometimes the airman can lead a ship to their rescue, and the survivors are brought safely to port.

more than 150 feet wide. Immediately on touching down the pilot had to use his rudder in order to round a bend of the river. A number of French Air Force officers took the pilot and his passenger to the Customs wharf, whence they went to the British Consulate. Here the pilot quitted the party and returned to the flying boat, where he encountered the Harbour Master, who informed him that he must shift it upstream lest it should be in the way of incoming shipping. This was done, and shortly afterwards a secret signal was received for Lord Gort by the wireless operator. The pilot attempted to go ashore with it in one of the dinghies, but a police boat refused to allow him to do so. The pilot, however, was determined to get the message through and made another attempt, which was once more frustrated by the police in their boat.

More desperate measures were necessary. By now it was dark. The captain of the flying boat ordered all lights to be switched on. This would break the strict black-out regulations

and would, as he knew, bring the police boat quickly to the scene. It did. On drawing alongside, the pilot and second pilot of the Sunderland jumped on board and forced the police, under the menace of their revolvers, to put them ashore. Protesting, they did so, but stated firmly that the flying boat would be placed under armed guard unless the British officers returned to it immediately. The pilots then tried a ruse. The captain of the flying boat explained in broken French that his companion, the second pilot, was in reality the captain and that he himself had only come ashore in order to obtain provisions for the crew. The French police were duly deceived and, thinking that they held the man in command, allowed the real captain to go into the town. With a Consular official he went to the British Consulate and subsequently to the hotel to which Lord Gort had been taken. The message was delivered. A few hours later the whole party returned to the flying boat and for the rest of the night the crew remained on watch beside their guns. The Sunderland took off just before dawn and landed its passengers safely at Gibraltar, going thence to England.

Sometimes more pleasant adventures befall those of the Command engaged on this work. While waiting at Archangel to pick up passengers for London, two members of a Catalina crew went shopping. In a large store one of them saw a number of guitars. He bought one and tuned it to the mouth-organ of his companion. They began to play English tunes and sing English songs. Our Russian allies could not compass the words of these, but the melodies were soon upon their lips, and in the store and presently in the street outside "everyone suddenly burst out singing."

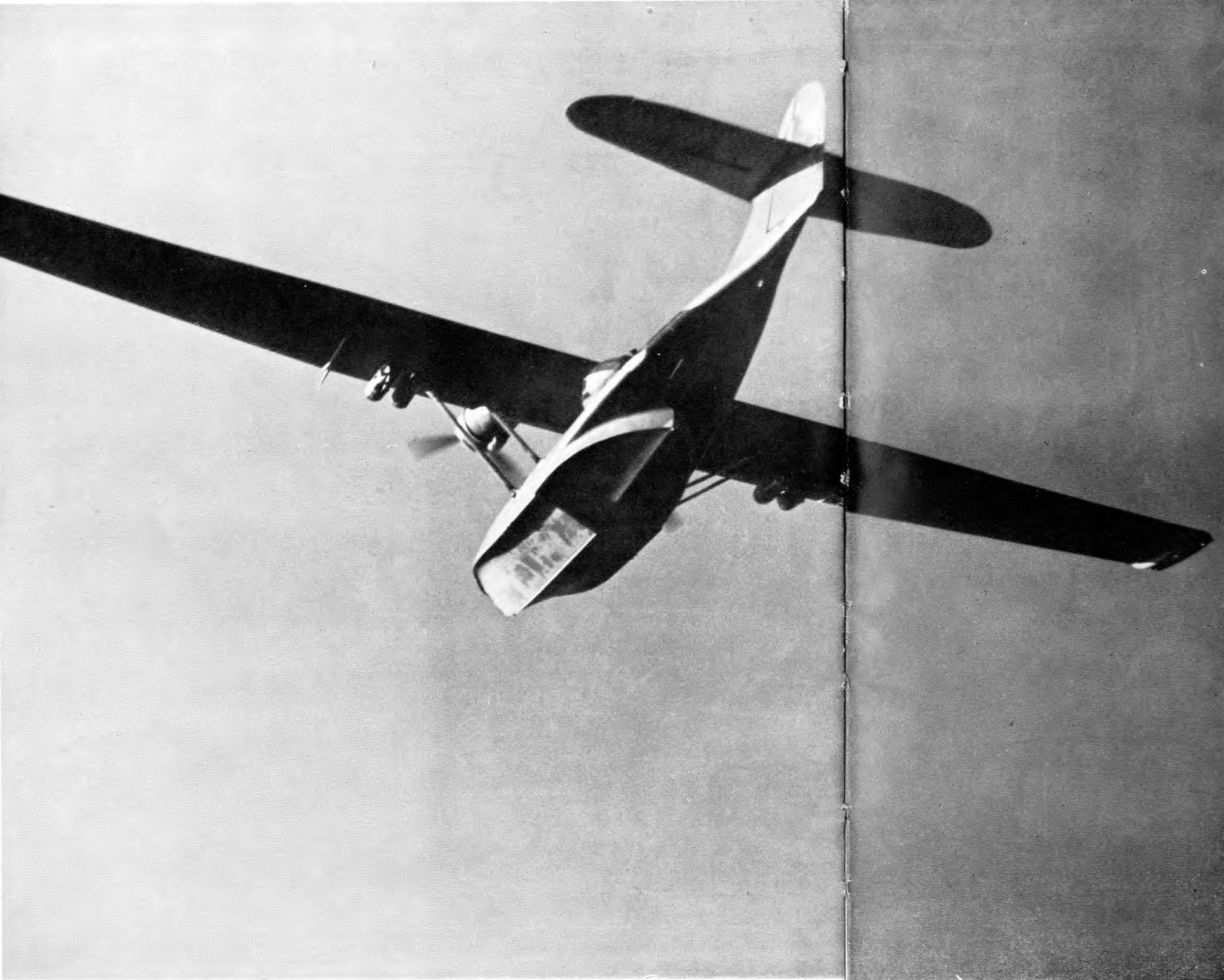
The story of many of these flights upon which aircraft of Coastal Command are constantly engaged must remain a secret until the war is won. Their importance is, indeed, obvious. Commanders-in-Chief have no longer to rely entirely on cipher telegrams or long-distance wireless telephone conversations. They can meet together in conference and together discuss the many problems of the war face-to-face across a table. Then, when the talk is over, the decisions taken, they can enter a flying boat or a Hudson of the Command and return to their posts at the various seats of war.



Sometimes it is his own comrades he saves from the sea.

THEY SEARCH AND STRIKE

With mine, bomb and torpedo,
Coastal Command maintains an
unrelenting offensive against the
enemy's shipping along the coasts
of Europe, and thus imposes upon
his land communications an ever-
increasing strain.



13 : Blockade by Mine and Bomb

WITH A FANFARE of trumpets according to their custom the Germans have more than once announced the startling successes which they claim to be achieving in their efforts to blockade this country. Concerning our counter measures they show greater reticence. Counter measures is the wrong term. From the first hour of the war we have imposed a blockade on Germany which has been successively extended to all the countries which her armies have occupied, and that blockade is complete to the limit of our capacity.

It began in much the same way as that imposed during the war of 1914-1918. A system of contraband control was instituted and applied to all ships bringing cargoes to Europe. Contraband control centres at Falmouth, in the Downs and in the Shetlands were set up and were kept very busy in the early days of the war. To them all ships whose cargoes were not covered by Navicerts or which were suspect were brought in by the Royal Navy. Coastal Command gave all the aid it could. In addition to numbers of German merchants, certain neutral traders, lured by the high profits to be made, sought to run our blockade. Devices used to disguise the ships were many of them ingenious. Swedish, Danish, Norwegian, and other colours were frequently used, and alterations in the superstructure of the ships were made with intent to deceive.

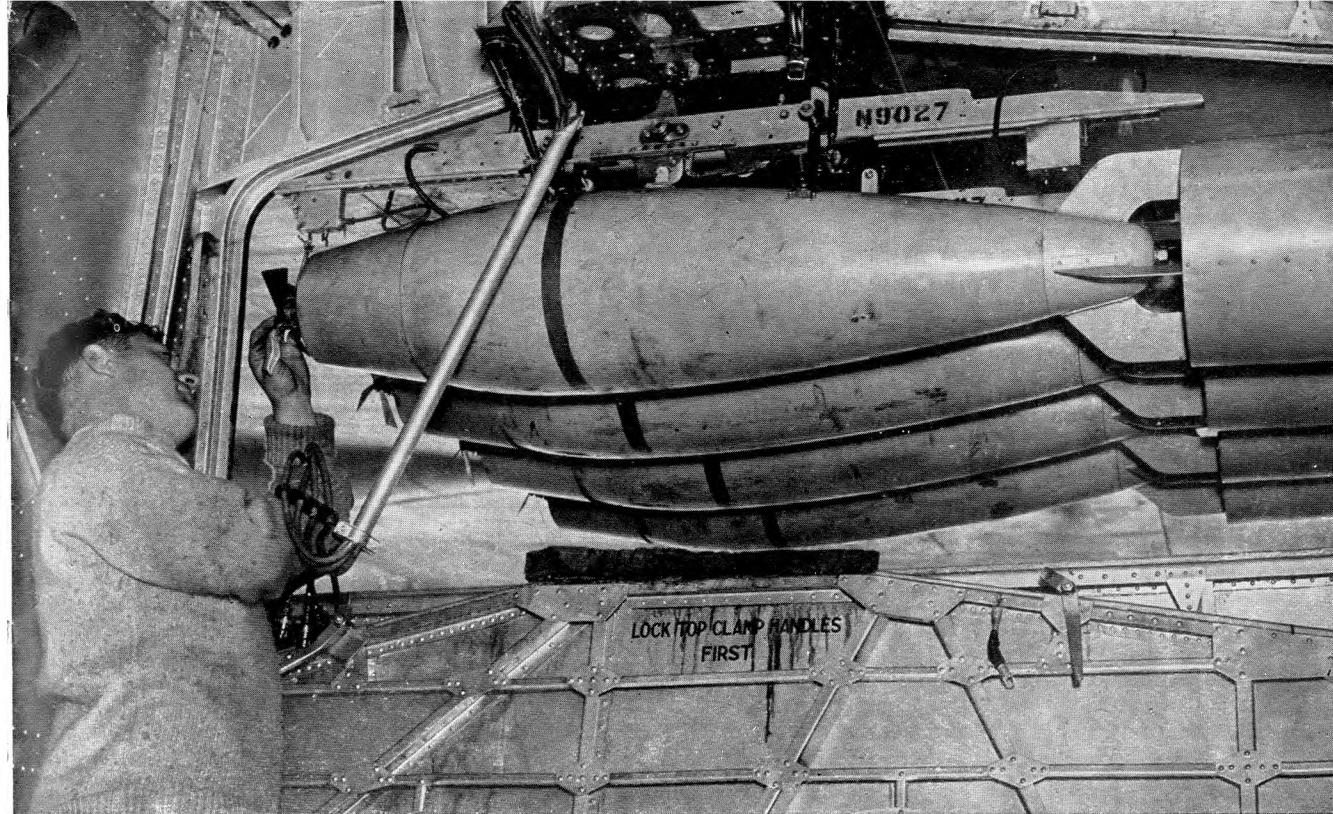
The pilots of Coastal Command have always received a rigorous training in ship recognition. Silhouettes, photographs and models of every kind of vessel are kept at all stations, and those showing the most likely type to be encountered

on patrol are often carried in the aircraft itself. Pilots photographed, if they could, any ship they saw or made sketches of her main features on a pad held on their knees. If they were at all doubtful about a ship they sent a message in code. This was passed on to the Royal Navy, which brought in the suspect for examination.

As the war progressed, the nature of the blockade changed. Germany has overrun so many more countries, and is using their products to maintain and increase the efficiency of her war machine, that the problem has become more difficult. We have not only to prevent goods and raw materials from entering Europe, we must also deny the enemy, as far as possible, the use of his ill-gotten gains.

Sea-borne traffic in the distribution of goods between European countries was in peace time of very great importance. It is even more so in time of war. The seaports of North-Western Europe have always been the main gateway for the exports and imports to and from the industrial areas of Central Europe and their immediate hinterland. Moreover, for the purpose of internal distribution the coastal trade of Western and Northern Europe was of considerable importance. It supplemented the use—so marked a feature on the Continent—of internal waterways for the transport of heavy goods. Coal, building materials, timber, structural steel, fertilisers, cement and other heavy products commonly travel by internal waterways and by sea in coasting vessels up and down the Western coast of Europe. Both methods of transport must be used if the flow of such products is to be maintained.

Moreover, uninterrupted sea-borne traffic is essential if the Germans are to make the most of their conquest of Norway and their domination of the Baltic. Norway has few industries but much raw material, and it can be made available for the enemy's war machine only if it can be brought to Germany for manufacture. It must travel in ships, and those ships cannot make use only of the comparatively safe Baltic ports, for to do so would place a heavy and perhaps an intolerable burden on internal transport in Germany, which must distribute the imports to their final destination. The ships must continue to put into Rotterdam and the North-West German ports. It is now very dangerous to do so. The economic urge to



"Bomb the enemy's ships wherever they may be found" sums up the offensive policy of Coastal Command. Above, heavy bombs in the racks of a Sunderland. Below, bombing-up is a skilled and delicate process.



use them, however, is as great as the danger.

There is no better evidence of the importance of the port of Rotterdam to Germany, and of the vital part played by the Rhine as a channel for the movement of all that is produced by the heavy industries of the Ruhr, than the assiduity with which the Germans continue to use that port in spite of their losses. Some of the exports of the Baltic countries—such as timber, pulp and paper—are essential for the German-controlled industries of the Western occupied countries and Italy. The enemy would undoubtedly like, as in peace time, to be able to carry these to the seaport nearest to the consuming centre. Now, they go as near as they dare and then have to resort to inland transport.

The Germans have also to grapple with another problem. Their forces garrisoning the conquered countries are spread over a wide area. These troops need not only supplies of food, clothing, ammunition and all the other materials required by a modern army, they are engaged in accumulating large stocks of material for the possible invasion of this country and they are at the same time building fortifications along the whole coast of the Continent against the possibility that we may one day invade. Huge quantities of material for the construction of aerodromes, gun emplacements, air-raid and submarine shelters must be obtained and

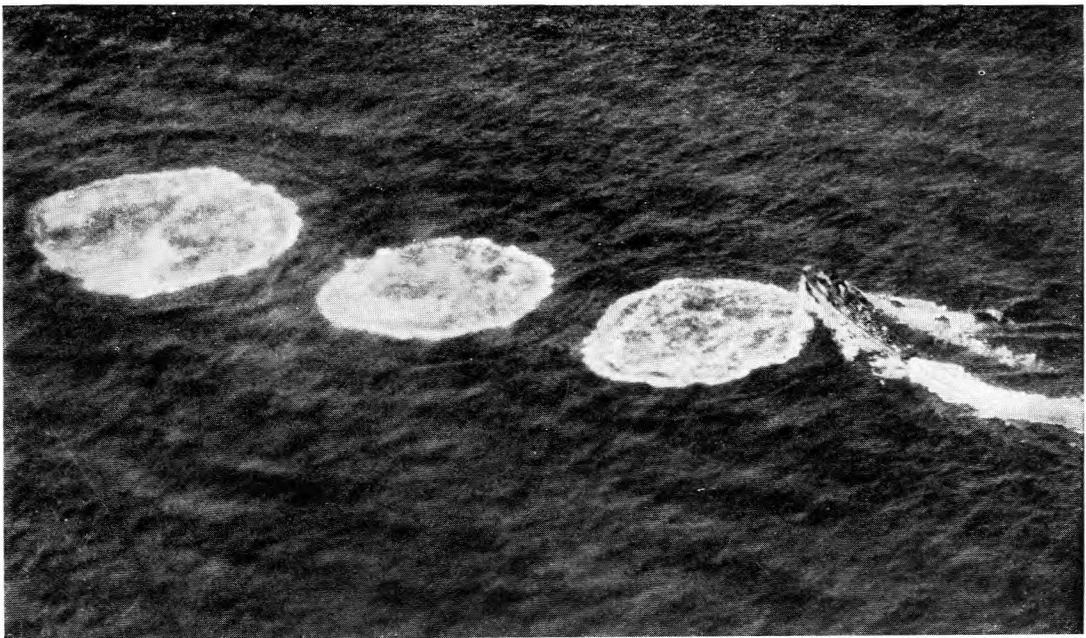
brought to the places where they are to be erected. The consumption of cement alone must be enormous. If this were peace time there is no doubt that all these materials would be brought by sea.

The German railways form one of the most efficient administrative machines in the world, and their efforts in this war have been as remarkable in their way as those of the German Army. All the early traffic problems of the war were clearly foreseen and efficiently dealt with, the two most difficult being perhaps the transport of coal to Italy and of oil from Roumania.

But even while they were still dealing with problems they had been able to foresee, it was clear that they were working under strain. One example will suffice. The dispatch of one million tons of coal a month from the Ruhr, the Saar and Silesia to Northern Italy involves a railway traffic movement which would be equivalent to the dispatch of a "Flying Scotsman" from King's Cross to Edinburgh every seven and a half minutes throughout the twenty-four hours of the day.

With the later developments of the Russian campaign, huge problems have arisen that were never foreseen and for which plans were never made. The strain has been tremendously increased and the German railway authorities

Near miss! This picture illustrates two sides of Coastal Command's blockade, for the vessel attacked is a German M-class minesweeper used to sweep enemy waters mined by aircraft of the same Command.



have redoubled their efforts to keep traffic off the rails.

If Germany held the same dominion over the seas as she does over the continent of Europe, the strain on the railways would be so much less severe and her supply problem so much smaller that it would scarcely trouble her at all. No one realises this more than she does, and it is for this reason, and also because many of the garrisons which she must supply cannot be easily reached except by dangerous sea routes, that she is making very great efforts and taking very great risks to use ships with which to relieve the heavy and growing pressure on her railways and other forms of transport. In doing so she has laid herself open to attack, and that attack has been, and is being, carried out with all the vigour at our command.

The part played in this sustained and prolonged assault by aircraft of all three Commands is of very great importance. Coastal Command has concentrated on shipping. It must not be forgotten that, when a ship is sunk, not only are the goods which it carries destroyed, but also that particular means of transport is lost, whereas an attack on a railway may destroy only some of the goods it carries and some of the rolling-stock, which can, moreover, be more easily and quickly replaced than a lost freighter.

Coastal Command makes use of three chief weapons in its operations against enemy shipping—the mine, the bomb, and the torpedo. All three are dropped from the air. Let us take first the attacks by mine.

The task of laying mines in enemy waters is shared with Bomber Command. Each Command has been allotted certain areas along the coasts of the enemy and of the occupied countries off which mines are laid. The aircraft used for the purpose were originally Swordfish, of which the open cockpit added considerably to the discomfort suffered by the crews in winter, though in other respects it was an advantage, for the pilot could see the surface more easily. As soon as Beauforts became available they were pressed into service.

The method used is as follows: The aircraft sets out flying at a height between 1,500 and 2,000 feet. When it approaches near to the place chosen—a shipping channel, the entrance to a port, the mouth of a fjord, or wherever it may be—it comes down low in order to pin-



Fast-moving targets are not easy to hit. A German R-boat takes avoiding action—a sharp turn to port at high speed—as a stick of bombs goes down.

point its position. This is done by picking up some prominent landmark, such as a building, a headland, a lighthouse, a small island. Arrived there, the navigator sights the landmark through the bomb-sight and, at the exact moment at which the Beaufort passes over it, presses a stop-watch, at the same time telling the pilot to fly a course at a certain speed at a certain height for a certain time. During this, the run-up, the aircraft must be kept on an absolutely level keel. At the end of the period, calculated in seconds and fractions of seconds by means of the stop-watch, the observer releases the mine and the operation is over.

Very rarely do the crew even see the splash when the mine hits the water. The operation is dull, difficult and dangerous. "Creeping like a cat into a crypt" is how one pilot has described it. The Germans do their best to cover all likely landmarks with anti-aircraft fire.

More than once the crews of Coastal Command have seen little lights moving, like strange fire-flies, along the edges of cliffs. They came from the pocket-torches held in the hands of German gunners as they ran to man their guns.

Little is heard of these mining operations. Only an occasional reference is made to them in official communiqués. But they go on night after night and the crews who carry them out run risks as great as those who achieve a result by the use of a more spectacular weapon—the bomb or the torpedo. Over a period of six months in 1941 seventy per cent. of the mines laid by Coastal Command were placed in the position chosen for them.

It is impossible to do more than estimate the damage they cause. Intelligence and other sources can never discover the whole truth and it is doubtful whether the enemy himself knows all of it. Certain successes are known to have

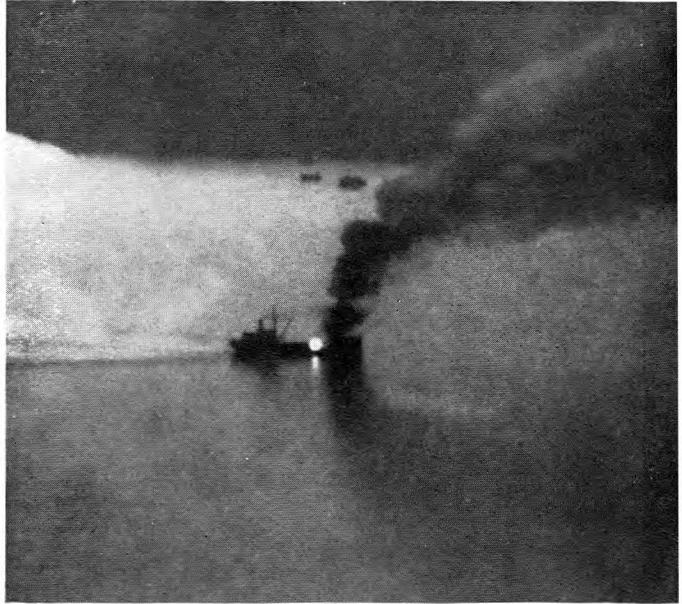
High-level attack. Flying at 8,000 feet above its target, a Hudson, using the Sperry bomb-sight, scored this direct hit on the stern of a German supply ship in northern waters.



been achieved. Here are some instances. In February 1941 a German vessel of about 3,000 tons was damaged near Haugesund and beached to prevent her sinking. A German trawler struck another mine on the same day and sank. The area was closed to traffic for some time. Later that month a German ship was mined off Lorient and many corpses were washed ashore on the Quiberon Peninsula. An aircraft of Coastal Command had dropped a mine in that area a night or two before. In September of that year two cargo vessels were mined and sunk in the roadsteads of La Pallice and La Rochelle. In October a 4,000-ton ship was mined and sunk in the channel leading to Haugesund and the entrance to the port was blocked for some time.

The more direct method of attack is to bomb the ships of the enemy wherever they may be found. Coastal Command began early. The first enemy ship to be bombed was a tanker attacked by a London flying boat on 10th April, 1940, some forty miles from the Faroe Islands. The limited resources of the Command did not permit it, in those early days, to make attacks on a large scale. Nevertheless, its achievements are not to be ignored. Between 10th April and 31st December, 1940, 223 attacks were made on merchant vessels and supply ships and 81 on enemy ships of war. They took place along the Norwegian coast, the Dutch, Belgian and French coasts, and also in the Heligoland Bight and off the North-West coasts of Germany. The sinking of a merchant vessel off Haugesund by a Hudson on 22nd June and the hitting and sinking of twelve merchant vessels, one of which was of 14,000 tons, and a tanker of 10,000 tons in July must be mentioned.

The attacks in August 1940 were not very successful, but in September two E-boats were sunk by a Blenheim 18 miles off Dieppe on the 10th and hits obtained on ten merchant vessels, one of which was certainly sunk. In October 1940 three merchant vessels were hit. The attacks fell off in November, but in December no less than 45 were made on merchant vessels and one on enemy destroyers. So ended the year 1940. The attacks had been mostly carried out by single aircraft, a Blenheim, a Hudson, or a Beaufort, though sometimes the attackers flew in formation of two or three. They were



"I seek my prey in the waters" is the motto of one Coastal Command squadron. An enemy M.V. blazing after an attack by a Beaufort.

in the nature of an experiment. The crews taking part in them were gaining experience of which they were to make good use in 1941. It was not a quick process. To attack and hit a ship, especially when it is protected by its own fire and that of flak-ships, is not only dangerous but difficult. The technique was worked out and improvements made through that winter and spring.

During this period much work was done to determine the correct fuse-setting of the bombs. It was very necessary to do so. On 30th March an enemy ship loaded with depth charges, probably an anti-submarine vessel, was found off La Rochelle and hit by a 250-lb. bomb dropped from 400 feet without a delay fuse. The bomb detonated all the depth charges and blew the ship to pieces. The aircraft returned "riddled with bits of its target." As a result of this and other attacks of the same kind it has become the general practice to use delayed-action bombs.

When vessels carrying ammunition, however, are hit, the explosion is naturally so formidable

that the aircraft runs a great risk of suffering damage. On one occasion a Hudson belonging to a Dutch Squadron dropped a salvo of bombs on a ship near the Norwegian coast. "Nothing happened at first," reported the Dutch pilot. "The rear gunner started swearing because he didn't see anything. Then he said he saw the crew frantically lowering a boat. Then came a tremendous explosion and we thought our bombs had hung up and gone off underneath our aircraft till we saw the ship in small pieces."

Bomber Command took a prominent part in the attacks on shipping. The work they did has been described in the Air Ministry's account of the activities of that Command. In March 1941 Coastal Command aircraft made nine attacks, and eight in the following month, on enemy ships of war at sea, in addition to a large number of attacks on the "Scharnhorst" and "Gneisenau" in harbour at Brest. They also hit for certain fifteen merchant vessels during the same period, and probably many more. One attack on a convoy of eight merchant vessels off Stavanger on 18th April was pressed home with great determination. Two merchant vessels were hit and left sinking for the loss of two Blenheims; a second attack made on the convoy encountered heavy opposition from Me.110s which shot down three Blenheims after one of them had scored a hit on another vessel.

The attacks continued on much the same scale throughout the summer. On 11th June Blenheims scored seven direct hits on a large tanker discovered between Ostend and Dunkirk. On 5th July Blenheims, again escorted by fighters, discovered an enemy convoy near Zuydcote. Some of the aircraft attacked from a high level and drew the fire of the convoy and its escorting vessels. The remainder went in low and scored two direct hits on one merchant vessel and another on a second. One of the Blenheims, hit by anti-aircraft fire, struck the water, bending both propellers, but got back to base.

By then the Blenheims and Beauforts operating over the English Channel had been so successful that it was practically denied to enemy shipping. After July attention became more concentrated on the Dutch and Norwegian coasts. By the end of that month Continental business men were complaining

of the heavy losses incurred by them in shipping goods from Dutch ports.

The attacks by bombs on enemy shipping reached a momentary climax in October and November 1941. Many of them took place by night during the moon periods, and the aircraft employed were Hudsons flown by British, Canadian and Dutch Naval Air Squadrons. The attack on the night of 29th/30th October is especially noteworthy. Reconnaissance on the morning of the 29th had disclosed a concentration of German shipping in the harbour at Aalesund and the neighbouring fjords. Hudsons set out from the North of Scotland and delivered the attack. The first to arrive saw the ships lying at anchor beneath a brilliant moon lighting the harbour in its frame of mountains on which the first snows of winter had fallen. The attack can best be described in the words of one of those who took part in it:

"There was a lot of flak coming up as I came over the target. I could see one ship burning, with smoke pouring from it. The ground was covered with snow and I had the whole target in silhouette. I flew around pretty low for a bit, then climbed up to get a better view and choose my target, keeping out of range of the flak. I saw a second ship hit and it soon became an inferno of flames. We could actually see the plates red-hot. I saw four other aircraft attack shipping in the harbour. They were flying very low, and the flak was streaming down on them from batteries in the hills—green, white, red, yellow. A lot of it was going straight on to the enemy's ships.

"I had by then chosen my target—the biggest ship in the harbour, about 5,000/6,000 tons. I approached from the North, about five miles away, my engines throttled right back. I came down to about 5,000 feet, by which time I was nearly over the ship, and dived straight on to it. I dropped my bombs at about 2,000 feet. I did my own bomb-aiming. Directly the bombs were gone I pulled up over the town. I was then down to about 1,000 feet, still throttled back; then I opened up fully and went off. There was a lot of flak coming up at us. Some of it came pretty close, but we couldn't actually hear it. The gunner definitely silenced two flak positions.

"I flew right round the harbour and when I



Aalesund, a few hours before the successful raid of 29th/30th October, 1941. Four merchant vessels were sunk and three heavily damaged.

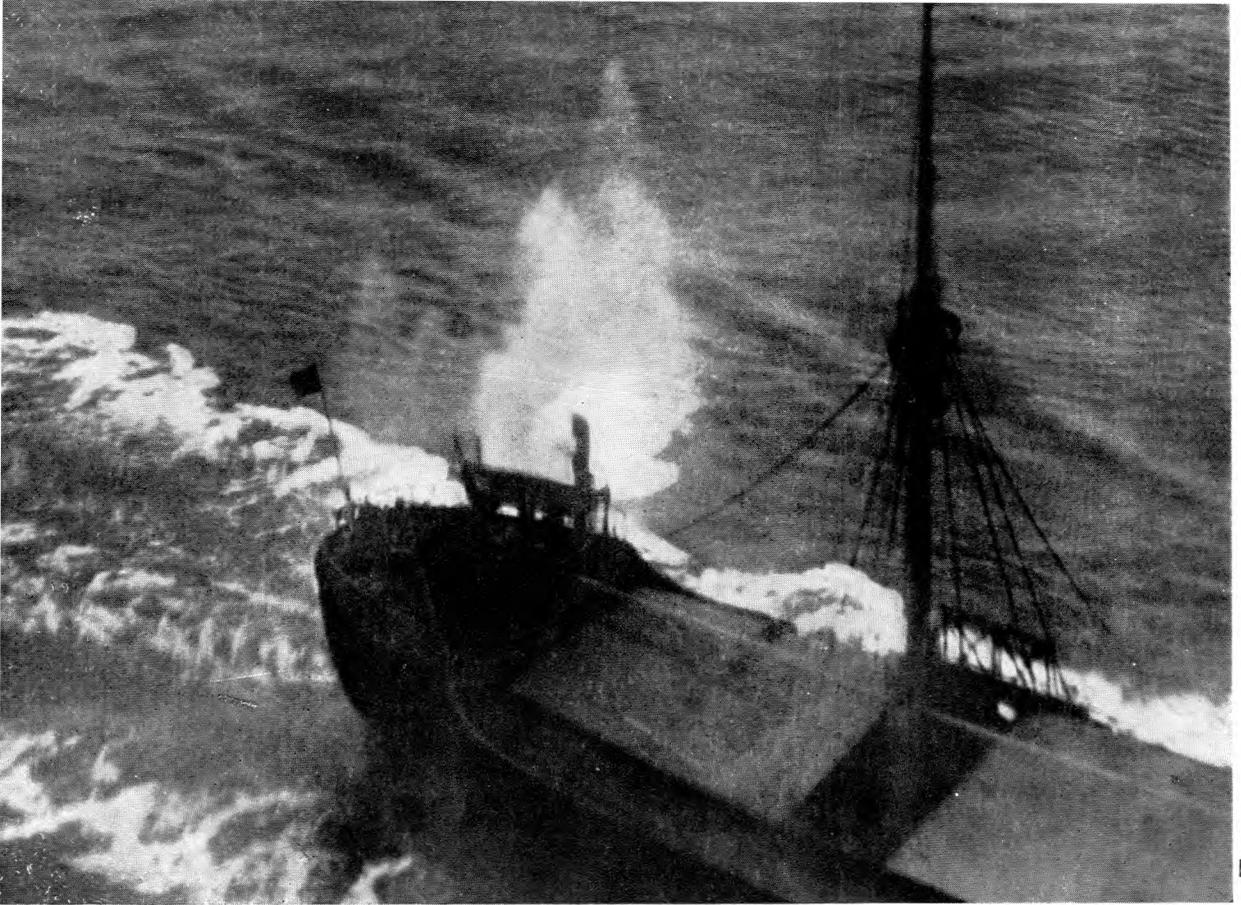
came back to the target I saw the ship was still there. I said to the crew: 'We must have missed it.' A moment later the gunner shouted: 'Think I can see a glow forward.' I turned round to have another look and saw she was down by the bows. I flew round again and this time I saw the bows were awash. I kept on flying round, and next time I looked the water was about up to her funnel. She got lower and lower, then we saw the rudder come out of the water and about a third of her keel. Just before she went down we saw part of the stern with the flag-pole sticking up, and as we watched she sank. The ship took twelve minutes to sink from the time I released the bombs. It was a most satisfying sight to see it going down."

All the aircraft returned safely. One of them was carrying the Air Officer Commanding the Group to which the Squadron making the attack belonged. Its bombs sank one of the four ships destroyed that night. Three

others were hit and very heavily damaged.

In the five nights from 31st October to 5th November eighteen merchant vessels were hit, the majority, perhaps all, being sunk or burned out. On 2nd November the attack switched to the Dutch coast and four ships were hit. In less than a month about 150,000 tons of enemy shipping had been sunk or severely damaged, and of this about 120,000 could be claimed by Hudson Squadrons. The denial to the enemy of these ships and the loss of their cargoes undoubtedly affected his military operations against Russia.

To read the reports submitted by pilots immediately after their encounters with enemy ships is to receive the impression of men so eager to get to grips with the enemy that they disregard the risks involved. This, however, is not so. A more careful perusal of them shows that the captain of a Hudson, a Beaufort, or a Blenheim, while prepared to take great risks,



and in fact accepting them as in the ordinary course of duty, is not at the same time heedlessly risking the lives of his crew or the safety of his aircraft.

“From mast height I laid a stick of bombs across the ship. I didn’t see them drop, but the rear gunner reported: ‘There’s one on the deck.’” . . . “At that moment both my engines spluttered and stopped. That shook me, for we were flying right between the masts.” . . . “The whole sky lit up as two of the bombs burst and the ship seemed to disappear into thin air.”

Such phrases as these indicate how closely pressed home is the attack, but they are often followed by the statement that it was made from cloud cover, that evasive action followed immediately afterwards, and that the aircraft regained the shelter of the clouds as soon as possible. Such actions on the part of the

pilot in no way detract from the achievement. On the contrary, they enhance it. The enemy’s merchant vessels, of which all are armed and most protected by flak-ships which put up a heavy barrage, are not attacked haphazard. The tactics of swift approach and swift “get-away” have been carefully worked out and studied, and though the hazard of the operation is never allowed to interfere with its execution, if the chances of a successful attack are nil it is not made. If there is even the smallest prospect of success, it is.

Single enemy vessels or vessels in convoy hug the coasts of conquered Europe. They are discovered, therefore, by visual and photographic reconnaissance or by means of patrols given a roving commission to attack any suitable shipping target which may present itself. Such patrols are called “Rovers.” They are sent out very often at the discretion

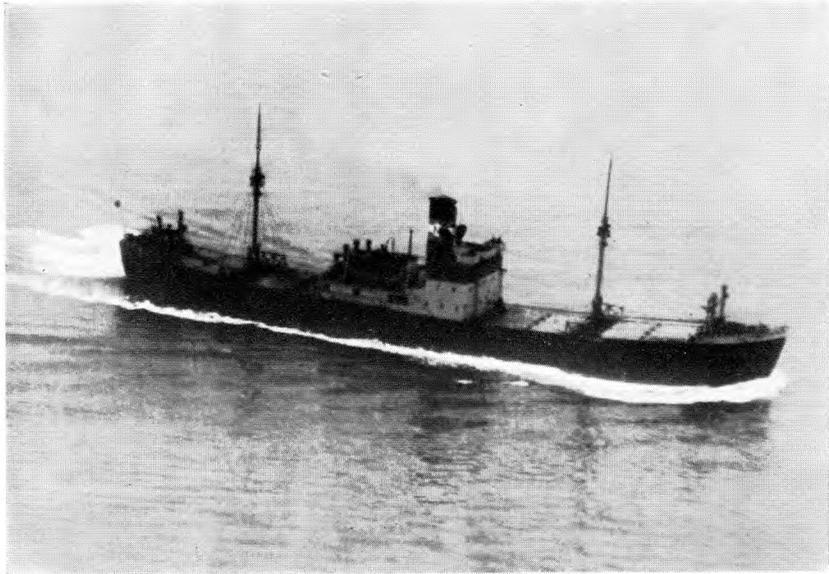
of the Officer Commanding the station, who acts under a general order from the Group, and they are flown both by day and night. They were welcomed from the start by the pilots and crews as an exciting change from convoy or anti-submarine patrols.

In daylight, weather is of supreme importance. Crews detailed for such patrols cannot take off unless there is a reasonable certainty that the area they are going to investigate will be covered with cloud.

“There is a feeling of unreality,” says a Wing

talking to a pal, or perhaps blowing on cold fingers. . . . The moonlight Rover is quite different and in some ways more fascinating. . . . It can take place only on bright nights. There is something indescribably exhilarating about flying low over the water along a path of living flame. . . . Surprise is nearly always achieved because it is possible to see much more looking up-moon than it is looking the other way, and the marauding aircraft comes suddenly on the ship out of the ghostly murkiness of night.”

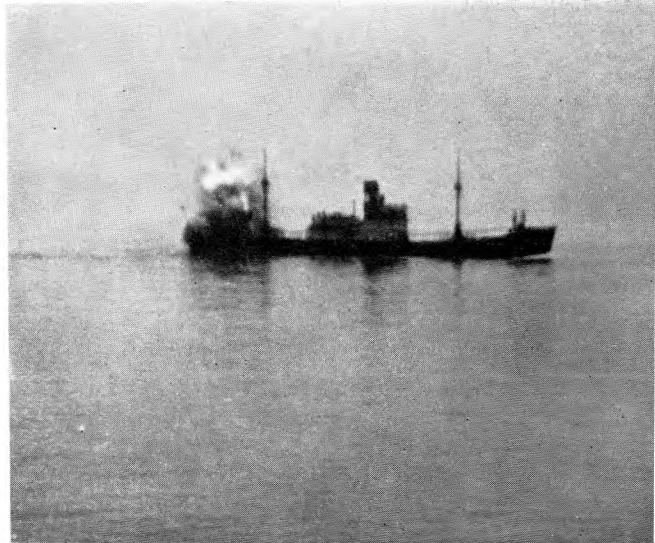
2



Delayed-action bombs are used in low-level attacks, so that the aircraft shall not be damaged by the explosion. 1. A stick of bombs has been dropped from mast height over the stern of this enemy ship. 2. The ship steams on, apparently unscathed. 3. A second or two later the bomb makes itself felt.

3

Commander, “in starting out on a bright, sunny day and presently flying into horrible grey weather and so finding the enemy coasts, and flying along low-lying, sandy shores or an island of the Frisian group and perhaps stumbling on a ship before either she or oneself has quite realised what has happened. The whole essence of a successful shipping ‘strike’ is surprise. . . . The attacking aircraft has to come in very close and very low. . . . It is in this position, however, for only a few seconds, and we rely on catching the gunner on board when he is lighting a surreptitious cigarette,



14: Torpedoes Running Strongly

THE SAME CONDITIONS for attack apply to the torpedo-carrying aircraft of the Command. The Squadrons engaged on them fly Beauforts, aircraft which can carry either bombs or torpedoes.

The torpedo is an unhandy weapon when it is carried by an aircraft and launched from the air, but it is more effective than any other against a ship, for it explodes beneath the surface of the water, and the damage that it causes is therefore, in nine cases out of ten, more severe than that caused by a bomb. The torpedo is unhandy for a number of reasons. It is brittle in the sense that if it is dropped from too great a height or when an aircraft is travelling too fast it will break up on striking the surface, and it is hard to aim, for it must enter the water at the correct angle. If it does not it will either hit the bottom and there explode or be diverted, or move up and down as though on a switchback, "porpoising" as it is called, and then break surface. Moreover, its delicacy of construction makes it impossible to drop it if the aircraft is flying too fast. It cannot be dropped too near the target or it may pass beneath it, and this means that the pilot must become very proficient in judging distance.

Pilots and crews go through a course of intensive training in which they learn as much as they can about the idiosyncrasies of the torpedo. By means of simple and ingenious photographic machinery the pilot under instruction who has attacked a target with dummy torpedoes, and the fully trained pilot who has loosed his torpedo against a ship, are enabled to discover the exact distance from the target at which they dropped them. The torpedoes are

beautifully made and covered with anti-corrosive paint, which gives them a dark blue colour. This paint is very effective against the action of sea-water, and torpedoes have been known to remain in the sea for as long as thirteen years and still be perfectly serviceable.

The Beauforts operate on cloudy days or, if the weather is clear, with a fighter escort, and during moonlight nights. They, too, find the enemy by means of a Rover patrol or a "strike" directed against a ship or a convoy which has previously been discovered by reconnaissance.

To explain more fully the way in which a torpedo-carrying squadron works here is an account of the start of an operation as seen in the Operations Room of a squadron which has taken a very active part in the onslaught on enemy shipping. The time is the early summer of 1941, when torpedo attacks on enemy shipping were very frequent.

[Telephone rings in Operations Room—Controller, Group Headquarters, wishes to speak to Controller.]

CONTROLLER. Controller Selsey here, sir.

CONTROLLER (GROUP). Controller Group speaking. A "Jim Crow" reports an 8,000-ton tanker, a 3,000-ton merchant vessel, and five escort vessels, course Westerly, speed 6 knots, time 16.30. Six aircraft of X Squadron loaded with torpedoes to rendezvous over Pevensey Bay 17.50 hours. Fighter escort will be provided.

CONTROLLER. Right, sir. I'll bring them to immediate readiness. *[Controller replaces telephone and addresses Navigator.]*

Strike on for X Squadron. Six aircraft. Lay on and plot course to Beachy Head, thence to Le Tréport. Aircraft are to rendezvous to pick up fighter escort at Pevensey Bay at 17.50 hours. I should allow ten minutes for the aircraft to formate and set course.

[Controller rings Squadron Commander.]

Instructions from Group—six aircraft for immediate strike. Will you please come over for the gen.⁽¹⁾

[Controller then rings Station Commander and passes information received from Group.]



The torpedo is the airman's most effective weapon against shipping ; but its successful use demands extremely delicate judgment of height and distance, as well as the stoutest nerves.

NAVIGATOR (*to Controller*). Crews to report to Operations Room 16.30 and to be air-borne by 17.30.

[*Controller telephones Met. forecaster and asks for weather report.*]

[*Navigator, having worked out track times and distances, calls to N.C.O.*]

Sergeant, issue Form Green to Squadron for this strike and forms to Group, will you ?

CONTROLLER (*to W.A.A.F. clerk*). Inform A.L.O.⁽²⁾/Buxted./C.C.L.O.⁽³⁾ Fighter, Ops. Steyning, of times of take-off and return of the

six aircraft of X Squadron.

(*To A.C.W.⁽⁴⁾*.) Bring six aircraft under orders on State Panel⁽⁵⁾ and bring it up to date. (*To Intelligence Officer.*) Will you get out the gen ?

[*The Intelligence Officer prepares his material for briefing and instructs the Photographic Section to fit the necessary cameras.*]

[*Enter Squadron Commander. To Controller.*]

SQUADRON COMMANDER. What's all this about ?

(1) Royal Air Force slang for information, (2) Air Liaison Officer. (3) Coastal Command Liaison Officer. (4) Aircraftwoman. (5) The board on which details are given of the exact state of each aircraft and crew of the Squadron.



Swift approach and swift getaway is the secret of a successful "strike." A Beaufort torpedo-bomber dives out of the clouds.

CONTROLLER. One 8,000-ton tanker and one 3,000-ton merchant vessel and five escort vessels steaming at 6 knots on a Westerly course. [*Exit Squadron Commander to interview Intelligence Officer.*]

CONTROLLER (*to Navigator*). It's time these chaps were here—time's getting on.

NAVIGATOR (*to Controller*). Everything has been checked and is ready. Has Group confirmation arrived yet?

W.A.A.F. Just arrived, sir. [*Hands to Controller and takes copy to Intelligence Officer.*]

[*The Station Commander arrives and asks the Controller if everything is correct. The Controller gives more information concerning the strike, about which he has previously given brief particulars over the secret line, and shows the Station Commander confirmation sent from Group to him.*]

[*The crews arrive at the Operations Room, where they are briefed as follows:*]

"An 8,000-ton tanker, a 3,000-ton merchant vessel and five escort vessels have been reported by a 'Jim Crow' to be steaming at 6 knots in a Westerly direction down the French coast off

Le Tréport. The 3,000-tonner is being led by an 'E' or 'R' boat followed by the larger tanker, which has a small escort vessel astern, two more on the seaward side of her and another 'E' or 'R' boat on the landward side. They have a pretty effective screen.

"We will take off from here at 17.30 to give us ample time to get to Pevensey Bay for rendezvous with fighters. Three squadrons of Hurricanes will be giving close escort, and there will be others giving cover above. We will set course from Pevensey Bay at 17.50 for a point 10 miles West of the convoy in view of the report of haze, so that if we hit the coast we can't fail but find them if we turn East. All aircraft will keep low on the water going out.

"As there is only one escort vessel on the port side we will come in and attack from the land. Another advantage of this will be that we'll be more difficult to see coming up on the approach. Just before reaching the target the fighters will go in ahead and keep the escort ships busy. We'll fly in two 'Vic' formations of three aircraft. Robinson, you'll lead the sub-section and position yourself about 100 yards away on my port quarter. On sighting the target I will give you orders to spread out from echelon to port. This will mean that we shall all be able to drop roughly together and cover a wide area, thereby increasing our chance of a hit, and ensuring that avoiding action by the ships will be made more difficult.

"When you see my fellows taking up echelon, put yours in echelon also and open out to about 150 yards intervals. Take individual and violent avoiding action yourselves as you approach to drop, but take care to get a good steady release in spite of the flak, which will probably be plentiful. Don't drop outside 800 yards. After dropping, break away and re-form in tight 'Vic' as soon as possible to starboard.

"We will take the tanker and you should be in a good position for a good shot at the merchant vessel. Take off and form up in the usual manner.

"Wireless operators, stand by cameras throughout attack and take as many photos as possible during turn away. This should be simple with the hatch on the right side for a change. W/T operators will obtain their instructions from the Signals Officer.

“ Navigators will keep an ‘ Air Plot ’ in case aircraft are separated and have to return individually.”

[The Intelligence Officer then addresses the crews.]

“ This tanker is taking oil down to Brest, so I need not stress her importance. The 3,000-ton merchant vessel is a possible raider. Have a good look, because it’s very important to identify her. You’ve all got cameras. Don’t forget to use them. Photographs are invaluable.

“ You won’t be worried by flak from the shore, but there will be plenty of light stuff from the escorts, which are all ‘ R ’ boats. They may have a balloon or two, so watch out. The nearest Hun fighters are at Blank, where there is a *staffel* (an operational unit of the Luftwaffe), but anyway you’ve got a fighter escort to look after them.”

[The Operations Navigator then briefs the aircraft navigators on tracks, times, etc., and gives them any information regarding our own forces and obstructions en route to the target. The Signals Officer then speaks about communications and the Met. Officer about the weather likely to be encountered. The pilots and observers leave. Soon the sound of aircraft taking off is heard.]

We have watched the start of a typical “ strike.” Let us now look at some of the operations undertaken by torpedo-carrying squadrons of the Command since September 1940. The first attack of importance was made on the night of the 17th, when six Beauforts in two flights of three attacked shipping in Cherbourg harbour. This French base has always been heavily protected since it was occupied by the Germans. At that time it was probably the best defended of all the Channel ports, and these, be it remembered, were then full of enemy shipping collected in preparation for the invasion of this country.

The attack made by the Beauforts was unique, for up to that moment no torpedo had ever been dropped at night in the whole history of warfare. To give the Beaufort torpedo-carriers the best chance of success a diversion was arranged by sending over Blenheims, also of the Command, to bomb the target and thus distract the anti-aircraft defences. Led by the

Squadron Commander, the leading flight of Beauforts reached Cherbourg while the bombing attack was in progress. They could see a number of fires and a great quantity of flak.

“ I decided,” said the Squadron Commander, “ that I would enter by the Western entrance of Cherbourg harbour. I took this decision because there was a great deal of wind and I thought that if I were to approach the Germans with the gale in my face they might not hear me. That indeed proved to be the case, because when I entered the harbour no one fired at me. I had hardly got in, flying at about 50 feet, when the Germans opened fire.

“ I was so close that I could actually see them and I watched a German gunner, one of a crew of three manning a Bofors gun, trying to depress the barrel, which moved slowly downwards as he turned the handles. He could not get it sufficiently depressed and the flak passed above our heads. It was bright red tracer and most of it hit the fort at the end of the other breakwater on the farther side of the entrance. At the same moment I saw a large ship winking

The Target—an “ Altmark ”-type tanker, with the shadow of the attacking aircraft below her stern.



with red lights, from which I judged that there were troops on board firing at us with machine-guns and rifles.

"I dropped the torpedo in perfect conditions, for I was flying at the right speed and at the right height. Half a second after I had dropped it five searchlights opened up and caught me in their beams. I pulled back the stick and put on a lot of left rudder and cleared out. The trouble about a torpedo attack is that when you have released the torpedo you have to fly on the same course for a short time to make quite sure that it has, in fact, left the aircraft. I remember counting one and two and three and forcing myself not to count too fast. Then we were away."

Another Beaufort coming in immediately afterwards seemed "to be surrounded by coloured lights," and a third, flown by a sergeant pilot, hit a destroyer and at the same time lost half its tail from a well-aimed burst of anti-aircraft fire. It got safely back, however. All the pilots reported that the opposition was the fiercest they had ever experienced. In this gallant affair one Beaufort was lost.

This was a moonlight attack. Soon afterwards, at the beginning of an autumn afternoon, a roving patrol of two Beauforts found two enemy destroyers and six escort vessels off the Dutch coast near Ijmuiden. These they did not attack, but carrying on soon found a 2,000-ton mine-layer surrounded by four flak-ships all at anchor in the harbour. They attacked, but the torpedoes were swept from their course by the tide. As one of the Beauforts turned away it was hit and the elevator controls severed. The pilot, however, succeeded in flying his aircraft safely home by juggling with the throttle and elevator trimmer. "Surprisingly enough the elevator had a marked effect on the aircraft's trim despite the fact that the fore and aft controls were severed." On reaching base in very bad weather, with clouds down to 50 feet, he was seen to pass over the aerodrome, but he could not turn the aircraft in its crippled condition enough to regain it. He followed the coast and, although the flaps of the Beaufort were out of action, made a successful landing on another aerodrome with most of his crew wounded.

More than one reference has been made to crash-landings in this account. They have to

be made when the undercarriage is unserviceable and the wheels will not, therefore, drop. Here is what happened on a March day in 1941 to a Beaufort which had scored a hit on a destroyer off the Ile de Batz and had been hit by a shell which destroyed the hydraulic system, rendering all the turrets and the undercarriage unserviceable.

"On reaching base," says the account, "the Squadron Leader circled the aerodrome for an hour to consume all his petrol. While doing so his air gunner, a large man, succeeded in climbing out of the turret and into the tail in an effort to staunch the holes in the pipes with rags, but in this he was not successful. The pilot spoke to the ground, saying: 'We will crash-land. Keep us some tea.' To crash-land it was necessary to fly the aircraft straight on to the ground, throttle back at the last moment and then cut off the engines. This he did and the aircraft skidded 120 yards along the runway, structure and dust flying up on either side. The starboard propeller shot off and spun along in front of the aircraft on its tips like a wheel. The pilot thought at any moment that it would pierce the perspex windows of the cockpit. 'The funny thing,' he said afterwards, 'about getting out of a crashed aircraft is when you step down. You go straight on to the ground without having to climb down by means of the usual footholds.'"

Much has also been said of the activity of the flak-ships. The Germans are using them in ever-increasing numbers to protect shipping, of which the value, always great, grows daily. Sometimes as many as five have been observed escorting a single merchant vessel. Their crews are not unnaturally light on the trigger. "Just as we were right over the ship it spotted us," reported the pilot of a Hudson who met one such vessel off Norway. "The Germans opened up first with machine-gun fire, then the heavier guns started firing. It seemed to me, at that moment, that they were throwing up everything at us except the ship herself." It was bombed and left burning.

The torpedo attacks continued, the majority being carried out during Rover patrols. On 23rd October, 1940, for example, a German convoy off Schiermonnikoog, made up of nine merchant vessels and three flak-ships, was attacked by two Beauforts, the largest vessel

being sunk and the second largest left listing heavily to port. Here again the anti-aircraft fire was intense, but its accuracy poor, possibly because the Beauforts, when retreating after loosing their torpedoes, had the help of a 40-mile-an-hour wind behind their tails. On 8th November three Beauforts attacked a merchant ship off Norderney. All torpedoes missed, but in taking avoiding action the ship ran aground and became a total loss. The next day a torpedo running strong and straight towards a vessel off Borkum hit a sandbank and exploded, doing no harm. The state of the tide had saved the enemy.

During 1941 torpedo attacks increased. They were made not only off the Dutch, Belgian and Danish coasts, but also along the Norwegian coast. On 9th February, for example, three Beauforts attacked six destroyers off Norway and hit two of them. On 2nd March a large merchant vessel was hit off the Danish coast and left on fire. On the 12th an enemy destroyer was blown up in moonlight off the Norwegian coast.

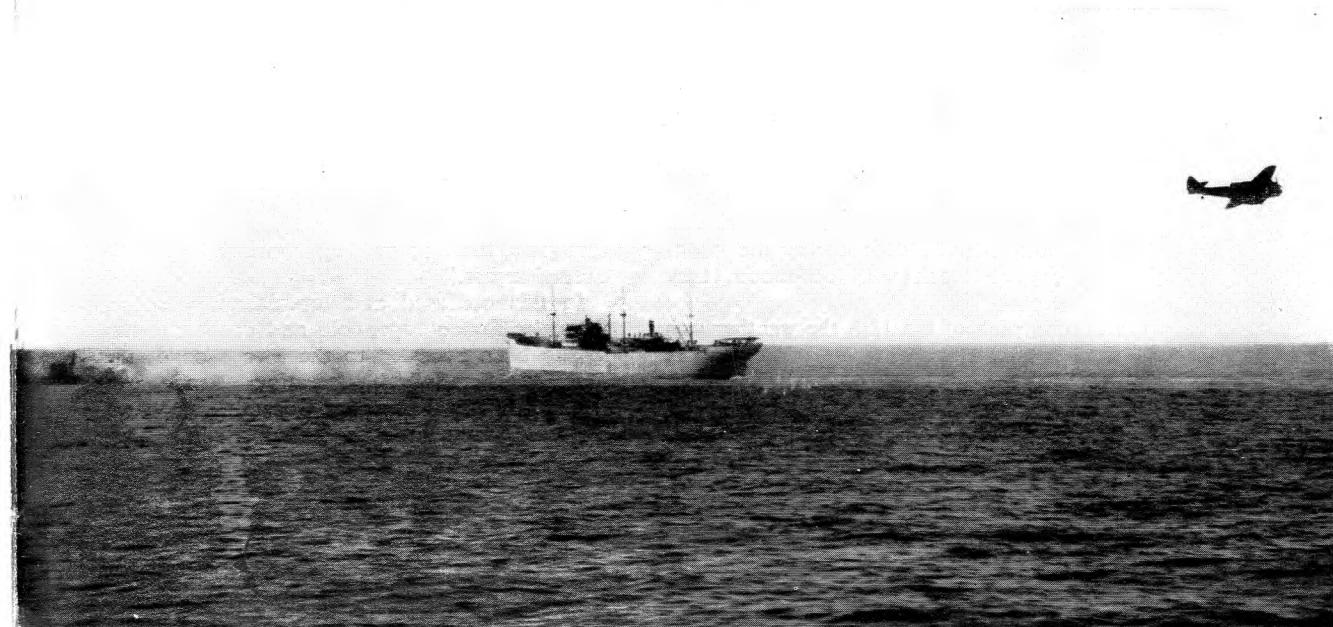
Early in September a fierce action was fought near Stavanger between Beauforts seeking to torpedo a large tanker and Me.109s which came to its rescue. The tanker was hit by two torpedoes, an escort vessel by one, and a Me.109 shot down. One Beaufort was lost. Another

which returned safely entered cloud cover only twenty yards ahead of the German fighters. A little later in the month a cargo vessel was set on fire near the Lister Light.

The catalogue of attacks is a long one. A few items in it have been mentioned. There is not space for more. In twelve months 126 attacks by torpedo were made. Between January and September 1941 87,000 tons of enemy shipping were sunk. Two more attacks must be described. On 12th June, 1941, a Blenheim on reconnaissance emerging from clouds some miles South of the Lister Light saw, 1,000 feet below, four or five enemy destroyers screening a much larger vessel, coloured light grey, steaming North-West. The larger vessel was almost certainly the "Lützow," and it seems probable that she had put out with the object of raiding our commerce in the Atlantic. In addition to her destroyer escort, the pocket-battleship had an escort of Me.109 and Me.110 fighters. The Blenheim slipped back into the clouds. It was then one minute before midnight.

On receipt of its message a striking force of Beauforts was sent from a Scottish aerodrome to attack with torpedoes. At 2.20 in the morning of the 13th June—it must be remembered that in those latitudes, at that time of the year, there is almost no darkness—one

"They were throwing up everything at us except the ship herself." A flak-ship (extreme left) firing all her guns at the Beaufort, which has attacked a large enemy motor-vessel.



of the Beauforts attacked the enemy. It flew low, crossed just above one of the protecting destroyers, and released its torpedo at a range of 700 yards. As the aircraft broke away the air gunner and wireless operator both saw a column of water leap from the "Lützow" amidships, and this was followed by a dense cloud of smoke. A few minutes later a second Beaufort arrived on the scene, which the destroyers were busily engaged in obscuring by means of smoke. The second torpedo was fired from 1,000 yards into this artificial haze and almost certainly hit the pocket-battleship. She was picked up again later by Blenheims of Coastal Command, which, together with Beauforts, shadowed her for many hours. By this time she and her escort had turned about and were making for the Skagerrak at reduced speed. The "Lützow" subsequently put into a North-West German base for repairs.

The "Scharnhorst," "Gneisenau" and "Prinz Eugen," it will be remembered, were attacked by aircraft of Coastal Command on 63 occasions in 1941. On 12th February, 1942, they broke out of Brest and, passing through the Channel, reached the safety of their home bases. In their dash to the North Sea and the Heligoland Bight, a manoeuvre executed with skill and determination, they had the great advantage of thick weather.

Besides making it impossible for a large number of aircraft of Bomber Command to find and bomb them and forcing those who did to release their bombs from an altitude too low to do them very great hurt, it prevented aircraft of Coastal Command from discovering their departure.

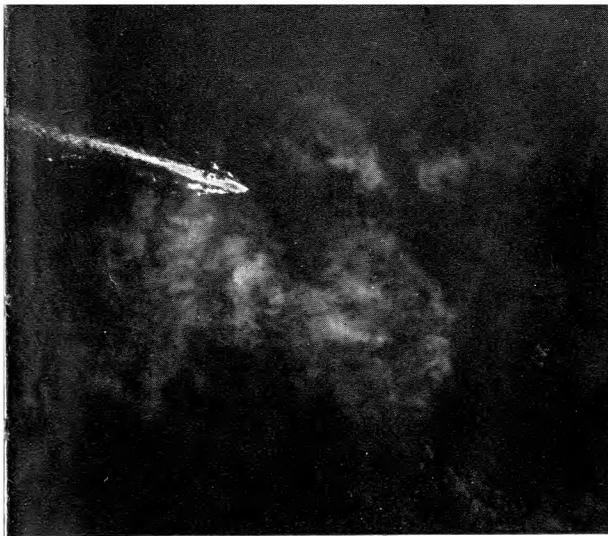
On the night of 11th/12th February the usual patrols over Brest were flown from dusk to dawn. A reconnaissance on the previous afternoon had revealed both battle-cruisers berthed at the torpedo-boat station, protected by anti-torpedo booms, and the "Prinz Eugen" at the coaling wharf. Six destroyers were also in the harbour. Some time during the night, which was pitch black with no moon, they slipped out.

On the morning of the 12th the weather was still thick and nothing was seen. A report received by Headquarters, Coastal Command, at 11.28 stated that a large enemy naval force, including the "Scharnhorst," "Gneisenau"

and "Prinz Eugen," had been sighted between Berck and Le Touquet. A Beaufort, a Whitley and two Beaufighters were at once ordered off to shadow this force, while Hudsons and Beauforts, provided with fighter escort, endeavoured to deliver bombing attacks in the early hours of the afternoon. The weather was so thick that they achieved no result and it proved very difficult for the Hudsons and Beauforts to maintain contact with the fighter escort. Beauforts carrying torpedoes delivered attacks off Holland, which were possibly more successful. One Squadron did so only at its second attempt. At the first the enemy was not found. At least three torpedoes were observed to be running strongly towards the targets and one crew reported that they had seen an enemy warship listing badly with smoke pouring from her bows. The Beauforts were subjected to very fierce anti-aircraft fire and to severe fighter opposition.

Most of them found the enemy by the simple process of running into heavy flak fired by unseen ships. One made three attempts to attack, but was by that time so badly damaged that its torpedo could not be released. "I saw my leader waggle his wing," runs the account of one pilot. "That meant that he had seen the ships. . . . The 'Prinz Eugen' was steaming along very slowly at the head of a tremendous line of ships. Destroyers were trying to lay a smoke-screen round her. . . . At that moment I saw two Me.109s fly across in front of me. . . . They circled to get on our tail and the 'Prinz Eugen' was in my sights." He dropped his torpedo and then the Beaufort became involved in a heavy fight with the Messerschmitts. One of them was shot down and the other made off. "My Beaufort was hit in twelve places. . . . A bullet had gone through a propeller and a cannon shell had ploughed a furrow in the tail-plane. The action was fought very near to Over Flakke Island off the Dutch coast. We thought the name appropriate in the circumstances."

In this confused and unsatisfactory action the palm for courage, cold and unshaken, has rightly been awarded to the Swordfish of the Fleet Air Arm, which, operating from one of the South coast bases of Coastal Command, delivered their attacks about noon. They



The pocket-battleship "Lützow," sighted on 12th June, 1941, was attacked by Beauforts which almost certainly scored two torpedo-hits.

came in low in two flights of three in the face of tremendous and accurate anti-aircraft fire, with swarms of enemy fighters about them, and all discharged their torpedoes. They were all shot down, and of the eighteen members of their crews only five survived.

The next occasion on which the "Prinz Eugen" was attacked by Coastal Command was on 17th May, 1942, when she was found off the Southern tip of Norway steaming southward. She was on her way to a German port for repairs made necessary because of the damage inflicted on her by H.M. Submarine "Trident." The attack was carried out by Hudsons and torpedo-carrying Beauforts escorted by Beaufighters and Blenheims. It was pressed home with the greatest determination in the teeth of heavy anti-aircraft and fighter opposition. The Beaufighters, sweeping ahead, raked the decks of the German vessels with cannon and machine-gun fire while the Hudsons and the torpedo bombers went in to the attack. In this action the rear gunner of one of the Beauforts beat off a series of attacks by enemy fighters lasting 35 minutes, though one of his guns had jammed and he himself had been wounded in the face, hands, legs and head. Five enemy fighters were shot down, and we lost nine aircraft.

The attacks by Coastal Command on enemy shipping have, as yet, reached no climax and

no end. All that they have so far achieved cannot be known. Not every German convoy is sighted, not every ship attacked sinks. The other side of the North Sea is often shrouded in mist, literally and metaphorically. At times it lifts for a moment to disclose a tanker or a supply vessel with their waspish escort of destroyers or flak-ships, and it is possible to catch a glimpse of what the enemy is using to maintain the flow of his supplies and of the difficulties and troubles he is encountering. That these are great and increasing there is much evidence to show.

The success of our operations, however, is not to be measured merely in terms of shipping sunk. If the enemy loses a large number in any one place the obvious inference is that he is using this particular route very frequently, and that therefore for each ship sunk several very probably get through. On other routes the number of sinkings may be smaller because the menace of air attack is so great that the Germans can no longer accept the losses incurred by following them, and have been obliged to find other means of transport. There is no doubt that important trade routes have had to be abandoned in the face of our air attacks.

It is impossible for our air attacks, with the resources available at present, completely to stop all coastwise traffic. Moreover, the state of the weather must always be a factor of cardinal importance. Aircraft of Coastal Command cannot, as yet, operate heedless of cloud cover. Fighter protection is not always possible; the waters in which targets are to be found are too far off. Blenheims, Beauforts and Hudsons must still go out into the murk of a foggy day alone and unescorted to strike at such targets, themselves the target for German fighters, swift to engage from aerodromes near the coast, and for the fierce fire of ships desperate in defence.

Sometimes a "strike" is what the word implies—one clean stroke carried out in the course of a single flight. Sometimes it is a running engagement which must be fought against opposition that will increase as the minutes and the hours go by. In the two short hours which must elapse between the moment when the presence of a ship within range is signalled and the moment when the striking

force arrives to attack it, that ship can vanish into a protecting curtain of mist or a narrow, cliff-bound fjord. To fight such an enemy is often to fight a shadow.

Shall I strike at it with my partisan? . . .

'Tis here,

'Tis here,

'Tis gone.

Yet a steady toll is taken. Day by day the score mounts, the burden on the enemy's railways, roads and canals increases. A time will come when it will prove too heavy, and then the sustained effort, the unwearying persistence of Coastal Command will have their reward.

15: Their Spirit is Serene

THIS STORY is an attempt to describe the exploits of a force still at close grips with the enemy. It is therefore a chronicle of contemporary events and as such must fall far short of the whole truth. The pattern of their deeds is being woven on the loom of history by the pilots and crews of Coastal Command; but the tapestry is not yet complete. Not until, bright with the gold of victory, the last threads have been drawn into place will the finished picture be seen in all its detail of triumph and setback, of courage, hardihood and achievement. Yet the general design and its many outlines are clear enough.

It is a seascape, the largest yet depicted, for it embraces most of the Atlantic Ocean. To fight and win the Battle of the Atlantic has always been the main task of Coastal Command. It carries this out in many ways—by protecting convoys, by anti-submarine sweeps and patrols, by “strikes” against U-boats and surface raiders, by combat with enemy aircraft, by attacking his bases, by unending reconnaissance over the sea and along his coasts. All this

activity is directed to one end: to aid the Royal Navy in frustrating the enemy's endeavour to blockade Great Britain and to prevent supplies from passing into her ports or out of them.

In the fulfilment of these duties aircraft of Coastal Command, between 3rd September, 1939, and 30th September, 1942, has escorted 4,947 merchant convoys, attacked 587 U-boats, and, if offensive operations against enemy shipping are included, flown some 55 million miles. This is a considerable achievement, especially if it is realised that to attain such a rhythm of activity the force has had to undergo a considerable expansion from a comparatively small beginning.

Nor is this all. Coastal Command is not, and never has been, only on the defensive. It is not merely content with striking down the attacker in whatever guise he may show himself. It carries the war into his own waters. The mine, the torpedo, the bomb—all three are to be found in its armoury. The first and second have taken a heavy toll of the enemy's shipping; the third has, in addition, lit many a fire and blasted many a hole in the buildings and workshops of his bases.

Coastal Command is an air force in miniature. Its Sunderlands and Catalinas range the ocean to protect our ships; so likewise do its Beaufofts and Blenheims, its Whitleys and Wellingtons, its Hudsons and Liberators, but they are also a bombing force capable of instant use against a wide choice of targets; its Beaufighters and Blenheim fighters join combat with the Luftwaffe at ranges beyond those within the compass of Fighter Command. It is an amphibious force in the sense that, though its element is the air, it makes use of both land and sea to provide it with bases from which to set out against the enemy. Its aircraft fly over the restless waters of the Atlantic, the Channel and the North Sea, over the pack-ice about the shores of Greenland, over the desert scrub and palms of West Africa, over the stern mountains of Norway and Iceland, over the wide fields of France, over the iron and concrete buildings of Reykjavik, the wooden houses of Trondhjem, the brick-built mansions of Rotterdam, the lighted windows of Nantes.

Theirs is a wide and varied battle-field. With other Commands, they experience the triple onslaught of flak, fighters and bad weather;

but for Coastal Command the last is of special significance. Not once but many times have flying boats been compelled to circle for hours till dawn because low cloud, fog, rain, snow or mist made alighting on the sea impossible in darkness. The weather forecasts, much of them based on the reports furnished by the pilots of the Met. flights carried out daily by the Command, have a peculiar value for men whose calling takes them for many hours many miles from land over the bounding and abounding waves.

What do the pilots and crews of Coastal Command see during their strong, monotonous flight? Such things as these: the curve of the shore as they leave and approach it, and grey mist smoking from the surface of the sea; and the wake of a ship in moonlight, and the bubbles bursting in the track of a torpedo; and the coloured balls of flak which come up so slowly and then arrive with a sudden, furious rush; and the light foam about a periscope; and the circles made by depth charges; and always

the expanse of ocean with the clouds overhead, and sometimes upon it a patch of oil . . . an empty raft . . . an upturned boat . . .

It is time to leave them. Their story has in part been told. Many fine achievements lie behind them; many more will be theirs before this war is over. Their spirit is serene, for, though humble of heart and at times envious of their comrades whose duties bring them into more frequent contact with the common foe, they know the importance of their task.

As these words are being written some of them are talking with their navigators, plotting the best course for a "Rover" along the moonlit shores of Holland, Belgium or France, others are being briefed for a "strike" on enemy shipping in a Norwegian fjord, others are landing from a U-boat patrol, others are resting before going aboard their flying boats for one more sortie over the Atlantic. They will take off in darkness and, with "no shapes but the keen stars" to guide them, they will be above the convoy at dawn.





THEY WILL BE ABOVE THE CONVOY AT DAWN

