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R.A.F. NARRATIVE

THE AIR DEFENCE OF GREAT BRITAIN

VOLUME V

THE STRUGGLE FOR AIR SUPREMACY
(January 1942 - May 1945)

Air Historical Branch (I)
Air Ministry

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PREFACE

This volume covers chronologically the defensive and offensive operations of Fighter Command or Air Defence Great Britain (as it became known on the formation of the Allied Expeditionary Air Force to support the Allied landings on the continent) by day and by night for the period 1942 to the end of May 1944 - a few weeks before the beginning of the flying bomb attacks on southern England. The latter operations are dealt with in the following volume of this narrative. Air Defence Great Britain had an important part to play in covering the landing operations in June 1944 as well as in protecting the assembly for the amphibious operation and its activities are described in the narrative entitled 'The Liberation of Northwest Europe'. The final chapter of the present volume briefly notes the activities of Fighter Command other than those relating to Operation Overlord and countermeasures against the V weapons in the period June 1944 to May 1945.

By the beginning of 1942 the German bombing offensive against Great Britain had passed its peak and, in contradistinction, the R.A.F. bombing offensive against German cities and industry had begun to gather weight. The heaviest attacks against this country in the period under consideration were in the nature of reprisal raids. First, there were the Baedeker Raids against cities containing targets of no military importance, then the daylight low level raids by low-flying aircraft against towns on the south and east coasts. When those failed, fighter and high speed bombers were transferred to 'tip and run' raids by night and, finally, the 'Little Blitz' was launched against London early in 1944. All these attempts to shake British morale proved to be failures and only reflected the decline of the German bomber arm. The enemy did not persevere with air attacks against shipping, aerial minelaying and air raids on ports which might have yielded profitable results and with the adoption of a policy of reprisals they were to a large extent abandoned by the end of 1943.

The British air defences proved adequate to counter the enemy's bombing tactics and his measures for bomber support. Faster and better armed night fighters such as the Mosquito were introduced to which were fitted more efficient types of Air Interception equipment. The latter were, on the whole, unaffected by the enemy's attempts to jam or evade them. The daylight raider, although causing negligible damage to the war effort, was, nevertheless, a trial to the spirit of the civil population and was finally defeated by a combination of improved early warning equipment, a new deployment of ground defences and a satisfactory fighter (the Typhoon) able to operate effectively at low levels.

Since the end of 1940 Fighter Command had striven to act offensively beyond the Channel and such efforts had acquired additional importance with attempts to pin down a large enemy fighter force in the west and so assist the Russian Armies. The R.A.F. had, in 1942, to contend with a superior German fighter. Later the short range of the British fighters became a handicap as the G.A.F. usually evaded battle until the Allied fighters were at the limit of their endurance. But in the raid on Dieppe in August 1942 a major action was fought with the G.A.F. in which Fighter Command revealed its superiority, although the number of aircraft actually destroyed proved to be not as high as the numbers claimed to have been destroyed. The arrival of U.S. heavy day bombers and accompanying long-range fighters in Great Britain from 1942 onwards was a great asset to the offensive although the Mustang long-range fighter was not available in sufficient numbers to be effective until early 1944.

The fighter offensive did not achieve its purpose either in drawing off German aircraft from other more important theatres of war or in the destruction of enemy fighters and the effectiveness of the bombing of industrial targets and airfields in the course of these operations was

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over-estimated. Too high a proportion of Allied pilots was lost in relation to enemy fighter losses. But the offensive did provide valuable experience for future operations over the continent and in contrast to the R.A.F. the morale of the German fighter pilots declined, due in no small measure to the internecine disputes within the G.A.F. itself.

The G.A.F. for the greater part of this period retained no more than a holding force in the West and while Allied preparations for Operation Overlord compelled it to re-inforce its bomber arm (shortly to be expended in the raids on London in early 1944), yet this was effective in so far as it contained a very large number of fighter aircraft in this country that were urgently required in other theatres of war, particularly the Mediterranean. It is this policy, above anything else that when examined retrospectively, is open to question. It would appear that this degree of over-insurance was insisted upon by the Air Officer Commanding-in-Chief Fighter Command in order that he might retain a force adequate in strength to meet all possible eventualities. In 1942 the key actions in the Air War were fought in the Mediterranean Theatre - over Malta and the Western Desert. No comparable air actions were fought in the West. Yet a large force of Spitfires was kept in Great Britain at a time when air commanders in the Mediterranean Theatre were crying out for them. One of the chief characteristics of an air force - flexibility - was thus forsaken. By 1943 the need for up-to-date fighter aircraft overseas was less acute and, in the meantime, a high priority had been given to the task of converting the Metropolitan Air Force into an offensive force - to prepare the way for and to cover the re-entry into Europe.

By the end of 1943 air superiority over Great Britain had, by and large, been achieved and was being extended over France and the Low Countries. The full weight of Anglo-American air power was really borne home to the enemy in the first five months of 1944 and the building up of air superiority over the entire period under review was one of the principal reasons why the G.A.F. signally failed to oppose both the Allied preparations for the landings in Europe and the assault itself.

The assumption of the offensive by the Allies caused an inevitable diminution in the stature of Fighter Command and the extension of the war to other theatres made it necessary to withdraw aircraft from the home defences. Fighter Command from 1942 onwards tended to become a reservoir for fighter aircraft for Russia, the Middle East and the Far East. At home it provided the nucleus of the Tactical Air Force (later 2nd T.A.F.) which supported the landings on the continent. It also provided the nucleus of the support group for R.A.F. Bomber Command together with a number of officers experienced in intruder operations. Finally, the intricate system of control for the air support of Operation Overlord was based on the system of fighter control brought to perfection by Fighter Command. But even in the latter stages of the war the British Air Staff was unwilling to disperse the system for fighter control and early warning which had been evolved over the past four years.

The details of day and night fighter offensive operations in the narrative have been, in the main, confined to appendices as they were of such a repetitive character. Summaries of major raids against this country together with British and German orders of battle will also be found in the appendices. A list of the chief sources of the narrative is given below but reference should be made here to the R.A.F. Signals History Volume IV 'Radar and Raid Reporting', Volume V 'Fighter Control and Interception' and Volume VII 'Radio Countermeasures' which are an indispensable adjunct to this volume. Full use has been made of German documents particularly with reference to aircraft losses and to reports of raids against this country.

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AIR DEFENCE OF GREAT BRITAIN

VOLUME V

THE STRUGGLE FOR AIR SUPREMACY 1942-1945

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| <u>Subject</u> | <u>A.H.B. Shelf Mark or alternative classification</u> |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Chief of the Air Staff Folders | ID3/ |
| Vice Chief of the Air Staff Folders | ID7/-ID8/ |
| Secretary of State for Air Folders | ID/5 |
| Deputy Chief of the Air Staff Folders | ID4/ |
| Night Air Defence Committee Papers | Unindexed portfolio (1940-1944) |
| Chiefs of Staff Committee Papers | C.O.S. (42) etc. (to be found under A.H.B. shelf marks) |
| Air Ministry Files (Most Secret and Secret) | A.M. (C.S. or S.) |
| Assistant Chief of Air Staff (Operations) Files | ID/12/ |
| Director of Fighter Operations (Home) Files | Under various A.H.B. Shelf Marks |
| Director of Bomber Operations Files | II/69/, II/70/ |
| Air Marshal Sir Sholto Douglas (A.O.C.-in-C. F. Cmd.) - Flimsies | Unindexed |
| Air Marshal Sir Sholto Douglas (A.O.C.-in-C. F. Cmd.) - Folders | W.S.D./S. (unindexed) |
| Air Marshal Sir Trafford Leigh Mallory (A.O.C.-in-C. F. Cmd.) - Folders | IIS/110/ |
| Joint Intelligence Sub-Committee Papers | J.I.C. (to be found under A.H.B. Shelf Marks) |
| Air Interception Committee Papers | IIK/85/88A-B |
| Combined Operational Planning Committee Papers | IIA1/29/1/ |
| Air Warfare Analysis Section Papers | IIIB/47/3-4 |
| Key Points Intelligence Branch - Damage Appreciations (Ministry of Home Security) | Unindexed Volumes 14-15 |
| A General Report of Damage to Key Point Targets affecting the National War Effort (Ministry of Home Security) | VID/18 A-G |
| Air Ministry War Room Monthly Summary of Fighter Command Operations | IIH/89 |
| Fighter Command Files | IIH/240/, F.C./S. (unindexed) |
| No. 11 Group Files | IIH/243/ |

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| <u>Subject</u> | <u>A.H.B. Shelf Mark or alternative classification</u> |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| No. 12 Group Files | IIH/252/ |
| Army Co-operation Command Files | IIL/ |
| Fighter Command/A.D.G.B. Operations Record Book and Appendices | IIM/ A2/ A-5A |
| Fighter Command/A.D.G.B. Operational Research Section Reports | II/39/2 |
| Army Co-operation Command Operations Record Book | IIM/A25/2A-3A |
| No. 2 Group Operations Record Book | IIM/132/2 |
| No. 83 Group Operations Record Book | IIM/B83/1 |
| Fighter Command/A.D.G.B. Form 'Y' 1942-1944 | In Quarterly Volumes (unindexed) |
| Assistant Director of Intelligence (K) Reports | IIG/29 |
| Fighter Command Interception Unit Operations Record Book and Appendices | IIM/FA140/1 |
| Despatch on the Anti-Aircraft Defence of the United Kingdom by General Sir Frederick Pile | IID/50 |
| Translations of German Documents (Orders of Battle, Casualty Returns, Raid Reports etc.) | A.H.B. 6 |
| Fighter Squadrons Operations Record Books | IIM/Sqdn. No. |
| Dossiers of Tactical Targets prepared by A.I.30(1) 1943-1944 | Unindexed |

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CHRONOLOGY OF IMPORTANT EVENTS

1942

| | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 21 January | Counter Attack by Rommel's forces in Western Desert |
| 28 January | U.S. Military Headquarters in England established under General J. E. Chaney |
| 31 January | General Ira Eaker designated Commander of U.S.A.A.F. Bomber Force in Great Britain |
| 11/12 February | Escape of Scharnhorst, Gneisenau and Prinz Eugen from Brest |
| 22 February | Advanced Detachment of VIIIth U.S. Air Force arrived in Great Britain |
| 27/28 February | Operating Biting - combined operations raid on German radar station at Bruneval |
| 13 March | Air Staff authorised resumption of Circus operations to hamper build-up of G.A.F. |
| 7/8 April | Peak of enemy air attacks on Malta |
| 15 April | Establishment of Headquarters VIIIth U.S. Air Force Bomber Command at High Wycombe, Bucks. |
| 23/24 April | Start of Baedeker Raids with attack on Exeter. |
| 7-10 May | Spitfire reinforcements for Malta arrived by aircraft carrier |
| 8/9 May | Conclusion of Baedeker raids with attack on Norwich |
| 7 July | General Carl Spaatz appointed Commanding General U.S.A.A.F. in Europe |
| 28/29 - 30/31 July | Raids on Birmingham |
| 17 August | First bombing operations by VIIIth U.S. Air Force against Rouen railway centre |
| 19 August | Operation Jubilee - Combined Operation against Dieppe |
| 26 September | Loss of No. 133 (Eagle) Squadron in offensive sweep over northern France |
| 23/24 October | Eighth Army offensive began at El Alamein |
| 31 October/ 1 November | Day and night attack on Canterbury |
| 8 November | Allied forces landed in French North Africa under command of Lieutenant-General D. Eisenhower |
| 28 November | Air Marshal T. L. Leigh Mallory succeeded Air Marshal Sir Sholto Douglas as Air Officer Commanding-in-Chief Fighter Command. |

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1943

- 17/18 January Reprisal raid on London by 118 enemy aircraft -- six lost.
- 20 January Raid on London by fighters and fighter-bombers -- nine lost.
- 20/21 January First claim for enemy aircraft destroyed by night fighter equipped with A.I. Mark VIII.
- 21 January Casablanca Directive defining primary objectives of Combined Bomber Offensive issued.
- 27 January First U.S.A.A.F. raid on Germany. Emden and Wilhelmshaven attacked by Fortresses and Liberators.
- 2 February Russian victory at Stalingrad
- 25 February R.A.F. Bomber Command began 'Round the Clock' bombing.
- 4-12 March Exercise Spartan -- Test of Mobile Composite Group.
- 11 March Increased low level daylight attacks by fighter bombers against south and south-east coasts began.
- 19 March Formation of No. 83 (Mobile) Composite Group.
- 20 March Appointment of Colonel (later Generalmajor) Dietrich Peltz to Angriffsfuehrer England.
- 16/17 April First enemy fighter bomber raid by night on southern England.
- 1 June Dissolution of Army Co-operation Command and formation of Tactical Air Force under Air Marshal J. H. D'Albiac -- operationally under Fighter Command. No. 2 Group transferred to T.A.F. from R.A.F. Bomber Command.
- 6 June End of low level daylight attacks against south and south-east coasts.
- 10 June Pointblank Directive issued.
- 30 June Beginning of Serrate operations against German A.I. fitted night fighter.
- 9 July Virtual end of daylight air attacks on Great Britain.
- 10 July Allied troops landed on Sicily.
- 15 July Chief of Air Staff authorised use of Window.
No. 84 (Mobile) Composite Group formed.
No. 14 Group amalgamated with No. 13 Group.
- 16 August Beginning of preparatory operations for Starkey (feint attack on Boulogne -- Le Touquet coastline).
- 20 August Heavy attack by R.A.F. Bomber Command on Peenemunde (experimental station for V weapons).
- 20 August Air Marshal Sir Trafford Leigh Mallory designated Air Commander-in-Chief for Operation Overlord.
- 27 August First attack on suspected guided missile site at Watten, Pas de Calais.

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1943 (Contd.)

| | |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 September | Operation Starkey. No enemy reaction. |
| 6/7 October | Beginning of spasmodic night raids on London by high-speed bombers. |
| 7/8 October | Enemy used Window (Duppel) for first time in raid on south-east England. |
| 14 October | VIIIth U.S. Air Force attack on Schweinfurt: heavy losses. |
| 16 October | Formation of Ninth U.S. Air Force at Sunningdale, Berks. |
| 5 November | Intensive attacks by T.A.F. and Ninth U.S. Air Force on Crossbow targets in northern France began. |
| 15 November | Formation of Allied Expeditionary Air Force under Air Marshal Sir Trafford Leigh Mallory. Fighter Command redesignated Air Defence Great Britain under Air Marshal R. M. Hill. Placed with the 2nd T.A.F. (formerly T.A.F.) under command of A.E.A.F. |
| 15 December | Ninth U.S. Air Force came under control of Headquarters A.E.A.F. |
| 17 December | Formation of No. 85 (Base) Group at Uxbridge. (Temporarily under operational control of A.D.G.B.). |
| 1944 | |
| 21 January | Air Marshal Sir A. Coningham assumed command of 2nd T.A.F. |
| 21/22 January | German air attacks on London recommenced (447 aircraft - 43 lost). |
| 2 February | Headquarters 2nd T.A.F. opened at Uxbridge. |
| 23/24 February | Start of the 'Big Week' - attacks by day and night heavy bombers against German aircraft industry. |
| 6/7 March | R.A.F. Bomber Command began attacks against French and German railway targets in preparations for Operation Overlord. Air operations against France and Low countries gather weight. |
| 18/19 April | Final raid on London. |
| 25/26 April- 29/30 May | Abortive attacks by G.A.F. on shipping concentrations on south coast. |
| 1 May | A.I. Mark VIII released for use beyond Channel. |
| 4 June | A.I. Mark X released for use beyond Channel. |
| 6 June | Allied landings in Normandy. |
| 12/13 June | First Flying Bombs landed in southern England. |

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1944 (Contd.)

- 27/28 June Last enemy intruder attack on British airfield until March 1945.
- 27 August R.A.F. Bomber Command recommenced daylight attacks against the Ruhr with A.D.G.B. escort.
- 8 September First V.2 Rockets fell on England.
- 15 October Air Defence Great Britain redesignated Fighter Command.

1945

- 27 March Last V.2 rocket fell on England.
- 29 March Last flying bomb attack on England.
- 4 May Last offensive operation by Fighter Command flown over Kiel Bay.
- 8 May V.E. Day.

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PART I

THE AIR DEFENCE OF THE UNITED KINGDOM

1942

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CHAPTER 1

INTRODUCTORY

At the close of 1941, Fighter Command was able to look back upon the year with some satisfaction. The failure of the German air offensive by day in 1940 had been followed by an equal, if less spectacular, failure in 1941 to reduce Great Britain by bombardment from the air by night.⁽¹⁾ The handicap under which Fighter Command had laboured in its inability successfully to intercept the night bomber was largely removed by the great improvement made in the field of radar, which not only brought results in the number of enemy aircraft shot down but removed the feeling of impotence which ultimately might have impaired the efficiency of the Command.

What was more satisfactory from the viewpoint of Fighter Command was the beginning of offensive operations and the policy of carrying the fight to the enemy was adopted by the development of fighter sweeps and circus operations. These consisted of a considerable force of fighter aircraft which crossed the French coast and swept certain coastal areas of North-west France with the object of drawing up enemy fighters and engaging them at a tactical disadvantage. The reluctance of the German Air Force to be drawn into such engagements, however, necessitated the inclusion of bomber aircraft (initially Blenheims and later Stirlings and Hampdens) for the dual purpose of attacking military objectives and inducing German fighters to engage in their defence.

With the German attack upon Russia, in June 1941, Fighter Command's offensive operations became an integral part of the policy for affording assistance to the Russians. By intensifying operations, it was considered possible to hold down in North-west France a large enemy fighter force, which otherwise could have been usefully employed on the Eastern Front and, also, to force the withdrawal of units from East to West to strengthen the fighter defences of North-west France. This policy, however, met with little success and there is no evidence that any units were withdrawn from the Russian Front to counter the Fighter Command offensive. Two experienced fighter Geschwader were certainly retained in Northern France but it is in any event most unlikely that the enemy would have entirely denuded Northern France of first-line fighters. At least the threat of an offensive would always have existed. Moreover, British casualties were much heavier than those of the enemy, with the result that after August 1941, it was decided to restrict the offensive and conserve aircraft for operations during 1942.

This decision was also connected with the entry of the United States of America into the war in December 1941. This meant the addition of a powerful ally but, at the same time, resulted in a diminution in the supply of war material both to this country and to Russia, so that the demands from Russia for material aid became as pressing as did those from the Middle and Far East theatres.

(1) See R.A.F. Narrative 'Air Defence of Great Britain' vols. III and IV. Unless otherwise indicated, this introduction is extracted from these two volumes and from a review of Fighter Command during 1941 in A.H.B./II/73/1.

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Although the Fighter Command offensive did not bring the successes which had been hoped for, one aspect of the offensive proved satisfactory. This was the 'Channel Stop' which was designed to prevent the passage of enemy shipping through the Straits of Dover or at least to make it an extremely hazardous operation. Blenheim bombers were used at the beginning of 1941 but the task was later undertaken by Fighter Command using Hurricane fighter-bombers. Their efforts brought about a substantial reduction in the volume of enemy shipping through the Straits.

The threat of invasion and of a German return to an all-out air offensive, however, made the year primarily one of expansion and improvement of the air defence system and the offensive role was still of secondary importance. Throughout 1941 the effort devoted by Fighter Command to the defensive was thus much greater than that devoted to the offensive and approximately two thirds of the sorties flown during July, the peak month of offensive operations, were directly concerned with the protection of shipping within forty miles of the British coast.(1)

The story of Fighter Command in 1941, may thus be summarised under three main headings:-

- (a) The day and night defence of Great Britain against air attack and possible invasion.
- (b) The day and night offensive against the enemy, chiefly over occupied territory.
- (c) The protection of convoys and shipping.

At the beginning of 1942 Fighter Command's first-line fighter strength stood at sixty-six day and twenty-five night squadrons. The defence of the country from air attack and possible invasion was still of primary importance. Hardly less vital was the defence of shipping; and the development of the fighter offensive in Europe had to be balanced against the need for reinforcement in other war theatres.

During 1941 Great Britain had acquired two new allies, Russia and the United States, and one more enemy, Japan. How long Russian resistance would last was problematic and in the Middle East the outcome of the struggle in the Western Desert remained undecided. Malta survived but only just, while the effect of the entry of the United States into the war was as yet unfelt. In the Far East, Japan's initial success was swift and far-reaching and few aircraft could be spared to help to halt her advance. This is the uncertain background against which Fighter Command must be viewed at the beginning of 1942. The Command was restricted in its operations to Western Europe but by success or failure in the solution of its problems, it could exert a strong influence upon the results of operations in several theatres of war.

Fighter Command
O.R.B., App.,
Jan. 1942
A.H.B./IIM/AZ/3A.

| | | |
|-----|-----------------------------------------------------------------|----------------|
| (1) | Fighter Command flew the following sorties by day during 1941:- | |
| | Offensive | 27,995 |
| | Defence of Shipping | 51,194 |
| | Other Defensive | 47,914 |
| | <u>Total</u> | <u>127,103</u> |

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CHAPTER 2

THE AIR DEFENCE OF THE UNITED KINGDOM IN THE
EVENT OF INVASION

The Role of Fighter Command in an Invasion

Before describing the German air attacks on this country during 1942 and Fighter Command's attempts to defeat them, it is convenient to give an outline of the various plans, which Fighter Command prepared, to deal with a possible German invasion of this country. Such plans were happily never implemented but a short study of them achieves two objects. It shows that, in spite of the beginning of offensive fighter operations during the previous year and a slight improvement in the general war situation, a good deal of time and energy was still devoted to the subject of invasion, during the first half of 1942. Secondly, from the broad strategical aspect, it helps to form a link between the history of Fighter Command during 1940 - 1941-and 1942; it throws into clearer relief the chief responsibilities of the Command and shows how these were beginning to change in 1942.

Air Staff Memo
on Invasion,
30 July 1940
A.H.B. IIL/46/37

On 30 July 1940 the Air Staff issued a memorandum detailing the roles of Fighter, Bomber and Coastal Commands in the event of a German invasion of the United Kingdom. It remained in force throughout 1941 and 1942, and formed the basis for all Air Force anti-invasion planning.

Ibid, Encl. IA.

The memorandum assumed that the enemy's first act would be to attempt, at least in the assault area, to establish air supremacy. This meant that a strong air offensive would be launched against fighters in the air, fighter airfields, the fighter control organisation and the aircraft industry and would constitute the first phase of the invasion. The task of Fighter Command would therefore be to meet and defeat the attack on its own organisation and that on the aircraft industry. Another preliminary stage might consist of heavy air attacks on our naval forces and their bases, in which case Fighter Command would be instructed to deal with such attacks as effectively as its resources would allow.

Ibid.

Should the enemy undertake airborne operations, possibly against Northern Scotland or Southern Ireland, or with a view to seizing a port of disembarkation for a seaborne invasion, the task of Fighter Command would be to destroy enemy tank-carrying aircraft, troop carriers, bombers and fighters in that order of priority. If a seaborne expedition approached simultaneously with an airborne attack, the Air Officer Commanding-in-Chief, Fighter Command was to be guided by the principle that the protection of our naval forces at sea was to rank equally with the destruction of airborne landings near important ports. Both these latter tasks were to take precedence over the destruction of airborne landings, which might be taking place elsewhere.

A seaborne invasion would clearly consist of three principal phases:-

1. The concentration of shipping and troops at the points of departure.
2. The voyage from the Continental coasts to our own.

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3. The establishment of bridgeheads in this country.

During the first phase Fighter Command would need to provide protection within the limit of its range, for Bomber Command aircraft attacking embarkation ports. At the same time it would continue to destroy any enemy aircraft approaching the British coasts.

During the second phase its primary task would be to afford protection to our naval forces in action against enemy warships and transports, and to protect our bombers which would be attacking enemy ships.

During the third and vital phase, when the maximum German effort would be expended to obtain local air superiority, Fighter Command would direct its action against enemy aircraft in the area. It was pointed out, however, that if the invasion was to succeed the enemy would have to land and maintain his seaborne expedition. This could not be done unless our own naval forces had been neutralised and the order of priority for the destruction of enemy aircraft was therefore to be:-

Ibid.

- (i) Dive bombers operating against our naval forces
- (ii) Tank-carrying aircraft
- (iii) Troop-carrying aircraft
- (iv) Bombers
- (v) Fighters

It will be seen that Fighter Command was charged with the responsibility of carrying out a great number of complex tasks. Its ability to do so in 1942 would have depended on a variety of matters including the strength of the Command and its reserves, the amount of warning of invasion and the state of training which had been reached. In particular, it would have depended on the thoroughness and readiness of our anti-invasion planning.

Planning during the Autumn of 1941

By the end of July it was evident that the Germans were committed to a major campaign in Russia on a front of 1500 miles with substantially the whole of their first-line forces engaged. From a military point of view, it was inconceivable that the Germans could break off the offensive, until either they had made such territorial gains as would preclude further counter-action by the Russian forces, or the Russian armies had capitulated in the field. In view of Russian resistance, the Chiefs of Staff on 31 July 1941 agreed with the Joint Intelligence Committee, that an invasion could not be launched before 1 September 1941 at the earliest and that in all probability the respite would continue until the spring of 1942. Planning was therefore directed towards the possibility of invasion in the spring and early summer of 1942.

C.O.S.(41)
155 (0).
Defence Plans
of the U.K.
1939-1945.
A.H.B./IA/18,
Sect. 72.

A.M.File C.S.
2110, Encl. 8A.

In October 1941, the Director of Plans in conjunction with the Assistant Chief of Air Staff (Intelligence) Director of Fighter Operations, and the Deputy Director of Plans, whilst accepting the broad outlines of the Air Staff Memorandum described above, endeavoured to supplement the general plan by an analysis of the possible development of the war situation for

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the following six months and its effect upon the possibility of invasion. Four hypotheses were advanced in an attempt to assess the probable scale of enemy air attack and therefore the necessary strength of Fighter Command. These were:-

Ibid.

A.M. File C.S.
2110, Encl. 8A.

- (a) Complete German victory over Russia and a full scale air attack on Great Britain as a preliminary to invasion.
- (b) Stabilisation on the Russian front and a full scale air attack on Great Britain as a preliminary to invasion.
- (c) Complete German victory over Russia and the main German effort concentrated in the Mediterranean and Middle East theatres.
- (d) Stabilisation on the Russian front and the main German effort concentrated in the Mediterranean and Middle East theatre.⁽¹⁾

Under hypothesis (a) the minimum requirements of Fighter Command were assessed to be:-

| | <u>Day</u> | <u>Night and Ancillary</u> |
|-------|---------------------------------|----------------------------|
| Ibid. | First Line 1,424 (89 Squadrons) | 548 |
| | Reserves 1,200 (85%) | 135 (20%) |
| | Total 2,624 | 683 |

Of the eighty-nine day squadrons, twenty-three would be needed for the protection of shipping around the coasts of the British Isles and thirty-four would be needed to fight the main fighter versus fighter contest, which was expected to take place over South-east England. Twenty-three squadrons would be needed for the defence of other important towns and areas such as Scapa, Birmingham and Plymouth and nine would be used to meet particular demands in hard pressed areas or if Eire should be invaded. The high reserve figure of eighty-five per cent. was advanced, since it was assumed that Germany would be prepared to accept drastic losses to achieve her purpose. In this case, the battle for air superiority would virtually be converted into one between the reserve stocks of aircraft. Under hypothesis (b) the strength needed for (a) was considered equally necessary.

A.M. File C.S.
2110, Encl. 8A.

Under hypothesis (c) a reduction of sixteen squadrons would be acceptable, seven to be withdrawn from the defence of important towns and areas and the nine squadrons, which would be earmarked to meet diversions and the invasion of Eire. This would depend, however, on our ability to rapidly form replacement squadrons from reserves, should Germany later deploy her full force against the British Isles.

(1) Under these hypotheses the strength of the German Air Force likely to be employed was assessed as follows:

| <u>Assumption</u> | <u>Long Range Bombers</u> | <u>Bomber Recce.</u> | <u>Dive Bombers</u> | <u>Single-Engined Fighters</u> | <u>Twin-Engined Co-op Fighters</u> | <u>Army</u> | <u>Coastal</u> | <u>Total</u> |
|-------------------|---------------------------|----------------------|---------------------|--------------------------------|------------------------------------|-------------|----------------|--------------|
| Ibid. | (a) 1400 | 400 | 350 | 1000 | 450 | 350 | 200 | 4150 |
| | (b) 1170 | 320 | 200 | 700 | 360 | 180 | 170 | 3100 |
| | (c) 470 | 200 | 70 | 590 | 360 | 60 | 150 | 1900 |
| | (d) 370 | 200 | 70 | 410 | 335 | 60 | 155 | 1600 |

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A.M. File C.S.
2110, Encl. 8A.

Under hypothesis (d) a reduction of a further three squadrons would be accepted but a total of seventy day squadrons was considered to be the absolute minimum, so long as Germany was in a position to bring an air threat to bear on this country.

To combat enemy night bombing of vital centres, twenty-five specified night fighter squadrons were considered a rock-bottom minimum, excluding five Turbinlite Squadrons. Should the scale of attack reach such proportions, that the night squadrons were unable to deal with it effectively, it might be necessary to operate day fighters by night, notwithstanding the difficulties this would entail.

A.H.B./III/16/
21A, Encl. 21A.

The analysis thus envisaged a fighter force of eighty-nine day, twenty-five night and five Turbinlite squadrons. By January 1942 Fighter Command had progressed some way towards this target, having a front-line day strength of sixty-six squadrons, in addition to twenty-five night squadrons, including five Turbinlite squadrons. Whether the Command would reach the eighty-nine days squadron strength, however, remained extremely uncertain in view of the urgent demands from the Mediterranean, the Far East and Russia.

Planning: January - May 1942

(i) Dewing Committee Report: 4 January

C.O.S. 41(673),
14 Nov.
C.O.S. (41)
283(o), Dec.
1941.

Following upon the above appreciations, on 10 November 1941, the Chiefs of Staff decided to set up a special inter-service committee, headed by Major General R.H. Dewing, Air Vice-Marshal J.C. Slessor and Captain R.R. Stewart, to examine from the German viewpoint, the form and scale of an invasion of Great Britain in the spring of 1942. The report was issued on 4 January 1942 and became the basis for anti-invasion discussion and planning throughout the first half of the year. Although the report was based upon the possibility of invasion on or about 1 April 1942, the Chiefs of Staff intended that it should be reviewed every three or four months and so kept up to date.

A.M. File
S.12563, Encl.
3A.

C.O.S. (42)
84(o), 8 April.

In the opinion of the Dewing Committee an invasion in the spring was unlikely, since they did not think the German High Command would accept the very high losses that seemed probable. The Vice-Chiefs of Staff however thought that the Report had underestimated the enormous risks and losses which the German Command would be prepared to accept and they also criticised the 'German' plan of a frontal attack through Kent and Sussex.⁽¹⁾ Nevertheless the Report was regarded not so much as a guide on which our requirements of defence should be based, but rather as a useful investigation, which had brought to light certain questions requiring further attention.

Whilst not discountenancing the possibility of German landings in other parts of the British Isles, the Committee thought that South-east England was the area in which the main German attack could be expected. Moreover, this area offered the best

A.H.B./IA/18,
Sect. 103.

- (1) The Dewing Committee's estimate of the probable form of invasion was in fact almost identical with the actual German plan (Operation Sea Lion).

C.O.S. (41)
283(o).

C.O.S. (INV)
(41) 3.

C.O.S. (41)
283(o).

possibility for the German Air Force to secure the local air superiority, which would be essential for the launching of a seaborne invasion. It was assumed that the enemy would use all his reserve training units in the first-line, in which case he might be able to dispose some 2,400 bombers and 1,300 fighters, excluding reserves. (1) For airborne operations, it was estimated that by April 1942 the enemy might possess nearly 2,000 Ju.52's and 4,900 gliders. (2) This was admittedly the maximum force likely to be employed but it seemed certain that the enemy would use his maximum strength, even if this meant dislocating his training organisation, in order that the seaborne expedition might succeed in establishing a beach-head. A large share of the responsibility of the Defence of Great Britain against such a force would necessarily fall upon Fighter Command, whose plans for deployment in invasion must be briefly considered.

(ii) Deployment of Fighter Command

A.M. File
S.12563,
Encl. 8A.

A.H.B./IA/18
Sect. 92 and
A.H.B./IIL/16/
21A, Encl. 21A.

Having studied the Dewing Report, the Air Officer Commanding-in-Chief of Fighter Command stated unequivocally that 'the best way of preventing an invasion or of defeating it when it occurs is to maintain a strong Fighter Command..... The minimum strength required to ensure the defence of this country against invasion is 75 Day Fighter Squadrons and 30 Night Fighter Squadrons.... We must not let our fighter strength in this country drop below the safety level.' In January 1942 the actual strength of the Command was sixty-six day and twenty-five night squadrons. To this total of 1,484 aircraft must be added the fighter aircraft which would be available under the Banquet scheme. (3)

Note by A.V.M.
Slessor on Dewing
Committee Report, 12
Dec. 1941.

A.M. File S.12563,
Encl. 8A.

Although in general the Air Officer Commanding-in-Chief agreed with the many points concerning the fighter defence, which had been raised by the Dewing Committee, he criticised the suggestion that particular squadrons should be earmarked for specific tasks. The Royal Air Force member of the Committee had, for example, proposed special squadrons should be held in readiness both for attacking enemy fighters and laying smoke screens. The Air Officer Commanding-in-Chief wished to retain as much flexibility over his squadrons as possible, so that the greatest strength could be diverted to the area, which was most seriously threatened. Roulement between squadrons in Nos. 10 and 11 Groups and those in the northern groups already existed and would be maintained, in order that a high percentage of the Command's pilots would have battle experience.

C.O.S. (INV) (41) 3,
Appendix 'A'.

| (1) | <u>Long-Range Bombers</u> | <u>Dive Bombers</u> | <u>Single- Engined Fighters</u> | <u>Twin-Engined Fighters</u> | <u>Total</u> |
|-----------------|-------------------------------|-------------------------|-----------------------------------------|----------------------------------|--------------|
| Initial | | | | | |
| Equipment | 1,944 | 450 | 990 | 297 | 3,681 |
| Initial Reserve | 600 | 150 | 330 | 100 | 1,180 |
| Stored Reserve | 400 | 100 | 300 | 60 | 860 |
| Total | 2,944 | 700 | 1,620 | 457 | 5,721 |

C.O.S. (41)
283(o)

| | | |
|---------------------|---------------------------------|--------------|
| (2) <u>Gliders:</u> | D.F.S. 230 (type used in Crete) | 4,000 |
| | Co. 242 (freight carrier) | 800 |
| | Heavy tank-carriers | 100 |
| Total | | 4,900 |

(3) See below p. 10.

SECRET

8

A.M. File
S.12563, Encl.
8A.

Plans for the evacuation of the fighter airfields near the coast in Kent and Sussex had also been drawn up and it was intended to implement these in good time before the invasion took place. Thirteen of these airfields had already been mined and alternative airfields either had been or were about to be arranged. (1)

(iii) Use of Fighter Aircraft for Support tasks

A.H.B./ID/12/
117 passim.
A.M. File C.S.
12262, Encl.
20A.

During February the Air Staff considered the most effective way in which the specialised four-cannon night fighter squadrons could be used during an invasion. Their primary task would, of course, be the destruction by night of enemy troop and tank-carrying aircraft and gliders. But it seemed unlikely that the enemy would be able to maintain full scale night attacks at the same time as the necessary daylight offensive. It was therefore decided to use the four Cannon night fighters for various support tasks, including daylight attacks on enemy barges, tank landing craft and certain ground targets and on 8 March 1942 the Deputy Chief of Air Staff issued instructions and asked that training should begin immediately. Twelve of the total of sixteen squadrons (2) would remain at their present stations, while the remaining four squadrons were to be deployed in probable invasion areas, as soon as an invasion appeared to be imminent. (3) Training in low-flying tactics, army co-operation and recognition of ships and ground targets was arranged for all the sixteen squadrons and it was estimated that they would reach an adequate operational standard by 1 May 1942.

A.H.B./ID/12/
117.

Ibid.

C.O.S. (41) 246
(o), 4 Nov, 1941.
A.M. File C.S.
12262, Encl. 10A.

On 4 November 1941 the Chief of Air Staff had also asked that fifteen day squadrons should be exercised in support duties and training had begun in December. (4) Although in the first place this training was carried out as part of the anti-invasion planning, the War Office was at the beginning of 1942 worried about the ability of the Royal Air Force to provide

| <u>(1) Mined Airfield</u> | <u>Proposed Alternative Airfield</u> |
|---------------------------|--------------------------------------|
| Martlesham | Great Sampford |
| Bradwell | Castle Camps |
| Southend | Fairlop |
| Gravesend | * Radlett |
| Manston | Stapleford |
| Hawkinge | West Malling |
| Lympne | West Malling |
| Friston | Redhill |
| Shoreham | Redhill |
| Ford | * Boscombe Down |
| Tangmere | * Odiham |
| West Hampnett | * White Waltham |
| Merston | * Farnborough |

*Not then available for Fighter Command but facilities were to be requested.

FC/S. 21275,
Encl. 94A.

- (2) 14 Beaufighter Squadrons, 1 Havoc Squadron (a/c armed with 12 machine guns, not cannon) and 1 Mosquito Squadron.
- (3) Nos. 29 and 219 Squadrons would be moved to Hunsdon and Middle Wallop respectively while Nos. 85 and 157 were already (19 March 1942) based at Hunsdon and Debden respectively.
- (4) The Squadrons were Nos. 257, 8, 245, 263, 402, 1, 3, 32, 697, 137, 253, 134, 611 and 603.

full assistance for a ground campaign in Europe. The training in general army co-operation work - or direct support as it was then becoming known - therefore continued throughout the year.⁽¹⁾

(iv) Fighter Command Memorandum on Roles of Fighter Units:
1 April

F.C. C.R.B.
App., April
1942, A.H.B./
IIM/A2/3A.

Ibid.

F.C.Op. Instruc-
tion No. 14/
1942.

Much of the discussion and planning which took place in the first three months of 1942 was summarised in a memorandum on 'The Dispositions and Roles of Fighter Units Before and During Invasion', which was issued on 1 April. Apart from the points which have already been mentioned it stated that Hurricane Turbinlite Satellite Squadrons would be withdrawn from their Turbinlite Flights and would operate from No. 11 Group airfields on various support tasks. It stressed the fact that the chief duty of the day squadrons would be the protection of Naval units and the destruction of troop and tank-carrying aircraft. In general, however, the Spitfires of No. 11 Group's rearward airfields would be used for the main air battle, which was expected to take place over South-east England. Arrangements had been made to either use or remove from the invasion area, certain non-operational flying units such as Air/Sea Rescue units and target towing aircraft.

F.C.Op. Instruc-
tion No. 15/
1942, A.D.G.B/
S.22958,
Encl. 73A.

It was realised that in an invasion Fighter Command would have few aircraft available for normal shipping protection, and from 27 April, Coastal Command therefore undertook responsibility for merchant shipping outside the 'battle area'⁽²⁾ The protection of all Naval units, except auxiliary patrol craft, would remain, however, the responsibility of Fighter Command.

(v) Deployment of Anti-Aircraft Guns: March-April

A.H.B./IA/18,
Sect.93.

A.H.B./IA/18,
App.25, 20 March
1942.

A.H.B./IA/18,
Sect.93.

The air defence plan against invasion required a considerable revision of the distribution of anti-aircraft guns throughout the country. From being widespread to meet the German attacks of 1940 and 1941, they now needed to be concentrated in the probable invasion area east of a line from the Wash to Weymouth. In March therefore, the Air Officer Commanding-in-Chief, Fighter Command in consultation with the General Officer Commanding-in-Chief, Anti-Aircraft Command prepared a plan known as the new Attic Scheme, in which the anti-aircraft resources of the country were redeployed. Priority was to be given to the protection of the twenty-one fighter airfields covering South-east England; and only slightly less important would be the thirty-one rearward airfields west of the Wash-Weymouth line and south of a line from the Wash to Bristol.⁽³⁾ Special protection was also to be given to the Fighter Command operational centres at Stanmore, Uxbridge and Leighton Buzzard. Almost equally important was the defence of radar centres, upon which Fighter Command relied

Ibid, Encl.26A.

F.C.Op.Inst.No.
15/1942

A.H.B./IA/18, App.25.

- (1) By 7 May 1942, 57 fighter squadrons had received training in Army Air Support and 128 exercises had been carried out in Fighter Command. For a full account of the development of air support see R.A.F. Monograph: 'Air Support in the Second World War' (A.P.3235).
- (2) The 'battle area' was defined as 'the sea areas South of the line Flamborough Head to the Helder and East of the line running from Ushant to Scillies, thence North to point West of Hartland Point and Eastwards to Hartland Point.'
- (3) The 21 vital coastal airfields were each to be equipped with 8 heavy and 16 light A.A. guns. The remaining 31 were each to have 8 heavy and 8 light A.A. guns. Six other airfields in Fighter Command were to be protected, so that the total of 58 airfields represented approximately 40% of the airfields in Fighter Command.

A.H.B./IA/18,
App.25.

for early warning of approaching enemy raids. Out of a total of eighty-five coastal and inland radar stations which were operating by August 1941, twenty-one were regarded as vital for anti-invasion air defence. The basic factor of the plan was thus the allocation of a suitable scale of anti-aircraft defence that would ensure the freedom of action to the fighter squadrons, on whose activities the success of the anti-invasion plans was largely based.

C.O.S.(41) 439
482. H.F.
Bundle 42/2,3.

Other objectives which required additional defence were to be allotted guns in the following order of priority: eight Coastal and fourteen Bomber Command airfields, certain Naval airfields and ports, Home Forces coastal artillery, communication centres in South-east England, and twenty-one industrial areas.

C.O.S.(42) 134,
199, 3 April
1942.

To meet all these requirements the 'absolute minimum deadline' was considered in March to be 2,048 heavy (25 per cent mobile) and 1,278 light anti-aircraft guns. This total was available, with the exception of 236 light anti-aircraft guns and these were due within the next few months. The scheme involved the movement of 1,000 heavy and 800 light anti-aircraft guns, 30,000 personnel, 23,000 tons of ammunition and would take about five weeks to complete. Since however, it was assumed that at least one month's warning of an impending invasion could be given, most of the work need not be carried out until the warning was received. In general, it was sufficient to prepare new sites for the heavy static guns and to earmark transport for giving the required mobility to mobile units.

C.O.S.(41),
272 Mtg.,
2 Aug. 1942.

(vi) Revised Plan Banquet 27 May

Plan Banquet was the code name for a scheme to provide reinforcements in an emergency for Bomber, Fighter, Coastal and Army Co-operation Commands from Operational Training Units and Flying Training Command. The plan was originally prepared in June 1940 in order to provide Bomber Command with crews and aircraft from Flying Training Command. The scheme was gradually expanded and Fighter Command planning began in February 1941. During 1941 it was constantly revised and kept up to date but in view of the revisions of the air defence plan and the new resources that were available in 1942, the Air Staff issued a new directive on the plan on 27 May 1942.

The section dealing with Fighter Command - Banquet Fighter - was divided into three parts and would have provided the following reinforcements:-

| | | |
|---------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Part A. | Suitable aircraft and crews from O.T.U's in Fighter Command | 10 Spitfire Squadrons 6 Hurricane Squadrons |
| Part B | Available crew personnel in Flying Training Command, ex-operational on types in current use in Fighter Command | Spitfire 145 Hurricane 94 Twin Engine Fighters 25 <hr/> 264 |
| Part C. | Suitable aircraft and remaining crews in Flying Training Command | 1 Spitfire Squadron 78 Defiants (all a/c with crews) |

Ibid,
Encl.21B.

A.M. File S.4789/I,
Encl.37A.

A.M. File S.4789/II,
Encl.118A.

A.M. File S.4789/III,
Encl.70A.

FC/S.29012,
Encl.4A.

SECRET

11

On receipt of an executive code word, the Fighter O.T.U's and Flying Training Command would immediately despatch these aircraft and personnel to pre-arranged fighter airfields.(1)

C.O.S.(A.A.)
1922,
23 Feb.1942.

Plan Banquet would thus have provided Fighter Command with approximately 320 additional fighter aircraft and crews, not including the extra 250 pilots from Flying Training Command. If the plan had operated smoothly, Fighter Command would therefore have been able in an emergency to deploy some 1,800 first-line fighter aircraft and this strength would in all probability have given the Command a numerical superiority over the German fighter force.

Risk of Invasion Fades: June-December 1942

J.P.(42)517,
21 May,
J.I.C. (42)
62 (Final),

Even during the spring of 1942, the threat of invasion was never immediate, since it was estimated that if the campaign against Great Britain could be developed to full intensity the retaliatory forces held in this country would suffice, and in July the Chiefs of Staff believed that the danger, by the spring of 1943, would be negligible. By then the combined British and American Air Force would be able to drop 47,000 tons of bombs in seven days on the invasion ports and troop concentrations. They believed that the effect of such a weight of attack would be to make the ports inoperative during that period and to destroy about 20 per cent of the invasion craft. The strength of our light naval forces, too, would have considerably increased owing to production and American assistance.

J.P.C.(42) 968,
26 Nov.

Finally, by December, the Chiefs of Staff were agreed that it was 'inconceivable that the Germans would be able to attain the requisite degree of air superiority for an invasion to be practicable before 1944, if ever.'(2) In July 1941 the German Command had, in fact, postponed the invasion (Operation Sea Lion) until the spring of 1942, on the assumption that by that time the Russian Campaign would be completed, and the project was not seriously considered again.

Written
Parliamentary
reply: 14
Oct. 1946.

General Summary and Conclusions

C.O.S.(41), 272
Mtg: 2 Aug.

The foregoing is, at best, little more than an outline of the many proposals and counter-proposals put forward to combat a possible invasion during 1942. The uncertain nature of the problem resulted in planning being frequently amended but at no time during the year did the threat of invasion become immediate. On 2nd August 1941 the Chiefs of Staff told the Defence Services that they might expect 'from now on to receive one month's warning from us of impending invasion', and at the beginning of 1942 the Joint Intelligence Sub-Committee concluded that 'some three months would elapse before any operations against the British Isles could be developed to full

Plan Banquet
Directive, 27
May 1942, App.B.
FC/S.29012,
Encl.111A.
A.M.File C.S.
13694, Encl.16A.

(1) The code words were:-

| | | | | | |
|------|---|-----------|---------|---------|-----------|
| Part | A | Executive | BANQUET | FIGHTER | 'APPLE' |
| " | B | " | " | " | 'BERTIE' |
| " | C | " | " | " | 'CHARLIE' |

(2) Plan Banquet was, however, not cancelled until 6 October 1943. The anti-invasion instructions regarding the use of night fighters, reinforcement by Coastal Command and other orders were cancelled a year later on 25 October 1944.

intensity', even if Russia was defeated. Most of the anti-invasion planning during 1941 and the beginning of 1942 was therefore never implemented.

Post war knowledge has resulted in some criticism of Fighter Command for a policy of over-insurance, but the question of how far the invasion threat was responsible - or was made to be responsible - for the maintenance of a stronger Fighter Command than was in fact necessary, will be discussed more fully in a later chapter.(1)

One aspect of the anti-invasion planning was, however, to lead to important developments. In December 1941 fifteen day fighter squadrons began training in Army Air Support anti-invasion duties. On 27 February 1942 the Air Officer Commanding-in-Chief stated that he wished to extend this training to all day squadrons in the Command. This was partly to ensure that fifteen support trained squadrons were always in the line, since it was impossible for the same squadrons to be held permanently available.

But it was also due to the fact that direct experience in using fighter aircraft for support tasks was lacking in the United Kingdom at this time. In July the Air Staff issued a plea regarding the organisation that would be required for our own invasion of the Continent. This stimulated the growing interest which was being taken in Army Air Support and by September all the day squadrons in the Command had received some support training and forty squadrons had been trained in control by an Army Air Support Control Unit.

This was the beginning of the Army Air Support organisation within Fighter Command which, together with Army Co-operation Command, was to form the foundations of a Tactical Air Force.(2) The tactical role of Fighter Command, which was envisaged in the anti-invasion planning was thus subsequently developed into an important part of the air organisation, which was to help to defeat Germany in Europe.(3)

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- (1) See below Chap. 9, page 143.
 - (2) Formed 1 June 1943. Certain Army Co-operation Mustang squadrons were attached to No. 10 Group, where, apart from being trained, they took part in active fighter operations in the summer and autumn of 1942, including Operation Jubilee. The formation of the Tactical Air Force is described in Chap. 14.
 - (3) No account has been given of the anti-invasion planning concerned with the ground defence of R.A.F. stations, since the reader may be referred to R.A.F. Monograph: 'Ground Defence and the R.A.F. Regiment, 1939-1945.'

A.M. File C.S.
12262, Encl. 10A.

Ibid, Encl.
11A.

C.O.S. (42) 351.
R.A.F. Monograph, 'Air Support in the Second World War', Chap. 3.
W.S.D. Outgoing Flimsies No. 17,
11 Sept. 1942,
App. 'A'

11G/5500/13,
Encls. 32A
and 43A.

CHAPTER 3

THE AIR DEFENCE OF THE UNITED KINGDOM BY DAYIntroduction

During 1941 there had been no resumption of large-scale German air attacks by day on London or other large towns.⁽¹⁾ Instead the enemy long-range bomber force was employed in 'pirate' raiding. The favourite objectives for such raids were airfields and aircraft factories and, during the winter of 1941, a number of successful enemy low-level, daylight attacks were carried out. These showed evidence of careful planning and were normally carried out by aircraft operating either singly or in pairs. They were, moreover, difficult to intercept and, although special measures were taken to deal with single raiders - such as the use of A.I. fighters by day when the weather was bad - the problem remained unsolved at the end of the year.

FC/S.22254,
Encls.10A and
11A.

At the beginning of 1941 the enemy also launched a series of fighter bomber low-level attacks against fighter airfields in Kent, the principal targets being Manston, Hawkinge and Lympne. Fighter sweeps were also resumed in February, although on a much smaller scale than those which took place in November 1940. These small-scale operations between February and May 1941 gave Fighter Command no chance of using the large wing formations, with which it had been intended to repulse a strong daylight offensive and the problem of interception was thus, as with the long-range bombers, unsolved in July, when both the low-level attacks and fighter sweeps were discontinued.⁽²⁾

After July 1941 the German daylight offensive was chiefly directed against shipping and during the second half of the year, at least two thirds of all German offensive daylight sorties recorded by the defences were devoted to operations against shipping.

H.Q.F.C.
Form 'Y'.

The total German daylight effort over the United Kingdom fell steadily during the year and in December only thirteen enemy aircraft were reported. This fall reflected the diminished strength of the striking power of the German Air Force in Western Europe, a large part of which had been withdrawn to the Russian Front. The initiative in almost every branch of day operations thus passed from the Luftwaffe to the Royal Air Force during the year.

A.M.Pamphlet
No.248, Chaps.4
and 7

On the other hand, the problem of intercepting the 'tip-and-run' raider in bad weather was not yet solved and as if to emphasise this, two enemy fighters appeared off the Sussex coast on Christmas Day 1941 and opened fire on buildings at Fairlight, near Hastings. Although a few Me.109's were reported over Kent and Sussex in September and November, the

F.C.I.S.
No.295.

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- (1) For a full account of the German daylight offensive during 1941 the reader is referred to R.A.F. Narrative: 'Air Defence of Great Britain,' Vol.IV, Part III, from which this summary is mainly extracted.
 - (2) The German fighter force in the West was fully occupied in dealing with our own daylight offensive and German fighters were, in fact, forbidden to fly over England.

A.D.I.(K)
Report No.
573/1945 paras.165
and 178.

Fairlight attack was the real beginning of the low-level fighter-bomber campaign of 1942, when the German fighter force turned again to the offensive.

Period: January - March 1942

(i) Review of the Air Defences

On 7 December 1941 the total strength of Fighter Command, including reserve aircraft in store, was nearly 2,400 aircraft.⁽¹⁾ At the beginning of 1942, the seven operational groups were organised in ninety-seven squadrons and eleven special flights. Of these, sixty-six squadrons formed the first line day fighter strength. Due to the despatch of squadrons to overseas theatres, the number of day squadrons was the same as it had been in April 1941, although the night fighter force had been considerably expanded.⁽²⁾ This was substantially less than the force of eighty-nine day and thirty night squadrons, which was the programme decided upon by the Expansion and Re-Equipment Policy Committee on 21 August 1941. Several squadrons, however, either were being or had already been re-equipped. No. 56 (Hurricane IIB) Squadron, for example, was rearmed with Typhoons during the first half of January 1942.

On 25 January the War Cabinet Sub-Committee on the Air Defence of Great Britain decided that Anti-Aircraft Command could reduce its manpower by 50,000 men provided that A.T.S. women could be employed on searchlight duties and that increased Home Guard recruitment could be permitted. This meant that fewer heavy guns could be kept at immediate readiness and that the speed of reversion of light guns from forward sight to predictor control was reduced. But the Committee was satisfied 'that these disadvantages are operationally acceptable, in view of the increasing scale of defence and of the efficiency of the warning system now available.'

A similar cautious optimism was also the basis of the new regulations for the flying of balloons issued by the Air Officer Commanding-in-Chief, Fighter Command on 31 January 1942. The new policy, on the lines suggested by Air Marshal Sir Leslie Gossage in October 1941, allowed the grounding of inland barrages by day and by night, until the receipt of enemy plots warranted their being raised to operational heights. The coastal barrages were, however, to be retained

| (1) Aircraft Types | Number of Squadrons | In Squadrons | | In No.41 Group | Total |
|-----------------------|---------------------|--------------|---------------|----------------|-------|
| | | Serviceable | Unserviceable | | |
| Hurricane II A/B | 13) | | | | |
| Airacobra | 1) | 240 | 76 | 85 | 401 |
| Typhoon | 1) | | | | |
| Spitfire | 58) | 886 | 238 | 247 | 1,371 |
| Whirlwind | 2) | | | | |
| Defiant | 7 | 110 | 27 | 94 | 231 |
| Beaufighter and Havoc | 20 | 242 | 80 | 70 | 392 |
| Total | 102 | 1,478 | 421 | 496 | 2,395 |

(2) See below Chap. 4. Six complete Hurricane squadrons were sent to the Middle East in May 1941. These were Nos.46, 213,229,260,238 and 249 Squadrons.

F.C.Order of Battle O.R.B., App., Jan. A.H.B./IIM/A2/3A. A.H.B./IIL/16/21A, Encl.21A. A.M. File C.S.8928, FC/S.23836, Encl.3A. A.M. File S.3553, Encl.92A.

A.D.G.B. (42) 1(Revise).

Ibid,Sect.2.

R.A.F. Monographs 'The Balloon Defences, 1914-1945', P.490.

F.C./S.23836, Encl.14B.

A.M.File C.S.8929 passim.

F.C. Op.Inst.
No.10/1942,
App., Jan.
A.H.B./IIM/A2/
3A.

at normal heights, until improvements in communications and the radar early warning system should justify close hauling. Although these instructions, and the reductions in Anti-Aircraft Command, reflected the increasing decline of the German bomber arm, the Metropolitan Air Force was still pre-occupied with defensive rather than with offensive operations.

(ii) Enemy Operations and Interception Results

Enemy Doc.
A.H.B.6

A.W.A.Report
B.C./G/10
A.H.B./IIB/
47/4.

Air Min.C.S.B.
Stats.

War Diary Gen.
Staff A.A.Cmd.
Vol.XXX,Jan.
1942.

W.D.(42)531,
26 Nov.1942.

On 3 January 1942 the number of German Air Force bombers available for use against the United Kingdom⁽¹⁾ was 274 and of these, only 146 were serviceable. This lack of aircraft in western Europe together with the threat to conserve aircraft, both for future operations and for the eastern front, was no doubt the chief reason for the extremely slight enemy bombing activity over this country during the first three months of the year. Of the total number of 1,924 enemy daylight sorties between 1 January and 31 March only 151, or less than eight per cent of the total, were flown over the United Kingdom and a substantial proportion of these were solely reconnaissance flights. The major part of the enemy effort was directed against shipping.⁽²⁾ However, the small force of 146 enemy bombers more than justified its existence on military grounds. It has already been noted that no less than 1,478 R.A.F. fighter aircraft were maintained in Great Britain for defensive purposes - a proportion of almost exactly ten to one. Now to fly and tend these aircraft approximately 90,400 aircrew and ground staff were required. Next, to take into account the static defences. The balloon barrage absorbed 60,743 officers and men. Anti-Aircraft Command at the beginning of January 1942 contained 1,920 heavy A.A. and 981 light A.A. guns as well as 2,776 Lewis guns and 358 rocket projectors, all these weapons being manned by 280,000 men and 170,000 A.T.S. The manpower contained in full time civil defence cannot be discounted. In the first half of 1942 civil defence absorbed 311,000 men and 80,000 women. Altogether some 1,400 aircraft, 6,000 guns and 600,000 men and women of the Army and R.A.F. stood by to meet the threat of air attack and 391,000 men and women were employed on full time civil defence duties.

F.C. Form 'Y'
O.R.B. Apps.
Jan. - Mar.
A.H.B./IIM/A2/
3A.
FC/S.27900,
Encl. 96A

F.C. Form 'Y'
O.R.B.Apps.,
Jan.
A.H.B./IIM/A2/3A.

During the period there were 14 bombing attacks, carried out by single or pairs of raiders, on places as far apart as Brixham and Shetland Isles. The heaviest attack took place on 27 March when four enemy aircraft bombed Torquay harbour and sunk a small ship. There were also 31 machine gunning attacks by fighters and fighter bombers on towns and villages on the south coast. The raids, both by bombers and fighter bombers, were usually carried out from a low altitude, often in conditions of poor visibility. For example, at 1346 hours on 23 January, a Ju.88 followed a Hudson to Wick aerodrome at about 100 feet and dropped three bombs which damaged two aircraft on the ground. Ground anti-aircraft guns opened fire but no claim was made. Visibility at the time was approximately 400 yards.

A.W.A.Report
BC /G/10.
A.H.B./IIB/47/4,
Addendum, Table 2.

Such raids were extremely difficult to intercept and only six enemy aircraft were claimed as destroyed overland by day during the whole period. Moreover the effort, which had to be expended by Fighter Command in an attempt to intercept the

(1) i.e. based in France, the Low Countries and Norway.
(2) See below Chap. 5, p. 69

F.C. Form 'Y'
O.R.B.Apps.
Jan.-Mar.
A.H.B./IIM/
A2/3A.

low-level 'tip and run' raider, was out of all proportion to the damage, which such raiders caused. In the first three months of 1942, Fighter Command flew 4,677 interception patrols. This was in addition to the 10,918 shipping patrols flown during the same period. These figures show that the German 'holding' campaign in the West was therefore meeting with some success.

The problem of intercepting the 'tip and run' raider essentially turned on the difficulty of providing adequate warning of its approach. The normal radar early warning station was limited by its 'visual' range but at the beginning of 1942, two other types of special low-looking stations were being developed.

(iii) Development of C.H.L. and C.H.E.L. Stations(1)

A.M.File S.4039,
Encl.30A.

R.A.F. Monograph:
'Royal Air Force
Signals in the
Second World War',
Vol.IV, 'Radar in
Raid Reporting',
Chap.15.

The first C.H.L. station with a 200 feet tower was erected at Humberstone towards the end of 1941. If this prototype proved successful, it was proposed to erect other towers at selected sites in areas where there had been a large amount of low-level raiding. Work on the project was held up in February, since it was thought that these towers might be a danger to our own aircraft but in March the Deputy Chief of the Air Staff authorised the continuance of the scheme as an important part of our air defences.

During 1941 the possibility of using the naval Type 271 radar equipment against the low-level raider was also explored and the first station to develop this equipment for the requirements of the Royal Air Force was Ventnor, Isle of Wight where experiments were begun in February 1942. These experiments showed that an aircraft flying as low as fifty feet could be tracked at ranges of between 30-45 miles. The sets' low-looking value was therefore quickly apparent and it was decided to form a chain of centimetre C.H.E.L. stations, which would be used jointly by all three Services for surface watching.

The high frequency 10-centimetre scanner thus seemed to be the answer to the problem of providing early warning of low-level attacks but many technical modifications and improvements were necessary before the cover provided could be considered satisfactory. Definite results against enemy raiders were not in fact obtained until 1943.⁽²⁾

See Chap. 10.

Increase in Low Level Attacks: April-May 1942

(i) Enemy Offensive Fighter and Long-Range Bomber Operations

Although enemy fighters and fighter bombers had been carrying out bombing and machine-gunning attacks on south coast towns since the end of 1941, it was not until April that these raids on fringe targets became a real menace. During that month there were thirty-seven attacks. The aircraft

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- (1) Chain Home Low and Chain Home Extra Low Stations. The use of C.H.L. stations for interception purposes is described below Chap. 4, p. 43 at seq.
 - (2) See below p. 35 for further developments of C.H.E.L. stations.

GERMAN OFFENSIVE SORTIES AGAINST THE UNITED KINGDOM AND SHIPPING IN HOME WATERS DURING 1942



LEGEND

- TOTAL DAYLIGHT SORTIES
- - - OVERLAND DAYLIGHT SORTIES
- TOTAL NIGHT SORTIES
- - - OVERLAND NIGHT SORTIES

AUTHORITY: 1ST ADDENDUM TO A.W.A. REPORT No. BC/G/10, TABLE 2 MARCH 1943 A.H.B. II B/47/4

FC/S.27900,
Encl.96A.

F.C. Form 'Y',
Vol.10.

employed were Me.109's and they usually operated in pairs at extremely low altitudes. During May the number of these attacks increased still further and fifty seven raids were carried out during the month. The most frequently attacked towns were Deal, Dover, Folkestone, Hastings, Brighton and Poole.

A.H.B./IIHL/69.

Comparatively few key points were affected but a noticeable characteristic of the raids was the number of incidents involving railways, electricity and gas installations.⁽¹⁾ A typical attack was that on Swanage and Poole Harbour, which took place on 20 April.

Ibid.

At 0710 hours five enemy aircraft flying at under 1,000 feet and identified by the Royal Observer Corps as Me.109's appeared near St. Albans Head, where they spread out over Portland, Swanage, Poole and Bournemouth. Bombs were dropped and a train machine-gunned at Swanage, killing three people and injuring fourteen and some damage was done to property. Bombs were also dropped in Poole Harbour. The weather at the time was very bad with fog and the cloud base at between 600 to 1,000 feet. Interception under such conditions was obviously extremely difficult and the Duty Reporting Officer at Fighter Command stated simply: 'Owing to bad weather conditions, no aircraft were put up by the Command in connection with these enemy aircraft'.

Ibid.

A.H.B./IIH/119/
1C, 10 April.

Some of the attacks showed evidence of careful planning, as, for example, the two raids on Worth Matravers in Dorset. Here there were four separate Telecommunications Research Establishments and a radar station in a relatively small area and, since there were no other objectives within many miles, it would appear that the attacks were made deliberately on these targets. The first attack on 6 April was carried out by three Me.109F's, which approached from the coast at about 400 feet, dropped three 250kg. bombs and then machine-gunned the site. The raid took place at 1907 hours in daylight under very poor weather conditions. The base of the 9/10ths cloud was at 500 feet and it was squally. The buildings were camouflaged but the tall masts at the site were easily visible.

Ibid.

On the second occasion - 8 April - a similar raid was carried out by three more Me. 109F's, but the weather was much better. Fighter Command ordered up a total of eighteen aircraft but no interceptions were effected.

F.C. Form 'Y',
Vol.10 and
FC/S.27900,
Encl.5A.

Another attack of this type was the raid on Cowes on 28 April. Seven Me.109's appeared at 0657 hours flying at sea-level. Bombs were dropped at Cowes and Newport, including two unexploded bombs on the Messrs. Saunders Roe aircraft factory. Extensive damage was also caused to the boat building yard of Messrs. J. S. Whites. The enemy aircraft flew at 100 feet or less and had disappeared out to sea by 0715 hours.

A.W.A.Report
BC/G/10.
A.H.B./IIB/
47/4

The number of enemy overland long-range bomber attacks decreased during April, no doubt as a result of the increase in enemy night operations during the Baedeker raids. On 4 April, however, three attacks of special interest were made on the Gloster Aircraft Factory at Brockworth. The enemy

(1) During April, for example, there were seventeen fighter attacks on gasworks.

A.D.G.B./
S.22254,
Encl.44A.

aircraft which operated on these raids belonged to K.G. 100 - the pathfinder unit which had been responsible for fireraising during the heavy night raids in 1940 and 1941. There seems little doubt that a radio beam was used, and a reconnaissance aircraft had flown over precisely the same track on the previous day. The three attacks were all carried out by single aircraft between 1630 and 1745 hours.

F.C. Form 'Y',
Vol.10.

A.H.B./IIH/
119/10,
12 April.

Altogether fourteen bombs were dropped, including seven on the factory. The damage caused was negligible and production was not impeded but eighteen persons were killed, and 144 injured. It was not discovered whether the aircraft bombed through cloud, as although there was a layer of 6/10ths cloud below 3,000 feet, there were gaps up to 5,000 and 15,000 feet, the heights between which the raiders were flying.

F.C. Form 'Y',
Vol.10.

Fighter Command detailed twenty-six aircraft including four A.I Beaufighters, to intercept the raid. Two of these Beaufighters from No.604 Squadron detected and finally engaged two of the enemy bombers, which were identified as He.111's, and claimed to have damaged them.⁽¹⁾

A.D.G.B./
S.22254,
Encl.44A.

Since 14 February, the use of A.I night fighters by day during the bad weather conditions had been authorised and had been left to the discretion of Group Controllers.⁽²⁾ The scheme was not strikingly successful, however, chiefly because the number of A.I fighters which could be spared from night operations amounted to only one aircraft and crew at immediate readiness in each squadron with a further aircraft and crew at one hour's readiness.

A.W.A. Report
BG/G/10.
A.H.B./IIB/
47/4.

During May the number of enemy overland bomber sorties rose to sixty-six but the majority of these were reconnaissance flights, so that in spite of the relatively small bomb load of the Me.109, it was the 'tip and run' fighter-bomber attacks, which were causing Fighter Command most concern.

(ii) The Problem of Interception

The difficulties in intercepting low-level attacks, particularly on coastal areas, were many and complex. Three things were necessary however, before any real progress could be made. These were:-

W.S.D.
Outgoing
Flimsies
No.17,
6 Sept. 1942.

(i) The development of a fighter aircraft with good low-altitude performance.

(ii) The development of a radar chain, capable of detecting aircraft approaching at sea-level.

(iii) An increase in the number of light anti-aircraft guns on the South coast.

Enemy Doc.
A.H.B.6
Trans.

-
- (1) German records, do not show any aircraft destroyed or damaged on this date.
 - (2) Interceptions by day in poor weather had been carried out in 1941 using A.I and G.C.I but without much success. Particular attention was given to the problem in No. 10 Group.

A.D.G.B./S.22254,
Encl.11A and
passim.

The development of a low-looking radar chain has already been described; and the provision of anti-aircraft guns for the South coast is dealt with in the next section of this narrative.

F.C.Order of
Battle,
7 May 1942,
O.R.B., App.
May A.H.B./IIM/
A2/3A.

FC/S.28917,
Encls.17A
and 38B.

With regard to fighter aircraft, the Spitfire VB, with which the majority of day fighter squadrons were equipped, could seldom catch the Me.109F when the latter was escaping at full speed. The answer to this problem therefore seemed to be in the development of the Typhoon. This aircraft was originally designed for the interception of low and medium altitude bombers. It possessed a high speed below 20,000 feet, a good rate of climb to that height and heavy armament.⁽¹⁾ Some manoeuvrability had been sacrificed in order to achieve this performance but it also possessed the added advantage of being an extremely stable gun platform.

Ibid Encl.17A
and F.C.Orders
of Battle, Jan-
April,
O.R.B.Apps.
A.H.B./IIM/A2/
3A.

FC/S.28917,
Encl.17A.

No. 56 Squadron was re-equipped with Typhoons during the beginning of January, No. 266 Squadron during the beginning of March and No. 609 Squadron at the end of April. It was not until May, however, that these squadrons became operational. They were then formed into a wing based at Duxford in No. 12 Group.

Ibid, Encl.1A.

Ibid, Encl.4A.

At first they were chiefly employed on low-altitude anti-
shipping sweeps along the enemy occupied coast line from
Walcheren to Cape Gris Nez, convoy patrols and anti-
reconnaissance patrols off the Norfolk coast. The speed of
the Typhoon, however, obviously pointed to its being a suitable
aircraft to deal with the 'tip and run' fighter attacks on the
South coast. The Air Officer Commanding-in-Chief therefore
proposed to send small detachments to forward airfields in
No. 11 Group. These would be of sufficient strength to enable
one section to be maintained at readiness during daylight hours
at each of two airfields. Accordingly on 31 May, four
aircraft of No. 56 Squadron were sent to Tangmere and four to
Manston.

F.C.Form 'Y',
Vol.10.

When enemy aircraft flew any distance overland, the
chances of a successful interception were greatly increased.
On 23 May, seven enemy bombers made a scattered attack on
south Wales and south-west England, and operated over this
country for more than an hour. One of these was detected and
then identified as a He.111 by a Beaufighter of No.604 Squadron.
The enemy aircraft took violent evasive action and finally made
a steep dive from 6,000 feet and crashed near South Alvediston.

F.C. Form 'Y',
Vol.10
and No. 91
Squadron
O.R.B. 1942

Chance interceptions also occurred, such as that by a
Spitfire of No. 91 Squadron on 6 April. This aircraft was
airborne for a weather test, when the pilot sighted two Me.109's
about four miles south of Dungeness. The enemy aircraft tried
to gain cloud cover but the Spitfire pilot was able to get
astern of one of the raiders and fired a four second burst, as
it dived towards the sea from 800 feet. The aircraft crashed
in the sea. Such interceptions, however were naturally
infrequent.

F.C. Form 'Y'
O.R.B. Apps.
A.H.B./IIM/A2/
3A

Altogether during April and May Fighter Command flew 6,345
day interception sorties, not including the total of 7,701
flown in the defence of shipping. In the course of the

(1) Either 4 x 20-m.m. cannons or 12 x 0.303 machine-guns.

A.W.A. Report
EC/G/10.
A.H.B./IIB/47/4,
Addendum,
Table 2.

overland interception patrols, the Command claimed the destruction of only seven enemy aircraft.⁽¹⁾

(iii) Anti-Aircraft Defences

A.H.B./IIH/
119/10,
6 May 1942.

One way in which 'tip and run' raiders could be engaged was by light anti-aircraft guns. However, in the spring of 1942 there were few guns available, the Bofors situation being particularly serious. On 15 December 1941 there were 1,080 Bofors guns deployed in the United Kingdom but, from December to March, 242 of these were sent overseas, in addition to current production, so that on 1 April only 848 remained. Moreover, at the beginning of 1942 certain airfields in Caithness, the Orkneys and Shetlands areas required re-inforcing, the guns mainly being withdrawn from industrial targets in inland areas and on the West coast.

FC/S.27900,
Encl.15A.

Thus on 13 May the Air Officer Commanding-in-Chief was not able to agree to the formation of two mobile Bofors batteries, owing to a shortage of guns. This scheme was suggested by the Air Officer Commanding of No. 11 Group and would have entailed moving the batteries between Deal, Folkestone, Hastings, Bexhill and Eastbourne, in order to give the enemy the impression that the south coast was considerably more heavily defended than it was.

Ibid,
Encl.8 A.

By the middle of May, however, with the steadily rising number of low-level fighter bomber attacks on the south coast, the position had become serious enough to warrant a redeployment of guns, even at the risk of denuding important inland targets. On 22 May, therefore, eleven towns and ports on the South coast were considerably re-inforced, largely at the expense of the Clyde, the Midlands and South Wales.⁽²⁾

F.C. O.R.B.,
App.D.5,
May,
A.H.B./IIM/
A2/3A.

During April and May, Anti-Aircraft Command was even less successful than Fighter Command. Only one enemy aircraft was destroyed, when an Me.109 was shot down into the sea off Newhaven on 20 May.

Report on
Active Ops.
A.A. Command,
20 May 1942

German Document A.H.B.6

- (1) German records of losses are arranged so that the day and night-bomber losses are given as a single daily total. Fighter losses also include aircraft destroyed by air offensive patrols over enemy occupied territory. No direct comparison with the A.W.A. figures is therefore possible.

F.C. O.R.B.,
App. D.5,
May.A.H.B./
IIM/A2/3A.

| (2) | Ports or Towns | Extra H.A.A. Defence | Extra L.A.A. Defence |
|-----|----------------|-------------------------|-------------------------|
| | Folkestone | Nil | 4 |
| | Rye | Nil | 4 |
| | Newhaven | 8 | 8 |
| | Shoreham | 16 | 12 |
| | Southampton | 12 | 12 |
| | Calshot | 4 | 8 |
| | Beaulieu | 8 | 4 |
| | Poole | 12 | 12 |
| | Portland | 8 | 8 |
| | Plymouth | 12 | ? |
| | Portsmouth | 16 | ? |

Growth of the Enemy Low-Level Offensive: June-August 1942(i) Fighter Attacks on the South Coast: ContinuingInterception Difficulties.

During June the number of enemy fighter attacks on fringe targets was considerably lower than that either for April or May. Thereafter the volume of these attacks steadily grew. In July there were nineteen attacks and in August seventy-seven. August was in fact the peak month of the year in terms of sorties and attacks, although a greater bomb weight was dropped during October. What was equally disturbing for Fighter Command was the increasing enemy use of the F.W. 190 as a fighter bomber. This aircraft made its first bombing attack on 11 July in an unsuccessful attack on shipping off Dartmouth and after this date rapidly began to take the place of the Me.109. The following figures for fighter-bomber sorties make this clear:-

| | <u>June</u> | <u>July</u> | <u>August</u> |
|---------|-------------|-------------|---------------|
| Me.109 | 23 | 12 | 19 |
| F.W.190 | Nil | 8 | 68 |

FC/S.27900,
Encl.96A.

A.W.A.Report
BC/G/10.
A.H.B./IIB/
47/4.

F.C. Form 'Y'
and Int. Summ
No.345
O.R.B., App.
July.
A.H.B./IIM/A2/3.

Ibid and Apps.
June and Aug.

Ibid

F.C. Form 'Y'
O.R.B. Apps.
July and Aug.
A.H.B./IIM/
A2/3A.

A.W.A. Report
BC/G/10.
A.H.B./IIB/47/4.
F.C. Int. Notes
and Appreciations
No.50 O.R.B., App.,
Sept.
A.H.B./IIM/A2/3A.

F.C. O.R.B.
Report No.373.

F.C./S.29331,
Encl. 1A.

Ibid, Encl. 5A.

Ibid, Encl. 6A.

Ibid, Encl. 9A.

Coastal towns, communications and harbours were attacked but the most tempting targets and the most frequently attacked were the many plump gasometers which dotted the South coast. The most heavily raided area was the coast of Sussex. As during the previous period there was evidence of careful target planning. For example two F.W. 190's attacked the radar station at Ventnor on 21 July and a similar raid was made on the radio station at Treleaver on 17 August.

In addition to fighter-bomber raids, machine-gun attacks and fighter reconnaissance flights also increased and the total number of enemy offensive fighter sorties during the three months was 331. Enemy aircraft usually operated in pairs and the average number of aircraft in each patrol during the period May to September was only three.

By August the difficulties of intercepting such attacks had not lessened. Between April and August, it was estimated that of the enemy aircraft approaching within sixty miles of the coast and twenty miles inland, only thirteen per cent were seen by intercepting fighters, seven per cent engaged and two per cent destroyed or probably destroyed. Moreover, this total included enemy long-range bombers and anti-shipping aircraft.

There was some evidence that too many defending fighters were being detailed to intercept low-level raiders, with the result that G.C.I. Controllers were confused. From 9 July therefore, No. 11 Group flew fewer interception patrols. The results, however, were not encouraging and three weeks later the Air Officer Commanding-in-Chief decided that we were perhaps operating too few fighters. On 11 August a report by No. 11 Group somewhat clarified the situation. It contained several reasons for the general failure to effect interceptions, the chief of these being the fact that low-level attacks were not plotted by the radar chain and that the first

SECRET

22

indications of such attacks normally came from Royal Observer Corps posts. It also emphasised the point, which has already been made, that a fighter with a good low-altitude performance was badly needed.

F.C. Form 'Y'.
O.R.B., App.
July.
A.H.B./IIM/
A2/3A.
FC/S. 29331,
Encl. 9A.
Ibid,
Encl. 13A.

On 6 July, for example, two Spitfire VB's intercepted and chased an Me.109F for twenty miles without being able to overtake it, and the Spitfire VB was no match for the F.W.190 at low altitudes. No. 11 Group therefore asked permission to use Mustangs from Army Co-operation Command and this was agreed to by Fighter Command on 14 August. Two squadrons - Nos. 26 and 239 - of No. 35 Wing were stationed at Gatwick and there were to come under the operational control of the Kenley Sector of No. 11 Group. The area to be covered was the South coast, particularly the stretch between Eastbourne and Shoreham. The Mustangs were not to be used against enemy aircraft operating above 10,000 feet.

Ibid,
Encl. 17A.

F.C. Form 'Y'.
O.R.B., Apps.
June-Aug.
A.H.B./IIM/A2/3A.

During the period June to August, Fighter Command flew 11,837 daylight interception patrols but did not succeed in definitely destroying a single low-level raider.⁽¹⁾ Anti-Aircraft Command fared no better, although a Canadian light anti-aircraft unit shot down one of two F.W. 190's, which attacked Eastbourne gasworks on 26 August.

Ibid, August

(ii) Long Range Bomber Operations

During the period, enemy overland long-range bomber attacks also increased.⁽²⁾ In June the number of enemy sorties was actually slightly greater than the total for May. The bomb weight dropped, however, was less than one third the total for May some ten tons as against thirty-five for May. As the low-level fighter attacks, the enemy effort reached its peak during August,⁽³⁾ although the heaviest daylight raid during 1942 took place in October. The character of long-range and reconnaissance bomber raids continued to reflect the tactics of the fighter-attacks. Enemy aircraft usually Do.217's or Ju.88's operated singly or in pairs and approached targets from very low altitudes, usually in poor weather conditions.

A.H.B./IIM/119/
1C, 19 June.

The attack on the Lockheed Hydraulic Brake Co's factory at Leamington Spa on 13 June was typical of this type of raid. The factory was then a bottleneck in the production of hydraulic equipment for Halifax, Beaufighter, Mosquito and Hurricane aircraft. It manufactured all the Avery couplings for all Bristol engined aircraft and was also the sole producer of certain essential parts for motor torpedo boats, tanks and other service vehicles. The destruction of this factory would therefore have been a serious blow to our war production.

Ibid, 17 June and
F.C. Form 'Y'.
O.R.B., App., June,
A.H.B./IIM/A2/3A.

At 1250 hours on 13 June a Do. 217 was detected off the Wash. The weather was poor with rain and drizzle and much low cloud, sometimes below 1,000 feet. The enemy aircraft was

A.W.A. Report
BC/G/10.
A.H.B./IIB/47/4,
Addendum, Table 2.

- (1) During this period Air Warfare Analysis Section estimated that 14 enemy aircraft were destroyed by day but this total consists of long-range and reconnaissance bombers which penetrated inland and anti-shipping aircraft.
- (2) Largely at the expense of the night effort, which correspondingly declined.
- (3) With 97 overland daylight sorties during the month.

Ibid.
A.W.A. Report
BC/G/10
A.H.B./IIB/47/4

tracked by sound by the Royal Observer Corps, and flew an erratic course at 1,000 to 2,000 feet over Boston, Market Deeping, Wittering, Coventry and Honiley. At 1308 hours the raider orbited Leamington and from a height of 250 feet dropped three high explosive bombs in the Lockheed factory area. It then returned on a reciprocal course under cloud cover and flew out over the Wash at 2,000 feet at 1338 hours. Sixteen fighters were ordered up but failed to effect any interceptions. Two A.I fighters were included in this force but since neither possessed centimetre A.I., no detections were made because of the low-altitude of the enemy aircraft. No serious damage was caused to the factory but it was clear that the enemy both realised the Lockheed factory's importance and could effectively map-read his way inland over considerable distances.⁽¹⁾ Four additional Bofors guns were immediately allocated to the factory and were in position by 17 July and the Air Ministry took immediate steps to find out from the Supply Ministries, whether any other factories remained which were bottlenecks and whose destruction would have important effect on munitions output. The Chief of the Air Staff was quite willing to allocate such factories increased light anti-aircraft defence, even at the expense of the protection of Royal Air Force airfields.

During the second half of July, the number of these attacks by single enemy aircraft again increased.⁽²⁾ These included a second raid on the Lockheed factory at Leamington Spa and four other attacks on key point factories and assembly workshops as follows:-

| | <u>Date</u> | <u>Factory</u> | <u>Height from which attack was carried out.</u> |
|---------------|-------------|-----------------------------------------|--------------------------------------------------|
| Ibid, | 16 July | Lockheed Co. Leamington | 400 feet |
| 30 July 1942. | 17 " | Ford Works Dagenham | 600 " |
| | 19 " | Messrs. Hoffman and Marconi, Chelmsford | 500 " |
| | 27 " | Short Bros. Swindon | 400 " |
| | " " | Rolls Royce, Derby | 400 " |

A.W.A.Report
BQ/18A and
F.C.Form 'Y'
O.R.B., App.
July 1942.
A.H.B./IIM/
A2/3A.
Ibid, August 1942.

On 27 July thirty enemy bombers operated over this country without loss.

Further isolated attacks occurred during August but key point factories were not involved. Moreover, the proportion of enemy reconnaissance to bombing sorties rose during the month and on 19 August - the day of the Dieppe Raid - forty-three enemy reconnaissances aircraft were reported overland.

Ibid.

The problem of intercepting these single enemy bombers operating at low altitudes and in poor weather was as difficult to solve as that connected with the fighter attacks on the south coast. Approximately half of the raiders crossed the English coast at the Wash or South Lincolnshire and it was

A.H.B./IIM/
119/10, 17 June

A.M.Pamphlet
No.248, Chap.4,
P.115.

(55692) 51

- (1) The 'erratic course' referred to by the Royal Observer Corps could be accurately correlated with outstanding ground features such as railway lines, rivers and large towns.
- (2) The Fuehrer der Seeluftstreitkraefte command was dissolved in July and its forces were used in daylight bombing over England.

W.S.D.
Outgoing
Flimsies
16 July and
A.H.B./IHH/
119/1C,
23 July 1942.

thought that the enemy had discovered a weak link in the radar chain. The Air Ministry therefore asked the Director of Radar to increase the low coverage in this area. It is also equally possible that this was simply the most convenient route to the Midlands for enemy bombers based in the Low Countries. The enemy must also have known that anti-aircraft defences were thinly spaced in this area.

Towards the end of August and in addition to the raids which have been mentioned, the German Air Force carried out several single high-altitude bombing attacks on this country. None of these had serious effects but the problem of high-altitude interception now became a matter of some urgency.

Enemy High-Altitude Raids 1942

(i) Planning and Exercises: September 1941-August 1942

R.A.F. Narrative:
'The Air Defence
of Gt. Britain'
Vol. IV, Part III,
para. 54.

The possibility of the enemy using high-altitude aircraft had been realised in March 1941, when consideration was given to the production of anti-aircraft guns capable of engaging aircraft flying at heights above 40,000 feet. It was not, however, until September 1941 that plans were drawn up for the practice interception of Fortresses of No. 90 Group, Bomber Command by aircraft of No. 10 Group.

F.C.O.R.S.
Report No. 448.

In November 1941 a more comprehensive scheme was evolved to deal with high-altitude raiding, in which the greater part of England and Wales was divided into four areas. These roughly corresponded to the areas covered by Nos. 9, 10, 11 and 12 Groups. Each area contained an 'Area Control' connected with a 'Central Control' to co-ordinate their activities. This organisation was the first attempt to solve the peculiar control problem of high-altitude interception. The chief features of this were:

- (a) Owing to the period of time required for our fighters to reach the height of an approaching raider and owing to the expected high speed of sub-stratosphere aircraft, defending aircraft might have to be scrambled when the raider was as far away as 150 miles.⁽¹⁾
- (b) It might, therefore, be impossible to predict where the raider would make landfall, or to which target it was proceeding, until after the fighters were airborne.
- (c) The fighters which were detailed to intercept, would possibly have to deal with a raid 50-100 miles away from their base.
- (d) The heights at which the raider would be flying made it unlikely that the Royal Observer Corps would be able to give either timely or reliable information.

It seemed necessary, therefore, that the defence system should permit control of fighters over a large area, certainly larger

(1) 'Sub-stratosphere' was used to designate those raids either over Great Britain or within 15 miles of the coast, in which enemy aircraft - flew at a height of more than 30,000 feet.

than a fighter sector, and that accurate radar information should be readily available.

F.C.Op.Instr.
No.7/1942
O.R.B.App.
March.
A.H.B./IIM/A2/
3A.

Between March and June 1942 a series of exercises, known as 'Quarry Exercises' took place above 35,000 feet with a Fortress aircraft representing an enemy raider. From these it was deduced that the different conditions in the groups made it undesirable to lay down a rigid, standardised interception system and it was, therefore, left to the individual groups to modify the suggested area control scheme.⁽¹⁾

At the same time it was necessary to improve our anti-aircraft defences. The 4.5" heavy anti-aircraft gun had a maximum ceiling of 37,000 feet and an effective operational ceiling of 30,000 - 32,000 feet. More than four hundred of these guns were dispersed for the defence of vital areas, seventy-one being deployed in the London area: these had a maximum ceiling of 44,000 feet and an effective operational ceiling of 38,000 feet. Action was also taken to re-line 4.5" guns to take a 3.7" shell. This gave them an operational ceiling of 40,000-44,000 feet. One hundred of these guns were expected by October 1942. A new 5.25" gun was also in production a dual purpose weapon for both coastal and anti-aircraft use. In its anti-aircraft role, it was designed to give an operational ceiling of 40,000-44,000 feet. Deliveries of these guns were not, however expected before January 1943. Even although new predictors were in production, accurate high-altitude anti-aircraft fire was not expected. The barrage was designed to be chiefly preventive, whilst the destruction of enemy high-flying bombers would be the task of Fighter Command.

There seemed to be no basic difficulties with regard to the coastal radar chain, which was capable of detecting aircraft at sub-stratosphere heights, at the distance necessary to enable intercepting fighters to reach the bomber's altitude. Experience in the early days of the chain had shown that gaps existed in the coverage but these had been located and corrected. This checking of the coastal coverage had been pursued to discover if similar gaps occurred at stratospheric height but, in general, the coverage was found to be good. There was, therefore, no reason to suppose that gaps would occur in the G.C.I. coverage and this was found to be the case during the 'Quarry Exercises.'

(ii) Enemy Operations: August-December

F.C. O.R.S.
Report No.448

F.C.Form 'Y'
O.R.B., App.,
August.
A.H.B./IIM/
A2/3A.

Although a very high-flying enemy aircraft was suspected of having been over London in June, it was not until 24 August, that three raiders were plotted at 30,000-35,000 feet. The first of these appeared over Cherbourg at 24,000 feet, made landfall at the Needles at 1350 hours at 35,000 feet and seems to have been on a reconnaissance flight. It flew over Southampton, Portsmouth, Chichester, Brighton, Eastbourne and Dover and returned to the Calais area over Deal. The second appeared a quarter of an hour after the first, inland near Dieppe, from where it flew to Le Havre at 18,000 feet. Climbing over the Channel to 30,000 feet, it made landfall at

(1) For details regarding the signals side of interception evolved at the various Groups, see F.C. O.R.S. Report No.448, para.5.

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Selsey at 1450 hours, continued inland to Aldershot, Woking and Byfleet, turning south from there to Horsham and finally left the country over Brighton at 1521 hours. One bomb - probably a 50 kg. was dropped at Camberley. The third raider appeared near Rouen at 22,000 feet. It climbed over the Channel and crossed St. Catherine's Point at 1530 hours at 35,000 feet. It then continued to Littlehampton, after dropping bombs at Southampton, which caused slight damage, and finally returned in the direction of Dieppe.

Fighter Command ordered up nineteen aircraft but no interceptions were effected. The first two raiders were seen by sections of Nos. 308 and 309 (U.S.A.A.F. Pursuit) Squadrons⁽¹⁾ and were identified as Do.217a. It was subsequently agreed, however, that they were Ju.86's.

From this date until the end of the year (thirty-five such raids were recorded, on fourteen of which bombs were dropped. In addition to Southampton, Bristol, Cardiff, Swindon and Colchester were also attacked.

Despite the small number of positive recognitions, the Ju.86P seems to have been the aircraft chiefly used for high-altitude raiding, although towards the end of 1942, F.W.190's appeared more than once at heights above 30,000 feet.⁽²⁾ This aircraft was produced in two versions, the P-1 bomber and the P-2 for high-altitude reconnaissance work. Both were twin-engined monoplanes fitted with pressure cabins to accommodate both the pilot and observer in the forward part of the fuselage. The engines fitted were Junkers Jumo 207A-1 liquid-cooled, turbo-supercharged diesels,⁽³⁾ which gave a maximum speed of 260 to 290 m.p.h. at 30,000 feet and a service ceiling at the start of 36,000 to 39,000 feet and 42,000 feet at the finish of a flight.

Neither model was fitted with armament or armour protection, as these would have decreased the performance and they were, therefore, vulnerable targets for a lightly armed fighter, which could reach and maintain an altitude in the region of 42,000 feet. The striking power of the bomber version was not great (16 x 50 kg. or 4 x 250kg. bombs), nor were its attacks likely to achieve a high degree of accuracy, but neither it nor the reconnaissance version could be ignored. The Chief of the Air Staff was particularly concerned with the possibility of the enemy using the Ju.86P by night as a high altitude radar jammer, thus making the interception of enemy night bombers more difficult.

(iii) The Problem of Interception

At the end of January 1942 it was proposed to develop two types of high-altitude aircraft - one which would operate up to 35,000 feet and another for operations between 30,000 and

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- (1) Operating under No. 11 Group in the Tangmere Sector.
 - (2) On 5 September a high-flying enemy aircraft was variously identified by pilots of No.310 Squadron as a F.W.200, by No.65 Squadron as a Ju.86 and by Nos. 302 and 124 Squadrons as an He.177.
 - (3) The use of diesel engines, considerably reduced the risk of fire from incendiary ammunition.

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Ibid.

F.C. O.R.S.
Report No.448
App.B and
A.W.A.Report
BC/G/10.
A.H.B./IIB/
47/4.

F.C.I.S.
No.353 F.C.
O.R.B.,
App. August
A.H.B./IIM/
A2/3A.
A.H.B./ID/12/61.

W.S.D.Outgoing
Flimsies No.11
12 Feb.1942.

F.C.Form 'Y'
O.R.B.,App.,
Sept.
A.H.B./IIM/
A2/3A.

50,000 feet. Both these types were to have pressurised cabins and it was hoped that the latter might be jet propelled. The commencement of high altitude raids over this country, however, found Fighter Command without a fighter aircraft capable of engaging enemy aircraft at the heights at which they were operating.

Interceptions were initially attempted by Spitfire VB, VI and IX's but none of these aircraft could reach the requisite heights. Only the Mark VI had been developed for high-altitude work. Powered by a Merlin 47 engine, it was fitted with a pressure cabin and had a service ceiling of 38,000 which it could reach in a climbing time of thirty one minutes. But this performance was still insufficient to give it an advantage over the Ju.86F. By August Fighter Command possessed two and a half squadrons of Spitfire VI's but owing to technical reasons they were not operational.⁽¹⁾

F.C., O.R.B.,
App., Feb.
App. A.6.
A.H.B./IIM/A2/3A
and
W.S.D.
Outgoing Flimsies
No.17, 6 Sept. 1942.
A.H.B./ID/12/61.

FC/S.27520,
Encl.14A.
W.S.D.
Outgoing Flimsies
No.17,
14 Sept. 1942..

Ibid,
6 Sept. 1942.

F.C. Form 'Y',
O.R.B., App.,
Sept.
A.H.B./IIM/
A2/3A.

As an immediate counter-measure to deal with the high-altitude raids, on 26 August the Air Officer Commanding-in-Chief allocated three Spitfire IX aircraft to No. 306 (Polish) Squadron at Northolt. These aircraft were fitted with 0.477 to 1 propeller reduction gear; the armour plating was removed; and the airframe was treated with a special surface finish. Pilots had been selected and tested in a decompression chamber and it was found that there was a reasonable chance of them operating in non-pressurised cabins at heights up to 45,000 feet without any serious ill effects.

This temporary high-altitude unit quickly met with some success. On 12 September one of its aircraft flying at 38,000 feet sighted a Ju.86P over the Salisbury-Bath area. The Spitfire climbed to 41,000 feet but was still below the enemy aircraft. By means of jettisoning the extra petrol tank, the Spitfire climbed again to 43,000 feet and carried out a stern attack from about 200 yards range. Cannon strikes were observed on the starboard main plane but the enemy aircraft took violent evasive action and succeeded in escaping in the direction of the French coast. Owing to the frosting up of the windscreen the Spitfire pilot had great difficulty in keeping the enemy in sight during the engagement. This was the only occasion during the year that an enemy high-altitude aircraft was damaged.

It was obvious, however, that some permanent organisation needed to be created for the special task of dealing with high-altitude raids and on 14 September the Air Officer Commanding-in-Chief requested that a High Altitude Interception Unit be established at Northolt with six main aims in view:

W.S.D.
Outgoing
Flimsies
No. 17,
14 Sept. 1942..

- (i) The interception of enemy aircraft at high altitudes.
- (ii) Investigation of the requirements of fighting tactics at high altitudes.
- (iii) Development and exercise of ground control systems for interception at high altitudes.

(1) Nos.124 and 616 Squadrons in the Debden Sector and No.91 Squadron in the Biggin Hill Sector.

- (iv) Specialised training of pilots for work at high altitudes.
- (v) Investigation of technical problems in maintenance of high altitudes, aircraft and training of maintenance personnel.
- (vi) Selection and observation of pilots from physiological and aspects.'

A.H.B./ID/12/
61.

At the same time production was being speeded up of the Spitfire VII powered by a Merlin 61 engine, equipped with a pressure cabin and with an estimated ceiling of 41,000 feet. Trials were also carried out with a single-seater Mosquito aircraft, provided with a pressure cabin and armed with 4 x 0.303 machine-guns.

FC/S.27520,
Encl.18A.

No.124 Sqdn.
O.R.B.

The High Altitude Flight, given de facto recognition in September, continued until November, when it was decided to expand it into a full squadron as one of the three high-altitude squadrons scheduled to be formed in Fighter Command by April 1943⁽¹⁾ Accordingly in January 1943, the Flight was absorbed by No. 124 Squadron at North Weald, which was partly re-equipped with Spitfire VII's.⁽²⁾

From August to December 1942, Fighter Command flew 299 sorties against the forty-six high altitude raiders which operated over this country during this period. Only one enemy aircraft was damaged. The immediate advantages which high-altitude raiding gave to the enemy were not great, although some measure of enemy success might be claimed in that Fighter Command was forced to direct a certain amount of effort and equipment to high-altitude interception. But the threat of more serious raiding always remained until our defences were adequately equipped to deal with it. Moreover, for the second time in the year the German Air Force had produced an aircraft, which temporarily at least, enjoyed an advantage over our own defending fighters.

Period: September - October 1942

(i) Enemy Offensive Fighter and Long-Range Bomber Operations

A.W.A.Report
BC/G/10,
Addendum,
A.H.B./IIB/
47/4.

Ibid.

After the relatively large numbers of attacks and offensive sorties, which the enemy flew during August, the number dropped considerably during September. The total number of enemy over-land daylight sorties - 164 - was in fact the lowest monthly total since April. In October, however, the enemy offensive freshened and during the month enemy aircraft carried out over two hundred sorties, in the course of which 126 tons of bombs

W.S.D.
Outgoing
Flimsies
No.18,
22 Nov.1942.

- (1) The A.O.C-in-C pointed out that even if the high-altitude raids ceased, the squadron would be usefully employed as the top layer of fighter cover in Circus operations.
- (2) The employment of Spitfire VII's raised a difficult problem for the Group Controllers. If a raider at 30,000 feet turned out to be an F.W. 190, it was, with its heavy armament, an awkward opponent for a Spitfire VII carrying only four machine-guns. A Spitfire IX with full armament was much more suitable for dealing with the F.W.190 but it would stand little chance of intercepting the raider, if the latter proved to be a Ju.86P.

A.W.A. Report
BC/18A.
A.H.B./IIB/
47/3.

were dropped. This was the highest monthly tonnage recorded during the year, in spite of the fact that during October the number of cannon and machine gun attacks greatly increased. During the month only one third of the enemy offensive fighters carried any bomb load.

F.C. Form 'Y'
O.R.B., App.,
Oct.
A.H.B./IIM/
A2/3A.

Enemy fighter attacks on South coast targets continued with Kent, instead of Sussex, becoming the area which was most frequently raided. F.W. 190's had now almost completely replaced Me.109's and on 24 September some twenty F.W.190's attacked Hastings. The first plots were received at 1619 hours, the enemy crossed the coast at 1622 and by 1625 were well out to sea again, having dropped their bombs and caused considerable damage to property. The area had been covered during the afternoon by standing patrols⁽¹⁾ but the patrol which was covering Hastings had landed at Biggin Hill and its relief could not take off, owing to severe thunderstorms over the airfield.

The most serious attack during the period was the raid on Canterbury on 31 October. This was a Saturday and the attack took place soon after 1700 hours during the most crowded shopping period. Thirty Me.109's and F.W. 190's crossed the coast near Deal at 1703 hours at heights between zero and 3,000 feet. These aircraft were supported by a further thirty Me.109's and F.W. 190's which provided 'top cover' and flew at heights up to 10,000 feet. Approximately twenty bombs were dropped on Canterbury causing damage, casualties and fires at the centre of the city.

Ibid.

Sixty-three fighters were ordered up in connection with the raid and ten Spitfire VBs of No. 91 Squadron claimed five F.W. 190's destroyed and four damaged for the loss of one Spitfire. A Spitfire IX of No. 122 Squadron also shot down an F.W. 190 into the sea near Deal.

The raid was followed by a night attack⁽²⁾ and was the heaviest daylight attack of the year. Within its limits, it was a well planned and successful enemy venture.⁽³⁾ But such raids could obviously have little or no effect on our war economy and the raid on Canterbury is important only because it points so clearly to the inadequate striking power of the Luftwaffe in the West at this time.

Ibid.

This inadequacy is also represented by the enemy long-range bomber operations during the period. Various single attacks were carried out and on 19 October thirty-five enemy aircraft dropped bombs at scattered places in East Anglia.

FC/S.30881,
Encls. 1B and 4A.

- (1) See below p. 30.
- (2) See below Chap.4, p. 62.
- (3) All the C.H.L. stations in the area - Dover, Foreness, Fairlight and Truleigh Hill - were jammed during the raid. Unfortunately this jamming, which began at 1642 hours, was not reported to the Group Controller until 1705 hours. Jamming of our early warning system occurred spasmodically during the year but in spite of reports from the Middle East that airborne jammers were being used, there is no indication that such jammers were employed over this country. For further details see R.A.F. Monograph: 'Royal Air Force Signals in the Second World War', Vol. IV, Chap. 14.

FC/S.22104/II,
Encl. 65A.

A similar raid took place on widespread areas of Kent, Sussex, Essex, Surrey and Hampshire on 26 October. These attacks, as with the 'tip and run' tactics of the fighters and fighter-bombers, caused Fighter Command to fly a large number of defensive patrols but by the autumn the number of interceptions effected began to show a modest increase.

(ii) Progress in Interception: Beginning of Standing Patrols

During September and October Fighter Command claimed the destruction of twenty-four enemy aircraft, thirteen of which were F.W. 190's engaged on attacking south coast targets.⁽¹⁾ This was by no means a crippling loss for the enemy but it was a definite improvement on the interception results for the previous period. In addition to these losses due to fighters, two F.W. 190's and two enemy long-range bombers were destroyed by anti-aircraft fire. The majority of these losses were inflicted on the enemy during October after several improvements had been carried out in the air defences of the South coast. One of the most important of these was the commencement of standing patrols.

The operations for which Typhoons were used have already been described.⁽²⁾ The results of these were, however, disappointing and the Air Officer Commanding-in-Chief felt that the Duxford Typhoon Wing would be better employed against low-level south coast raiders. Accordingly, on 19 September, the Wing was broken up; No. 609 Squadron was to be based at Biggin Hill with forward sections at coastal airfields;⁽³⁾ No. 266 Squadron moved to Warmwell and No. 257 Squadron to Exeter with a forward section at Bolthead. Moreover, in view of the enemy's regularity in the time of delivering his attacks, and owing to the relatively few offensive sorties which the Command was carrying out at this time, the Air Officer Commanding-in-Chief inaugurated standing patrols from 22 September. Spitfire and Mustang standing patrols were also to be flown, the Spitfires operating between St. Catherine's Point and Selsey Bill and the Mustangs of Army Co-operation Command between Brighton and Hastings. But it was upon the Typhoons that the Air Officer Commanding-in-Chief chiefly relied for improving results, since the Spitfire VB was no match for the F.W. 190 at low altitudes. Four Spitfires were in fact shot down by F.W. 190's during the period.

Standing patrols were not immediately effective. Between 22 September and 30 November only four out of 170 low-flying enemy aircraft were claimed as destroyed or probably destroyed and three of these were destroyed by anti-aircraft fire. The sole success of No. 11 Groups low standing patrols was that of two Typhoons of No. 486 Squadron, which intercepted two F.W. 190's off Hastings on 17 October. One of the F.W. 190's was shot down in the sea.

Two improvements in the Royal Observer Corps system of reporting must also be mentioned. The first of these formed a complement to the low standing patrols. Royal Observer Corps posts between the North Foreland and Lands End were issued with

- (1) The other aircraft claimed to have been destroyed were eight Ju.88's and three Me.210's. During the two months Fighter Command flew 7,555 day interception sorties.
- (2) See above p. 18 et seq.
- (3) The Squadron was moved to Manston on 1 December 1942.

F.C. Form 'Y'
O.R.B., Apps.,
Sept. and Oct.
A.H.B./IIM/
A2/3A and
A.W.A. Report
BC/G/10.
A.H.B./IIB/
47/4.

A.H.B./ID/
12/58.

FC/S.28917,
Encl.28A.

F.C. O.R.S.
Report No.424.
A.H.B./II/
39/2

No.486 Sqdn.
O.R.B.

F.C. Form 'Y'
O.R.B. Apps.,
Sept. and Oct. A.H.B./
IIM/A2/3A.

F.C.Op.Inst.
No.42/1942,
O.R.B., App.,
Sept.
A.H.B./IIM/A2/
3A.

rockets. After 30 September, these were fired as soon as a low flying enemy aircraft was seen and firing was continued - if possible in the direction of the raider - as long as the enemy was on sight. It was hoped that any fighters in the vicinity would see the rockets and therefore be able to effect an interception without waiting for orders from their Controllers.

F.C. Op.Inst.
No.46/1942.
O.R.B., App.,
Oct.
A.H.B./IIM/A2/
3A.

A week later on 5 October, a second scheme to speed up the reporting of fighter bomber raids was introduced. When a Royal Observer Corps post saw a low flying enemy aircraft, it was instructed to pass the word 'RATS' to the Centre before passing any plot. The plotter at the Centre was then to pass 'RATS' to the Controller, who in turn was immediately to inform the Royal Observer Corps Teller at the Sector Headquarters. Sector Controllers would have a map showing the positions of Royal Observer Corps posts in the sector, so that the 'RATS' system would enable the Controller to 'scramble' aircraft before any precise plot was received.

(iii) Improvement of Anti-Aircraft Gun Defences

W.S.D.
Outgoing
Flimsies
No.17,
25 Sept.1942.

On 25 September the Air Officer Commanding-in-Chief wrote to the Chief of the Air Staff: 'In my opinion this problem (i.e. of preventing low-level enemy fighter attacks) is not so much a fighter interception problem as an A.A. problem.' During the spring and early summer there was a serious shortage of light anti-aircraft guns deployed along the south coast, in spite of the reinforcements which were delivered in May. The situation, however, improved during June and 104 guns were allocated to south coast towns from the current monthly production. Production was maintained during the summer, so that by the end of September, 267 40-mm Bofors guns were deployed along the south coast. Moreover, 142 Bofors guns from the October production total of 217 were allocated to south coast towns.⁽¹⁾ An increase in the number of light anti-aircraft guns was not, however, by itself sufficient to counter low-flying enemy attacks.

General Sir
F.A.Pile's
Despatch,
London Gazette,
18 Dec. 1947.

F.C. O.R.B.,
App., Oct.
A.H.B./IIM/A2/3A.

F.C.Op.Inst.
No.41/1942,
O.R.B., App.,
Sept.
A.H.B./IIM/
A2/3A.

Ibid,
No.43/1942
and
App. 'A'

As in the case of fighter aircraft, the warning system required to be speeded up and on 26 September instructions were issued to C.H.L. stations between North Foreland to Marks Castle to inform the appropriate Gun Operations Room immediately any very low-flying aircraft were detected. The direction, size and speed of the enemy formation were also passed in the usual manner as soon as they were estimated. Permission was also granted on 30 September to twenty-three gun defended areas on the south coast, such as Deal, Hastings/St. Leonards and Brixham, to fire at sight on any aircraft approaching from seaward by daylight below 1,000 feet.⁽²⁾ In addition, orders were issued that every light anti-aircraft

FC/S.27900
Encl. 61A

- | | | |
|-------------|---------------|-------------|
| (1) These:- | Sandwich | Deal |
| | Hastings | Eastbourne |
| | Brighton | Worthing |
| | Littlehampton | Bognor |
| | Selsey | Bournemouth |
| | Wareham | Swanage |
| | Torquay | |

- (2) Any Royal Air Force aircraft which crossed the coast at this height or less because of an emergency was to lower its undercarriage as a sign of distress.

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General Sir
F.A. Pile's
Despatch
London Gazette,
18 Dec. 1947.

gun within five miles of the coast from the North Foreland to Lands' End was to be constantly manned during daylight hours.

A.A. Report on
Active Ops.
and F.C. Form
'Y' C.R.E., Apps.,
Sept.-Oct.
A.H.B./IIM/A2/3A.

In spite of these improvements in the anti-aircraft defences at the end of September, the results for the nine weeks ending 31 October were not encouraging. Only two F.W. 190's were destroyed on the south coast during the period. In addition, a Ju.88 was destroyed over East Anglia and on 26 October a Do.217 was shot down by the airfield defences at Southend.

FC/S.21264,
Encl.102.

General Sir
F.A. Pile's
Despatch
London Gazette,
18 Dec. 1947.

A further point with regard to the anti-aircraft defences must also be mentioned. On 1 October a major re-organisation of Anti-Aircraft Command took place. The three Corps and twelve Divisions of the Command were abolished and seven Anti-Aircraft Groups were formed, whose boundaries conformed to those of the Royal Air Force Fighter Groups.⁽¹⁾ This change was promoted by the desire to economise in manpower⁽²⁾, the need for fewer intermediate formations between Command Headquarters and units, and the necessity for still closer co-ordination with the Royal Air Force Fighter Groups. The new organisation, whereby one Anti-Aircraft Commander and his Staff were responsible for all the anti-aircraft defences in a Fighter Group area, proved to be much more efficient than the old chain of command and no major difficulties were experienced during the change-over.

FC/S.21264,
Encl.130A.

(iv) Interception of Enemy Reconnaissance Aircraft

A.D.G.B./S.
22254,
Encl.38A and
39A.

From March 1942 onwards, it was noticed that the activities of enemy meteorological reconnaissance aircraft operating in the Shetlands area were confined to a certain regularity. The enemy aircraft normally left the area before dawn and apart from the fact that they were frequently outside the range of the G.C.I station at Russland, there were no A.I. Beaufighters available. No uncontrolled interceptions were attempted. The matter was raised several times in the course of the summer and the Admiralty were becoming slightly uneasy at the way in which these aircraft could penetrate our interception system and reach the Atlantic.

Ibid.

Accordingly on 8 October three Beaufighter VI's of No. 125 Squadron equipped with A.I were attached to the Royal Air Force Station at Sumburgh. Apart from the interception of enemy

FC/S.21264,
Encl.102.

(1) The numbers of the new A.A.Groups were as follows:-

| <u>A.A.Group</u> | <u>Headquarters</u> | <u>Corresponding Fighter Group</u> |
|------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| No. 1 A.A.Group | London | No. 11 Group No. 10 " No. 9 " No. 12 " No. 13 and 14 Groups (excluding Orkney and Shetland Defences) No. 82 Group |
| No. 2 " " | Uxbridge) | |
| No. 3 " " | Bristol | |
| No. 4 " " | Preston | |
| No. 5 " " | Nottingham | |
| No. 6 " " | Edinburgh | |
| No. 7 " " | Belfast | |

(2) The manpower shortage was becoming serious and on 17 October the A.O.C-in-C compiled a list of economies to be effected within Fighter Command.

F.C. O.R.E.,
App., Oct.
Letter to S.of S.
A.H.B./IIM/A2/3A.

Ibid,
Encl.76A.

aircraft it was felt that the attachment would give the G.C.I. Controllers in No. 14 Group area some experience in handling interceptions. On 17 November a further three Beaufighters of No. 125 Squadron were sent to Peterhead for the same purpose. The aircraft at Peterhead had no success but those at Sumburgh between 8 October and 10 November claimed to have destroyed two Ju.88's, probably destroyed an He.111 and damaged two Ju.88's.

Ibid,
Encl.70A.

The difficulty of intercepting enemy reconnaissance aircraft, which often flew at heights above 20,000 feet and in poor weather conditions, thus prevented Fighter Command from seriously interfering with their activities. Such enemy operations, however, did not meet more than a limited defensive effort on the part of Fighter Command and the detachment from No. 125 Squadron at Peterhead was therefore withdrawn on 13 December.

Ibid,
Encl.88A.

Decrease in Enemy Attacks: November-December 1942

(i) Special Measures in Connection with Operation Torch

During November, the squadrons that were to take part in Operation Torch - the liberation of North-West Africa - began to assemble in the south and south-west of England. This meant that there was a large concentration of aircraft in No. 10 Group's area and this Group therefore took special measures to deal with any possible enemy attacks during the month.

FC/S.30742,
Encl.33B.

From 1 November one section was maintained at standby all day at Warmwell and, when the weather was cloudy, two Beaufighters from No.604 Squadron were brought to readiness. In addition, airfields in the Group were reinforced with both heavy and light anti-aircraft guns, which were manned by skeleton crews throughout the daylight hours.⁽¹⁾

FC/S.30742,
Encl.25A.

Fighter Command, in co-operation with Bomber Command and the VIIIth U.S. Air Force, also agreed to undertake large scale air diversions, in the form of offensive operations against the Continent. By this means it was hoped to prevent enemy attacks and at the same time contain the maximum number of German aircraft in northern France and the Low Countries, so that they could not be used in the Mediterranean Theatre.

(ii) Enemy Operations

A.W.A.Report
BC/G/40.
A.H.B./IIB/
47/4.

The expected enemy attacks during November did not take place; indeed, there was a sharp decrease in both the number and weight of attacks during the month. Only one bombing incident occurred between 6 November and 14 December and the total number of enemy aircraft which operated over this country during November was only thirty-seven - the lowest monthly total of the year. This sudden collapse of the daylight offensive against the United Kingdom had several causes.

Ibid,
Addendum,
Table 1.

A.M.Pamphlet
No.248,
Chap.9,
p.201-4.

Throughout 1942 the German Air Force was faced with a shortage of manpower and in October it was decided to build up

FC/S.30742.

- (†) 142 H.A.A. and 132 Lt.A.A. guns were deployed amongst the following airfields: Predannack, Portreath, Exeter, St. Eval, Chivenor, Perranporth, Davidstow Moor, Ibsley, Stony Cross, Hurn and Trebelaue.

ground fighting divisions from the Air Force (Luftwaffe Felddivisionen) to a strength of at least 50,000 men. In fact, by the spring of 1943, some 200,000 men were drafted to the Field Divisions from the Air Force. The production problem was even more serious, largely due to the surprisingly low level of German aircraft production between 1939 and 1942. More directly, the German air effort against this country was certainly affected by the worsening situations, from the enemy point of view, on the Eastern and African fronts.

A.W.A. Report
BC/G/10.
A.H.B./IIB/
47/4,
Addendum,
Table 1.

During December there was a slight increase in the number of cannon and machine gun attacks by enemy fighters. Long-range bombers also flew a total of twenty-four sorties during the month but the raiding was widespread and there was no evidence of carefully planned attacks.

(iii) Improved Interception Results

F.C. Orders of
Battle O.R.B.,
App., Dec.
A.H.B./IIM/
A2/3A.

By 3 December, No. 10 Group was operating two Typhoon squadrons - No. 257 from Exeter and No. 266 from Warmwell; and No. 11 Group was operating three - Nos. 486 (RNZAF.), 609 and 182 from Tangmere, Manston and Martlesham respectively. These squadrons undertook two types of patrol against low-level raiders. Standing patrols were maintained over the coast during periods when Sector Control considered low-level attacks to be most probable. The second method involved holding aircraft at immediate readiness to take off on instructions from Sector Control. Such aircraft were generally airborne within one minute. Weather conditions and limitations of aircraft strength prevented the maintenance of continuous standing patrols along the whole coastline, however, and between 22 September and 31 December only sixty per cent of the enemy raids risked interception by low standing patrols in the No. 11 Group area.

F.C. O.R.S.
Report No. 418.

F.C. O.R.S.
Report No. 424,
A.H.B./II/
39/2.

Between 22 September and the end of November only one, out of one hundred and seventy enemy low-flying raiders, was destroyed by aircraft on standing patrols. During December, however, interception results showed a marked improvement. No. 11 Groups low standing patrols effected the interception of nineteen of the ninety-six low-flying raiders, which operated during the month and claimed the destruction of eleven of these. Ten of these enemy aircraft were destroyed by Typhoons and one by a Spitfire IX. Neither the Spitfire V's and VI's nor the Mustangs had any success but it must be remembered that

Ibid.

Ibid and
F.C. Form 'Y'
O.R.B., App.,
Dec.
A.H.B./IIM/
A2/3A.

F.C. Order of
Battle, 3 Dec.
O.R.B., App.,
Dec.
A.H.B./IIM/A2/
3A.

- (1) In addition to these five, the other Typhoon Squadrons in Fighter Command at 3 December 1942 were:-

| No. 9 Group | No. 12 Group | No. 13 Group |
|------------------------|-------------------------------------------------------------|----------------------------|
| No. 247 (re-equipping) | No. 181 No. 56 No. 195 (forming) No. 183 (forming) | No. 1 No. 197 (forming) |

the Typhoons flew a greater number of sorties.⁽¹⁾ They were also operating in areas where low-flying attacks were most frequent.

In addition to these figures, three F.W. 190's and two JU.88's were claimed to have been destroyed by fighters in November; and during December two Do. 217's were shot down by anti-aircraft destroyed during the two months is not high but the rising interception rate in December showed that the Typhoon standing patrols were meeting with limited success.⁽²⁾ But until a really efficient early warning system could be operated, there seemed no definitive way of countering low-level raiders, except at a prohibitive cost to the energy and resources of Fighter Command. At the close of the year therefore low-level fighter attacks were still causing concern but it was hoped that the new very low looking radar stations, which had been developed during the year, would be able to defeat such attacks early in 1943.

R.A.F. Mono-
graph: 'Royal
Air Force Sig-
nals in the
Second World
War', Vol. IV,
'Radar in Raid
Reporting',
Chap. 15.

(iv) Further Development of C.H.E.L. Stations

It will be remembered that in March the Deputy Chief of the Air Staff authorised the continuance of the scheme of placing C.H.L. Stations on high towers. The first of these to become operational was Cresswell, which was commissioned in November. However, in December, work was suspended on several other sites and at the same time it was decided not to erect any further C.H.L. stations.⁽³⁾ This was because of the satisfactory development of high powered C.H.E.L. stations, which were also less susceptible to enemy jamming.

A.M. File
C.S. 12788,
Encl. 92B.

Ibid,
Encls. 71A
and 92A.

The success of the experiments carried out with the Naval Type 271 equipment at Ventnor in February, led to the preparation of a plan in July, whereby modified Type 271 sets would be used by all three services for surface-watching (i.e. including low flying enemy aircraft). No. 60 Group was eventually to take over all Army surface-watching stations in the early warning Chain. On 25 August a programme was specified for the construction of sixty-three stations and by this date installations were complete at sixteen.

F.C. O.R.S.
Report No. 124.
A.H.B./11/39/2.

(1) For the month of December these were:-

| | Spits. V and VI. | Spits IX | Typhoons | Mustangs | Totals |
|---------------------|---------------------|-------------|----------|----------|--------|
| No. of sorties | 588 | 164 | 746 | 240 | 1738 |
| Enemy aircraft seen | 1 | 4 | 27 | Nil | 32 |

(2) During December the results achieved by standing patrols compared very favourably with those by fighter offensive operations.

| | |
|----------------|----------------------------------------------------------|
| Low Standing | } 1 e/a dest. or probably destroyed per 124 sorties. |
| Patrols | |
| Fighter Rodoes | } 1 e/a destroyed or probably destroyed per 164 sorties. |
| and Sweeps | |
| | 1 Fighter Command a/c lost in battle per 698 sorties. |
| | 1 Fighter Command a/c lost in battle per 147 sorties. |

R.A.F. Signals
Monograph, Vol. IV,
App. 20.

(3) By December there were 122 C.H.L. stations, of which 78 were manned by the Royal Air Force.

F.C. Form 'Y'
O.R.B., App.,
May 1943.

The centimetre Chain of C.H.E.L. stations did not operate in 1942 but by the end of the year experiments seemed to promise that the stations would provide the answer to the problem of intercepting low-level enemy attacks. This in fact proved to be the case and, on 23 May 1943, four Typhoons of No. 1 Squadron intercepted and destroyed an F.W. 190 which had been detected at a thirty mile range - eleven and a half minutes before it reached the coast.

General Summary and Conclusions

It is important, when reviewing the course of German day-light air attacks on the United Kingdom during 1942, to keep them in a true perspective. In the course of the year it was estimated that the enemy flew only 1,548 overland sorties, of which nearly half were offensive fighter sorties. The total bomb weight dropped - 540 tons - was less than one fifth of the total dropped by night. (1) By any standards, this was an extremely modest total. (1) The major part of the German effort was in fact directed against shipping. (2)

A.W.A. Report
BC/18A.
A.H.B./IIB/47/3.

During the year enemy long-range bombers carried out 149 attacks against vital targets, approximately fifty-two per cent dropping their bombs on targets of military importance. The aircraft used in these operations were for the most part Do.217's or Ju.88's and the most favoured height of attack was under 1,000 feet. (3)

A.W.A. Report
BC/G/10.
A.H.B./IIB/41/4.

Enemy activity was slight in the first quarter of the year but low-level fighter and fighter-bomber attacks greatly increased during April and May. During the year a total of 837 bombing, cannon and machine-gun incidents occurred in an area approximately five miles inland from the coast between the Gravesend area of Kent to Boscastle in Cornwall, including the Isle of Wight and the Scilly Isles. No concentration was made against any particular key point or area, but although the low-level raider was chiefly considered as a 'nuisance' raider, it is to the credit of the German Air Force that, on the average, four out of every five fighter-bombers which dropped bombs, did so on a recognisable military target. (4) The most heavily attacked towns by daylight, although not the most frequently raided, were Torquay and Paignton, closely followed by Canterbury, Hastings and Eastbourne. The most frequently raided areas were Kent, Sussex, Dorset, Devon, Hampshire and Cornwall, in that order.

A.H.B./VI/18D.

A.W.A. Report
BC/G/10,
Addendum.
A.H.B./IIB/47/4.

Ibid. BC/18A.

A.H.B./IID/18D.

A.H.B./IIH/69.

A.W.A. Estimates.
Report BC/G/10
IIB/47/4.

A.W.A. Report
BC/18A, Table 7.
A.H.B./IIB/47/3.

- (1) During the afternoon and night of 7/8 September 1940, German bombers dropped over 670 tons of bombs on London.
- (2) 7,684 sorties out of the total of 9,226 sorties.
- (3) 62% of all attacks by long-range bombers were carried out below this height.
- (4) The following table shows the type of targets which were attacked:-

| | Under 1,000 ft. | 1,000- 10,000 ft. | Over 10,000 ft. | Unknown |
|-----------------------------|--------------------|----------------------|--------------------|----------|
| Communications | 130 | 8 | 3½ | 2 |
| Gas Works | 56½ | 2 | 3½ | - |
| Factories | 40½ | - | - | - |
| R.A.F. Stations | 31 | - | - | - |
| Military and Naval Stations | 27 | - | - | - |
| Airfields | 5 | - | - | - |
| TOTAL | 290 | 10 | 7 | 2 |

The difficulties in intercepting both these attacks on the South coast and long-range bomber raids on isolated factory and communications targets have been described. To combat the long-range bombers which frequently operated in poor weather conditions, A.I.-equipped fighters were used but with little success. A.I. could not generally detect aircraft below 5,000 feet and too few fighters equipped with A.I. could be spared from night work.(1) Enemy fighter bombers, which normally remained overland for only a few minutes, were even more difficult to deal with. In spite of considerable re-inforcements of light anti-aircraft guns, anti-aircraft results were disappointing. At the end of September the Air Officer Commanding-in-Chief instituted standing patrols using Typhoons and these enjoyed some measure of success, particularly in December. This was, however, no doubt partly due to the Typhoon's performance, since at low altitudes the Spitfire V was outclassed by the F.W.190, which almost replaced the Me.109 during the second half of the year. The real need was for a very low looking radar early warning system and at the end of the year such a system was being developed.

The high-altitude raids in August and September raised interception problems, which in some ways resembled those connected with the low-level attacks. The damage which the high-altitude raiders caused was not great but, temporarily, Fighter Command lacked a fighter aircraft which had a sufficiently good high-altitude performance. There was, however, no immediate threat that the enemy would increase the scale of high-altitude raiding and in the meantime a High Altitude Flight was formed in September to give special attention to the problem. Production of the Spitfire VII was also speeded up and it was hoped that this aircraft would be able to deal effectively with the Ju.86P - the aircraft the enemy chiefly used for high-altitude operations.

Enemy aircraft losses during the year are difficult to assess with any accuracy. The Air Warfare Analysis Section estimated that between 67 and 85 enemy aircraft were destroyed overland by day and the lower figure probably forms a reasonable estimate.(2)

During the year Fighter Command flew 35,640 daylight interception sorties.(3) This represented a substantial part of the national war effort and must therefore be taken as an indication of some success of the German 'holding' policy in Western Europe at this time. At the same time it should not be forgotten that the threat of large-scale daylight raiding had decreased during the year. This was, of course, largely due to the success of Allied operations in Russia and in the Mediterranean. Nevertheless, it seems reasonably certain to suggest that had the enemy reverted to heavy daylight raids, his forces would have suffered serious losses.

A.W.A. Report
BC/G/10,
A.H.B./IIB/47/4.

Enemy
Documents
A.H.B.6.

- (1) See Chap. 4, p. 44 et seq.
- (2) German bomber losses are only recorded in a block day and night total. This also includes aircraft lost in the course of anti-shipping operations. German fighter losses include aircraft destroyed in combats with our own fighters engaged on offensive operations.
- (3) This total does not include 37,478 sorties devoted to the protection of shipping.

Letter from
A.O.C.-in-C. to
U.S. of State
F.C., O.R.B.,
App., Dec.
A.H.B./IIM/A2/3A.

Owing to the despatch of squadrons and crews to overseas theatres, the strength of Fighter Command fell slightly over the year.(1) At the end of December 1942 the first line day-fighter force consisted of 49 Spitfire and eight Typhoon squadrons. The composition of the force, however, was very different. In January 1942 it included fifty-two Spitfire II A/B or VA/B squadrons: in December this total had fallen to twenty-seven. At the beginning of the year there were no long-range day squadrons in the Command: at the end there were eleven. This change represented the growing importance of offensive fighter operations, which are described elsewhere in this narrative.

There is no obvious break in the history of Fighter Command, from the point of view either of policy or operations, at the end of 1942. The Command, however, received a new Air Officer Commanding-in-Chief on 28 November when Air Marshal T. L. Leigh-Mallory took over the command from Air Chief Marshal Sir Sholto Douglas.(2)

Throughout the year the threat of heavy daylight bombing had greatly diminished; and this was paralleled by a similar decline in enemy night attacks which must now be considered.

Letter A.O.C.-in-C.
to U.S. of State
F.C., O.R.B., App.,
December.
A.H.B./IIM/A2/3A.

- (1) During 1942, 1,320 operational pilots had been sent overseas from operational squadrons (i.e. not including those sent direct from O.T.U.s.)
- (2) The following were Air Officers Commanding Groups for the major part of 1942:

| | | |
|-----|---------|----------------------------|
| No. | 9 Group | A.V.M. W. A. McCloughry |
| " | 10 " | A.V.M. A. H. Orelebar |
| " | 11 " | A.V.M. T. L. Leigh-Mallory |
| " | 12 " | A.V.M. R. E. Saul |
| " | 13 " | A.V.M. J. O. Andrews |
| " | 14 " | A.V.M. R. Collishaw. |

CHAPTER 4

THE AIR DEFENCE OF THE UNITED KINGDOM BY NIGHTIntroduction(i) Review of Enemy Night Bombing during 1941⁽¹⁾

The weight of bombs dropped on Great Britain by night during the last five months of 1940 was greater than the total for the whole of 1941. This fall during 1941 was largely due to two causes: first, the withdrawal of a substantial part of the German long-range bomber force to the Russian front in July and secondly, the enemy shift of attack from overland to shipping objectives.

After the German night attacks on London following the Battle of Britain failed to produce critical results, a new phase of night bombing opened dramatically with the heavy attack on Coventry on 14/15 November 1940. Throughout the next three months concentrated attacks were made against provincial towns and cities, in which the pathfinding unit, K.G.100, using a radio beam, played a special part. London remained a secondary target but on 29/30 December sustained a heavy attack, during which large sections of the City were destroyed by fire.

During the period February to May 1941 the enemy's strategy of blockade assumed increasing importance and forty-eight of the sixty-one major raids were made on ports. The period is also noteworthy for two important improvements in our night defences. First, our radio counter-measures began to achieve considerable success in severely restricting the operations of K.G.100 and II/K.G.26, which was using the Benito blind bombing equipment. Even more important was the introduction of radar A.I. and G.C.I.⁽²⁾ The first versions of A.I. sets were installed in January and by March the much more efficient A.I. Mark IV was being fitted to Beaufighters. Results immediately began to prove the superiority of radar interception over other methods and in May enough evidence had accumulated to show that the twin-engined squadrons equipped with A.I. made nearly double the number of contacts with enemy aircraft in under half the number of sorties made by single-engined 'Cat's eye' squadrons. A.I. fighters operating under G.C.I. control in fact revolutionised the technique of our night fighting and became the most important defence against the night bomber, although measures continued to be taken to improve the standards of visual interception using searchlights.

By the middle of June a substantial part of the German long-range bomber force was withdrawn to the Eastern Front and most of the bomber units which remained in the West came under the control of Fliegerkorps IX. The enemy increased offensive against shipping resulted in a fall in the number of overland raids during the remainder of 1941 and from May to December

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- (1) Unless otherwise indicated, this summary is extracted from R.A.F. Narrative: 'The Air Defence of Great Britain', Vol. III, Chaps. 5-7.
 (2) Aircraft Interception and Ground Controlled Interception.

F.C.Int.
 Summ. 217,
 Jan. 1941.

No. 80 Wing
 O.R.B.,
 April 1941.

A.W.A.S.
 Estimates.

Ministry of
Home Security:
Report of
Damage to Key
Point Targets,
1941.

the German Air Force launched only three major attacks against British cities. Minor attacks, however, continued and the way in which low-flying enemy aircraft could avoid radar detection, was causing concern.⁽¹⁾ Moreover, although the enemy raids were not seriously interfering with our war production, the inevitable damage to house property, public services and industrial premises could not be ignored. In addition between 12 May and 31 December 1,585 persons were killed by bombs.

Throughout the year the night-fighter force had been very considerably expanded. In November 1940 it amounted to eleven squadrons, while in January 1942 it totalled twenty-five squadrons (including five Turbinlite squadrons). Anti-Aircraft Command had also been greatly increased in size and during the year S.L.C. equipment (radar control for searchlights) was slowly brought into operation. Towards the end of the year a large scale redeployment of searchlights was effected. This new system remained the basis of searchlight deployment for the rest of the war and must therefore be described.

(ii) Redeployment of Searchlights - The 'Fighter Box' System, November 1941

In September 1941 the General Officer Commanding, Anti-Aircraft Command submitted a new plan for the deployment of searchlights, which discarded the principle that searchlights should be laid out in even clusters. The deployment was accordingly put in hand and on 3 November Fighter Command issued instructions concerning the new system.

The layout of the searchlights was altered from an even carpet of clusters spaced 10,400 yards apart to a series of zones or belts, which were designed to ensure that an enemy aircraft flying to its objective would be forced to cross a belt, where it could be engaged by fighters. To give the fighter sufficient warning of the approach of an enemy aircraft, 90-cm. type searchlights (210 million candle power) were spaced 10,000 yards apart in a belt approximately twelve miles deep called the 'Indicator Belt' or 'Indicator Zone'. The object of these lights was to show the position of the target to the defending fighter rather than to achieve direct illumination. Contiguous with the 'Indicator Zone' was the 'Killer Belt' or 'Killer Zone'. This was approximately twenty miles deep and fourteen miles long and was equipped with 150-cm. searchlights (510 million candle power) placed 6,000 yards apart.⁽²⁾ All searchlights were eventually to be equipped with S.L.C. radar control. The 'Indicator' and 'Killer' Zones together formed a 'Fighter Box', which was between thirty and forty miles deep and fourteen miles broad; and the country was divided into a series of 'Fighter Boxes' around the various Gun Defended Areas.

In the centre of each 'box' a stationary vertical searchlight beam was exposed, around which the fighter pilot circled, until he received information that a hostile aircraft was entering his 'box'. This was signified by the code word

-
- (1) Below 5,000 feet the 'echo' of the target was generally lost in the returns from the sea.
 - (2) Many of the ideas seem to have been derived from the German searchlight layout.

'Trade' after which the Controller gave the height of the raid as then known. The fighter then climbed or lost height so that he was 2,000 feet above the raid height. He then received the code word 'Smack' meaning 'Attack' followed by the height of the raid as known at that moment. The fighter then flew close to the orbit beam. The searchlight crew, on the receipt of Smack, depressed their beam so that it pointed in the direction of the raider. Interception was effected by the pilot constantly directing his aircraft along this beam towards the intersection of searchlight beams in the 'Indicator Zone'. If the fighter possessed A.I. and contact was established, the searchlights could be doused on receipt of a code word.

Assuming that the fighter had a command of speed of at least twenty per cent over the enemy aircraft, it was estimated that it would close with the enemy before the latter could leave the 'Killer Zone'. Long chases were not desirable and unless action was imminent the fighter was not allowed to pursue the enemy beyond the rear edge of the 'Killer Zone' (the 'Rubicon'). The enemy aircraft would then be allocated to the fighter in the next 'box', while the original fighter would return to its point of orbit.

If large scale raids prevented the Sector Controller from allocating raiders to specific fighters on orbit, two additional methods were to be used depending on whether the night was dark or bright. On dark nights fighters, having received the code word 'Crackers' were given permission to engage any raiders in their 'box' which were illuminated by the searchlights, still, however, being restricted by the rear boundary of the 'Killer Zone'. On bright moonlight nights 'Cat's eye' fighters, on receipt of the code word 'Free Lance' were freed from searchlight control, as it was considered likely that they would meet with more success, and were allowed to go forward to meet the incoming stream of raiders and to follow them to the target area without restriction. Finally, in order that the operation of normal A.I. fighters should proceed simultaneously with those operating with searchlights, the former were limited to the area over the sea or clear of the outer land boundaries of 'boxes' bordering the coast.

Ibid.

It was hoped that the new searchlight layout would greatly increase the co-operation between searchlights and 'Cat's eye' fighters and therefore the success of the latter but the relatively small number of enemy night overland attacks during 1942 and the steady replacement of single-engined 'Cat's eye' squadrons by twin-engined A.I. squadrons, meant that the system was never properly tested during the year.

N.A.D. Papers
1942. Passim.

Reduced Enemy Activity: 1 January - 23 April 1942

(i) Enemy Operations

The steady decline in the number and weight of night attacks at the end of 1941, owing to an increase in the enemy anti-shipping offensive and the withdrawal of bomber units to the Eastern Front, has already been described. In fact during the last three months of 1941 only eight attacks on land targets were carried out and none of these was serious. Nevertheless, it was estimated that the enemy maintained a force of some 200 to 250 bomber aircraft in the West,

N.A.D. (42) 2.

SECRET

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Enemy Documents.

A.H.B.6.

available for night operations against the United Kingdom. This was a reasonable estimation, as German records show that the total bomber strength in the West (i.e. based in France, the Low Countries and Norway), including long-range reconnaissance bombers, amounted to 274 aircraft. However, in January, due to training, re-equipping and other causes, only 146 of these aircraft were serviceable. The aircraft were chiefly based on airfields in Holland and Belgium and little use was made of the nearer bases in the Pas de Calais area, perhaps because of our intruder activity.

N.A.D.(42) 2.

Ibid.

The outstanding characteristic of the activity during the beginning of the year was the enemy's obvious intention to conserve aircraft. This was no doubt the reason for the fact that over half the enemy sorties were flown by minelaying aircraft.(1) Moreover, the remainder of the enemy effort was directed against shipping targets, so that the effort against land objectives was extremely small.(2)

F.C., O.R.B.
Form 'Y'
App., Jan.
A.H.B./IIM/A2/3A.

On 10/11 January(3) some thirty enemy aircraft were active over Merseyside. About half the number of these aircraft laid mines and attacked shipping in Liverpool Bay, while the remainder dropped bombs at scattered places in the North and Midlands. The attack was delivered in two waves and the second of these approached the Norfolk and Lincolnshire coasts on a course, which was identical with that of our returning bombers. The weather was extremely bad but a Beaufighter of No. 456 Squadron from Valley succeeded in destroying one of the raiders. This Merseyside attack was the only occasion during the period when enemy aircraft flew any distance overland.

Ibid.

F.C., O.R.B.,
Form 'Y'
App., March.
A.H.B./IIM/A2/3A.

On 15/16 January several enemy aircraft dropped bombs at various places on or near the coast between the Tees and the Tyne. No attacks were recorded in February but small scale raids took place on three nights in March. On 23/24 March an attack on Weymouth and Portland was carried out shortly after sunset by twelve enemy bombers which were escorted by a number of Me.109's. The raid was intercepted by Spitfire VB's of No. 118 Squadron and one Ju.88 was claimed as destroyed and two damaged. Dover was also subjected to a small attack later the same night. Weymouth and Portland were attacked on the following two nights and on the second of these, Dover was again raided. All these operations were, however, carried out on a small scale and it was estimated that the total number of enemy sorties during the month of March was less than eighty.

Ibid.

N.A.D.(42) 2.

F.C., O.R.B.,
Form 'Y'
App., April.
A.H.B./IIM/A2/3A.

During the first half of April the only two overland raids were an attack on Portland on 2/3 April and on the Grimsby area on the 7/8th. Both were carried out by aircraft which appeared either to have been searching for shipping targets or to have been minelaying. On 16/17 April there were scattered raids on places in Dorset and Hampshire and on the following night, about forty enemy aircraft delivered a

N.A.D.(42) 2.

- (1) From the enemy's point of view, aerial minelaying was most economical. See below Chap. 5.
- (2) From 10 November 1941 - 31 March 1942, this averaged only 6% of the total enemy night effort.
- (3) See Appendix No. 4 for summary of principal German night attacks in 1942.

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poorly concentrated attack on Portsmouth and Southampton. This was the only overland activity during the period, apart from occasional enemy reconnaissance sorties over the Shetlands.

There was thus no indication of the much increased scale of enemy attacks which began towards the end of April. Before considering these, however, the strength and the tactics used by our night fighter force must be reviewed.

(ii) Progress of Night Fighting

A.H.B./11L/16/21A,
Encl. 21A.

D. Ops. Folder
Target Force 'E'.
and
FC/S.24279,
Encl. 28B.

FC/S.23836,
Encl. 3A.

At the beginning of January there were twenty-five squadrons in the first line night-fighter force. This total included the Defiant Squadrons, and the Turbinlite flights, which were composed of Havocs and Hurricanes. The force was therefore some five squadrons short of Target Force 'E' - the plan which was agreed to by the Air Ministry in June 1941 and which aimed to give Fighter Command a night-fighter strength of twenty-five specialised squadrons, in addition to five Turbinlite squadrons. Nevertheless, the force had been considerably expanded during 1941 as in April of that year, it consisted of only sixteen night squadrons.

A.M. File
S.72157,
Encl. 128A.

FC/S.24279,
Encl. 84A.

At the beginning of 1942 re-equipment was proceeding slowly, since, although twin-engined aircraft were available at Maintenance Units, it was not possible to deliver them to squadrons, owing to shortages of certain vital items, such as propellers and junction boxes. However, at the end of March the position improved and three Defiant squadrons were at that time in the process of re-equipping with Beaufighters and one with Mosquitos. Moreover, a new Mosquito Squadron (No. 157) had been formed in December 1941. There thus remained three Defiant squadrons to re-equip with twin-engined aircraft and two new squadrons to form, in order to reach the twenty-five specialised twin-engined night-fighter squadron Target. The re-equipment of the Defiant squadrons to either Beaufighters or Mosquitos was also a matter of some urgency, since even the Mark II version of the Defiant was no match for the Ju.88 or Do.217, either in speed or rate of climb.

N.A.D.(42) 2.

During the first three months of 1942 only eight enemy aircraft were destroyed by fighters. This small total was the result of two main causes: the comparatively small number of enemy sorties and the fact that the majority of the enemy activity took place over sea areas.⁽¹⁾ This meant that interceptions were difficult to effect, since the range of the G.C.I. Stations was only 35 to 40 miles. Experiments were therefore conducted in the use of two C.H.L. Stations, Foreness and Happisburgh, for interception purposes. These stations had a range of 60 to 65 miles and by the end of March the experiments justified the preparation of a further sixteen stations for interception duties.

The enemy's defensive tactics consisted of flying an erratic course at a low altitude and this also contributed to the Controller's difficulties, since raiders operating below 5,000 feet were generally too low to be covered by the G.C.I. stations. It was therefore hoped that the low-looking qualities of the C.H.L. stations could again be used.

N.A.D.(42) 2.

(1) During the period 10 November 1941 - 31 March 1942, 94% of enemy activity was over the sea.

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A.M. File
CS.12638,
Encl. 3A.

F.C. Form 'Y'
and
A.M. File
S.6848,
Encls. 82A
and 83A.

A.M. File
CS.12638,
Encl. 22A.

In July 1941, the C.H.L. station at Foreness was fitted with a P.P.I. tube and successfully used for fighter control and by November 1941 five C.H.L. stations had been so equipped. At about 1900 and 2200 hours on 14 January, two A.I. Beaufighters from Nos. 29 and 255 Squadrons each shot down a Do.217. The enemy aircraft were suspected of minelaying in the Thames Estuary and the combats took place, under the control of the C.H.L. station at Foreness, eighty miles north-east of the North Foreland and thirty miles off Ostend respectively.

By the end of April eight C.H.L. stations were being used for controlling interceptions and a further eleven were planned. However in August, when the position was reviewed, it was estimated that C.H.L. stations had been responsible for only three night combats below 5,000 feet. Moreover, and apart from the difficulties of staffing, the use of C.H.L. stations for interception purposes meant sacrificing the primary duty of the stations, which was continuous raid reporting. The Air Officer Commanding-in-Chief, therefore reduced the number of stations, which could be used for control as well as reporting, from nineteen to nine.(1)

Apart from the difficulties of control, the problem of A.I. contact remained, since even the Mark IV A.I. was not normally effective below 5,000 feet. Moreover, the fitting of new versions of A.I. which had better low altitude performances was well behind schedule. On 20 January only nine aircraft were equipped with Marks V or VI,(2) while two months later the Air Officer Commanding-in-Chief complained that during this time he had only received eight Defiants and three Beaufighters fully equipped with the new type of A.I. At the end of March, however, A.I. production increased somewhat, although the Air Officer Commanding-in-Chief was still worried about the slow rate at which the new types of A.I. were being fitted to aircraft at Maintenance Units.

A.O.C.-in-C.
W.S.D.
Outgoing Filmesies,
20 Jan. 42.

Ibid.,
17 Mar. 1942.

Ibid.,
1 April 1942.

N.A.D.(42) 2.

During the period, the lethality of combats decreased slightly, partly perhaps due to the increased armour, which enemy bombers were carrying and partly to the enemy's policy of flying in a series of mild turns as a normal routine. This had the effect of making every shot a deflection shot for our fighters.

(1) These were:-

| No. 10 Group | No. 11 Group | No. 12 Group | No. 13 Group | No. 14 Group |
|-------------------|-------------------------------------|--------------------------|-----------------|-----------------|
| Kite Kingswear | Foreness Beachy Head Swingate | Happisburgh Easington | Goldsborough | Cocklaw |

For further details see R.A.F. Monograph: 'Royal Air Force Signals in the Second World War', Vol. V, Part IV, Chap. 12.

- (2) Mark V: 5 Beaufighters in No. 219 Squadron.
Mark VI: 4 Defiants in No. 264 Squadron.

A.O.C.-in-C.
W.S.D.
Outgoing Filmesies,
20 Jan. 1942.

(55692) 72

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F.C., O.R.B.,
Oct. 1942.

FC/S.25116,
Encl. 1A.

Interception by Turbinlite aircraft belongs almost entirely to 1942 when the system became obsolescent, owing to the rapidly improving methods of radar detection. The idea of using an airborne searchlight, which would enable a satellite fighter to close with an enemy aircraft, was first conceived in 1940. At that time the enemy was making heavy attacks on this country and fighters were achieving little success on dark nights. On 30 June 1941, the Director of Operations (Home) decided to form ten flights of Turbinlite aircraft, five to start forming in July, the remainder in August.⁽¹⁾ The aircraft to be used for carrying the lights were to be Havocs and modified Boston III's, the satellite fighters being Defiants, which were later replaced by Hurricanes.

N.A.D. (42) 2.

By November 1941, seven flights had been formed and by the end of March, after the formation of two new flights and the conversion of No. 93 Squadron to a Turbinlite Flight, the ten flights had a total of sixty-eight aircraft. Three of these flights were equipped with Boston III, four with Havoc II and three with Havoc I aircraft.

FC/S.22104/II,
Encl. 13A.

N.A.D. (42) 2.

On 12 February 1942 the Chief of Air Staff gave permission for the Flights to be used operationally, but only if a scale of attack of the order of fifty aircraft or more should develop against any vital point. Nine flights accordingly provided aircraft at readiness every night but no opportunity arose to test the new system during the first three months of the year. Neither was there any occasion during this time of trying the new system of co-operation between searchlights and single-engined aircraft.

Intruder operations are described elsewhere in this narrative,⁽²⁾ but it is interesting to record that from November 1941 to March 1942, they proved to be the most successful form of night fighting.⁽³⁾

The year thus opened quietly as far as operations were concerned. The problem of intercepting the single raider flying an erratic course at a low altitude appeared to depend upon the introduction of new radar and other scientific equipment: that is, the progress of night fighting depended largely upon technical progress. In addition to the emphasis on solving the various technical problems, the period is largely one of the re-equipment of squadrons and the formation of new ones.

FC/S.25116,
Encl. 1A.

(1) These were:-

| | | |
|----------|--------|-----------------|
| No. 1451 | Flight | at Hunsdon |
| " 1452 | " | " West Malling |
| " 1453 | " | " Wittering |
| " 1454 | " | " Colerne |
| " 1455 | " | " Tangmere |
| " 1456 | " | " High Ercall |
| " 1457 | " | " Middle Wallop |
| " 1458 | " | " Predannack |
| " 1459 | " | " Hibaldstow |
| " 1460 | " | " Acklington. |

(2) See below Part II Chap. 8, p. 135.

N.A.D. (42) 2.

| (3) | Intruder | T.E. Fighter | S.E. Fighter |
|---------------------------------|----------|--------------|--------------|
| Sorties per combat | 7 | 72.6 | 251.1 |
| Sorties per e/a destroyed | 70 | 150.6 | 1632.5 |
| See also below Part II Chap. 8. | | | |

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The Baedeker Raids: 23 April - 9 May 1942

(i) Introduction and Opening Attacks on Exeter
23/24 and 24/25 April

Towards the end of April the scale of enemy overland attacks was rapidly increased and comparatively heavy, concentrated raids were carried out against Exeter, Bath, York and Norwich. These attacks on lightly defended cathedral cities and non-industrial towns within fifty miles of the coast continued into May and were given the name of Baedeker raids(1)

Until the late summer of 1941, Luftlotte 3 had carried out the sound strategical policy of concentrating its efforts against the British seaborne supply lines but subsequently the German High Command decided that greater attention should be given to industrial targets such as Birmingham. Objections, which were raised by Luftlotte 3 on the inadequacy of the forces at its disposal, were brushed aside but before the necessary organisation was completed, the increasing effect of Bomber Command's raids brought about a second change of policy. On 28/29 March 1942 Bomber Command delivered a heavy and concentrated attack against Luebeck and German public opinion, led by Hitler and the Propaganda Ministry, demanded heavy reprisals in the form of similar attacks on British cities.(2) Vergeltungsangriffe (reprisal raids) were therefore given top priority.

'I now consider it absolutely essential that we continue with our rigorous reprisal raids. I also agree that not much is to be accomplished with raids on munition centres. Like the English we must attack centres of culture, especially those which have only little anti-aircraft defences. Such centres should be attacked two or three times in succession and levelled to the ground: then the English will no longer find pleasure in trying to frighten us with their terror attacks There is no other way of bringing the English to their senses. They belong to a class of human beings with whom you can talk only after you have first knocked out their teeth.'

The shrill, over-confident tones of Dr. Goebbels could not, however, alter the fact that at this time, the necessary Luftwaffe bomber forces were not available in sufficient strength to produce any result that would satisfy the demand for an adequate reprisal. Nevertheless, preparations were made to assemble as much strength as possible and the original pathfinder force, K.G.100, was brought back to France and began to practise pathfinder tactics, using radio navigational aids.

-
- (1) In a speech on 26 April Hitler threatened the 'eradication of all British cities one by one as a reprisal for each R.A.F. attack.' He spoke of taking Baedeker's guide and of striking each British city off the guidebook as and when it was destroyed. However, the epithet originally seems to have been coined by Baron Braun von Stumm of the German Foreign Office Press Department.
- (2) There is the further possibility that the German High Command hoped that Bomber Command would divert its raiding from vital targets and fritter away its strength on equivalent German cities.

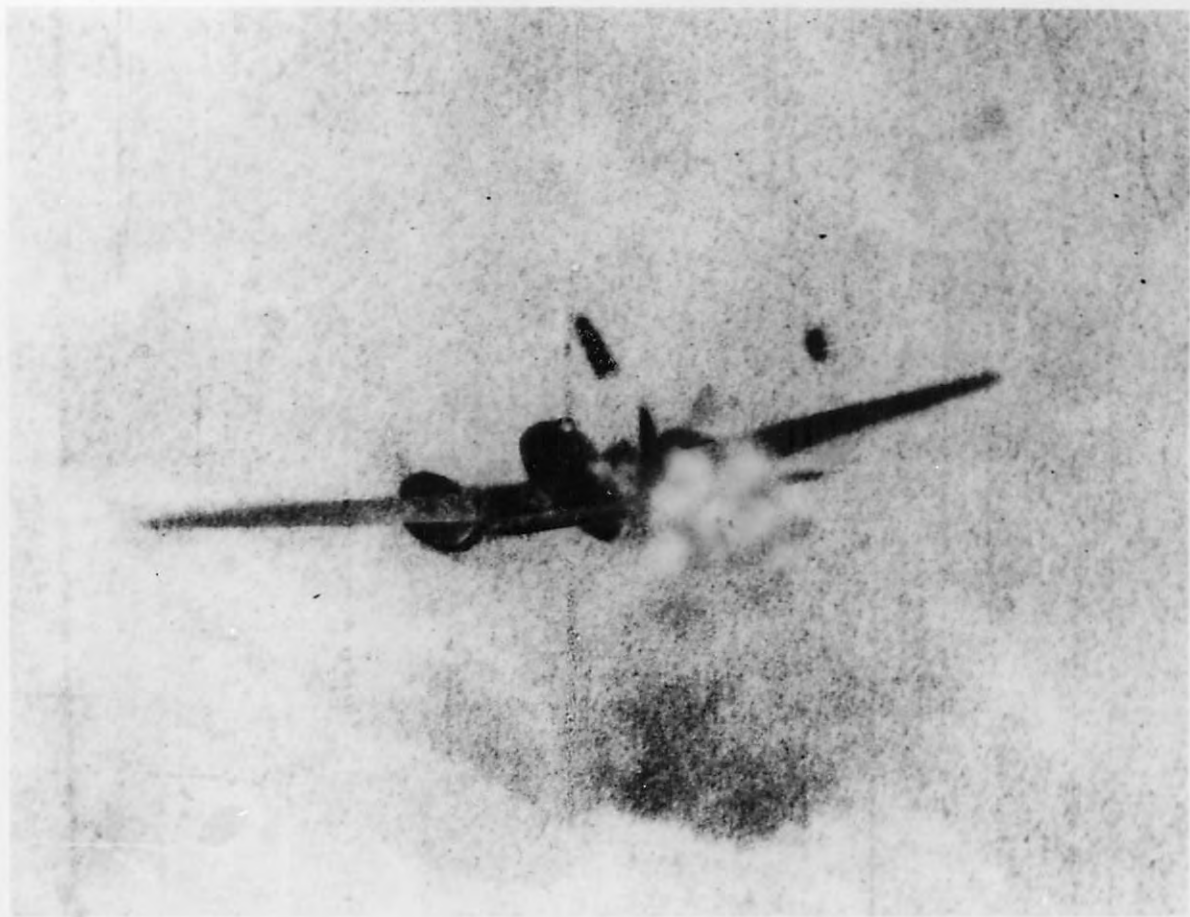
A.D.I. (K)
Report No.
12/1946.

A.M. Pamphlet
No. 248,
Chap. 8,
p. 195.

'The Goebbels
Diaries' edited
L. P. Lochner
(London 1948)
p. 138.

A.M. Pamphlet
No. 248,
Chap. 8,
p. 195.

A. M. Pamphlet
No. 248
Chap. 8 p. 196.
'The Goebbels
Diaries' edited
L. P. Lochner
(London 1948)
p. 148.



Combat with Heinkel III



Focke Wulf 190

Altogether the total German bomber strength in the West at the end of April had increased by more than fifty per cent. since January. (1)

The raids did not come as a complete surprise, as in March the Air Ministry had thought that enemy reprisal attacks for Bomber Command raids were probable and the Air Officer Commanding-in-Chief had accordingly warned all the operational groups to maintain a high state of night readiness. (2)

The first attack took place on the night of 23/24 April and consisted of a scattered raid on the Exmouth area. About forty enemy aircraft were plotted in Lyme Bay and of these some twenty-three crossed the coast between Weymouth and Brixham. Bombs, including a large proportion of incendiaries, were reported over a wide area of Somerset, Devon and Cornwall. One stick was dropped on the western part of Exeter. According to German sources, units of K.G.2, K.G.100 and Gruppe 106 took part in the raid. One Do.217 was destroyed over Exeter by a Beaufighter of No. 604 Squadron. It appears, however, that Exeter was the primary target, since on 24 April a German reconnaissance aircraft reported that little damage had been done to Exeter. A second raid was therefore ordered for the following night.

At about midnight 24/25 April, some twenty-five aircraft attacked the city from heights between 5,000 and 15,000 feet. They did not achieve a high degree of concentration and may have been investigating the success likely to be expected from attacking unprotected cities. Nevertheless, some 6,000 houses in Exeter were either destroyed or damaged, the gas services were seriously affected (although by the evening of the 27th 50 per cent of normal supplies were resumed) and troops stationed in the vicinity were required to help the rescue services. Police reinforcements were also introduced and seven Feeding Centres opened. Fighter Command flew ninety-two interception sorties during the night but without success.

W.S.D. Outgoing
Flimsies No. 12,
21 Mar. 1942.

F.C. Form 'Y',
Vol. 10.

A.W.A.S.
Report BC/14.

Enemy Documents
A.H.B. 6.

F.C. Form 'Y',
Vol. 10.

A.D.I. (K.) Report
No. 100/1942.

F.C. Form 'Y',
Vol. 10.

A.H.B./11/70/234.
Home Security
Weekly Appreciation
No. 97.

F.C. Form 'Y',
Vol. 10.

Enemy Documents
A.H.B. 6.

- (1) German Bombers based in France, the Low Countries and Norway.

| | Strength | Serviceable |
|-------------------|----------|-------------|
| On 3 January 1942 | 274 | 146 |
| On 30 April 1942 | 429 | 210 |

W.S.D. Outgoing
Flimsies No. 12,
21 Mar. 1942.

- (2) The strength of possible enemy attacks had also been correctly estimated i.e. it was thought the maximum number of possible sorties in one night against this country, including sorties by Reserve Training Unit, would be about 150; but that it was unlikely that more than 80 aircraft would operate on any one night.

(ii) Attacks on Bath, Norwich and York: 25/26 to 29/30 April

The third Baedeker attack was delivered against the Bath and Bristol area on 25/26 April in two main waves. At 2150 hours the first of about fifty enemy aircraft crossed the coast between Bridport and the Isle of Wight and flying between 7,000 and 10,000 feet attacked two main concentration areas, one in the Bristol, Bath and Severn Valley area, and the other between Taunton and Yeovil. At 0350 hours the second wave of some forty enemy aircraft using the same route, again penetrated as far as Gloucester and Bath. According to prisoner-of-war reports several crews from Gruppe 106 and K.G.2 made double sorties, the total strength employed being about fifty aircraft.

The scale of this enemy activity was the largest since July 1941. Fighter Command flew 127 interception sorties and claimed the destruction of three enemy aircraft: a fourth was also destroyed by anti-aircraft fire off Portland.

The attack on Bristol was hampered by the balloon barrage but, in spite of this, public utilities were damaged and in the Bedminster Division alone some 700 houses were damaged. The greater concentration, however, was at Bath, which suffered a low-level attack of some accuracy. Both the gas works and the Regional Control Room were hit and the Central Telephone Exchange was damaged and had to be evacuated. Twenty-six fires were reported and hits on the Tiverton Tunnel necessitated the closure of the line between Bath and Bristol. The passenger station, the L.M.S. Goods Yard, twelve gas and eight water mains were also seriously damaged, in addition to residential property, particularly in the old part of the Town. This was the heaviest of the Baedeker attacks and apart from incendiaries, seventy-seven tons of high explosives were dropped.(1)

On the following night, 26/27th, the enemy launched a second attack on Bath and because of the slight anti-aircraft fire expected to be encountered a number of relatively inexperienced crews were employed. However, they found the anti-aircraft defences on the alert. On the previous day the defence of twenty-eight possible Baedeker target towns had been put in hand and Bath was to be reinforced on 27 April.(2)

- (1) The attacks on Norwich were, however, more concentrated.
(2) Altogether 252 guns were to be withdrawn from north and north-western areas for deployment further south. By 8 May, 228 of these were ready for action at the following places:-

| | | | |
|-------------|----|-----------------|----|
| Aldershot | 12 | Ipswich | 8 |
| Andover | 7 | Lincoln | 12 |
| Ashford | 8 | Maidstone | 8 |
| Bath | 12 | Norwich | 12 |
| Basingstoke | 12 | Penzance | 8 |
| Cambridge | 8 | Peterborough | 8 |
| Canterbury | 12 | Salisbury | 12 |
| Chelmsford | 8 | Taunton | 8 |
| Colchester | 8 | Tunbridge Wells | 8 |
| Exeter | 12 | Truro | 8 |
| Guildford | 12 | Winchester | 11 |
| Hayle | 6 | York | 8 |

F.C. Form 'Y',
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A.H.B./11/70/234.

F.C. Form 'Y',
Vol. 10.

A.H.B./110/114.

A.H.B./11H1/69.

A.W.A.S. Report on
Attack on Bath,
15 May 1942,
A.H.B./11/70/234.

Ibid.

Ibid.

A/M Douglas
Outgoing Flimsies,
27 April 1942.

F.C. Form 'Y',
Vol. 10.

A.D.I.(K.) Report
No. 100/1942.

A.W.A.S. BC/16.
A.H.B./11M/A2/3A.

F.C. Form 'Y',
Vol. 10.

F.C. Form 'Y',
Vol. 10.

About sixty enemy aircraft operated over south-western parts of the country during the night, of which some thirty again concentrated on Bath. Two hospitals, four churches and the G.W.R. station suffered direct hits and communications were disrupted. Moreover, the fire position which did not at first present serious difficulties, was aggravated by a high wind and low water pressure in one area. A large number of houses was involved and, including those damaged during the previous night, totalled 480 destroyed and 1796 unfit for habitation. However, the Rest Centre organisation worked smoothly and satisfactorily dealt with the homeless. Fighter Command flew forty-five interception sorties against the raiders and claimed one enemy aircraft as probably destroyed.

Bath was not 'really annihilated' as the Germans claimed but considering the size of the town it suffered serious damage. During the two nights 413 civilians were killed and 357 seriously injured. The bulk of the personnel in the various A.R.P. services worked on a part-time basis and their training was found to be well up to standard, although police and troop reinforcements were required during the second night. The major part of the damage was caused by fire and it was estimated that approximately 4,400 incendiary bombs were dropped during the two attacks. The system of fire watching appears to have been unsatisfactory and little attempt was made by civilians (apart from those in the A.R.P. organisation) to put out incendiaries which fell on private property. It might, however, be remembered, as the writer of the Air Warfare Analysis Section Report says, 'that in Bath there are a great many houses occupied only by elderly, rather rheumatic people'.

On 27 April it was plain that at least an attempt was being made to implement part of Hitler's threat to wipe out British cities in the Baedeker guide. This meant a game of guessing for the defence services, as to which town was the next to be attacked. Fighter Command was not redeployed in any way, but the Air Officer Commanding-in-Chief asked all his Group Commanders to see that a high standard of night readiness was maintained and that plenty of fighters were put into the air at the first signs of an attack.

On 27/28 April the offensive was switched to the East Coast. Of about forty-five enemy aircraft which operated during the night, some twenty-five concentrated on Norwich. Aircraft from K.G.2 operated from Soesterberg in Holland, while those from K.G.100 and Gruppe 106 came from Dinard-Pleurtuit. Enemy crews were briefed to attack any large factories which were seen or, alternatively, the centre of the city. In fact, the concentration was made against the west and north-west of Norwich and extensive damage was done to the poorer residential property. The height of attack varied from several thousand to a few hundred feet, and shallow dive-bombing, low-level and machine-gun attacks were carried out. No. 12 Group put up fourteen aircraft in layer patrols over Norwich. These sighted several Do.217's, three of which were attacked but without visible results. Altogether Fighter Command flew ninety-five interception sorties.

After an interval of one night, Norwich was again attacked on the night of 29/30 April. The raid was both heavier and more concentrated than on the first occasion.

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About forty-five enemy aircraft were engaged and both the centre of the city and the St. Giles district suffered serious damage.

A.H.B./11/70/234.

Ibid.

The firewatching system broke down completely during the second attack, chiefly because very large numbers of people had trekked into the surrounding country after the first night's raid. It was estimated at the time that 7,000 people were made homeless and that out of the total population of 115,000, some 40,000 left the city. This mass and sudden evacuation placed a considerable strain on the civil defence authorities but there was no suggestion of panic. In fact, the general morale of the city seems even to have been improved by the raids.

Production was naturally affected but this was chiefly due to the fact that factory workers spent several days searching for relatives and arranging for them and their own families to be billeted. Neither of the two large factories - Messrs. Lawrence and Scotts and Boulton and Paul - was damaged.

A.D.I. (K.) Report
No. 100/1942.

F.C. Form 'Y',
Vol. 10.

See App.No.2.

On the previous night, 28/29 April, a force of between thirty and forty enemy aircraft attacked York.⁽¹⁾ K.G.30 was first over the target with the object of raising fires. Crews were given the railway station as their primary objective and direct hits were obtained on it and the nearby locomotive depot. There was also a good concentration of high explosive and incendiary bombs on the northern and central parts of the city. Between them Nos. 9, 12 and 13 Groups put up 117 fighters. Three 'cat's eye' Hurricanes of No. 253 Squadron claimed to have destroyed one Do.217 and two He.111's, a Beaufighter of No. 406 Squadron claimed the destruction of a Ju.88 and a Beaufighter of No. 68 Squadron claimed the destruction of a Do.217. According to enemy records only one bomber was lost.

Report on Ops.
Turbinlites
F.C., O.R.B.,
App. May.
A.H.B./IIM/A2/3A.

Ibid.

This night was the first occasion on which Turbinlite tactics were practised operationally.⁽²⁾ A Turbinlite Havoc of No. 1459 Flight obtained a contact on an enemy aircraft, which was 2,000 feet above it at a range of 10,000 feet. The Turbinlite aircraft closed and climbed 2,000 feet and obtained a visual of the enemy at a range of about 4,000 feet, the airspeed being about 220 m.p.h. The satellite Hurricane of No. 253 Squadron went forward and having a clear view of the enemy at a range of about 2,000 feet, asked the Turbinlite aircraft not to expose the light. Unfortunately the latter did not hear this request and exposed the light. The enemy aircraft showed up clearly and was easily identified as a Dornier, probably a Do.217. It was held in the beam for ten to twelve seconds, although it took violent evasive action by executing a steep right hand turn on to a reciprocal course. The Turbinlite finally lost it at about 6,000 feet. Although the satellite pilot saw the enemy aircraft clearly in the beam throughout the exposure, he was unable to get into the firing position, because he was just getting into position to attack on his own visual, when the light came on. He then found

A.D.I. (K.) Report
No. 100/1942.

F.C., O.R.B.,
App. May.
A.H.B./IIM/A2/3A.

- (1) The units involved were Gruppe 106, K.G.2, K.G.100, K.G.30 and K.G.77 from Gruppe 4.
- (2) On two previous nights, 14/15 and 26/27 April, Turbinlite teams had flown interception patrols but in both cases the contacts which were made, faded before the range had closed sufficiently to expose the light.

himself slightly below and very close to the Havoc and would therefore have had to cross over through the beam in order to attack, as the enemy had dived away to the right. The satellite pilot could not therefore counter the enemy's violent evasive tactics and did not open fire.

A.H.B./111/70/234.

Enemy Documents
A.H.B.6. and
Night Int. Summ.
No. 7 F.C., O.R.B.,
App. May.
A.H.B./111/A2/3A.

Altogether since the beginning of the Baedeker raids some six hundred civilians had been killed and considerable damage had been suffered by public utilities and private property. This was achieved by the German Air Force for the loss of only sixteen aircraft - thirteen destroyed by fighters and three by anti-aircraft fire. The immediate effect on our war production was not great but had the raids continued on the same scale for several weeks the effect might well have become much more serious. After the second raid on Norwich, however, the enemy offensive slackened and when the attack was renewed on 3/4 May, the target was Exeter.

(iii) Further Attacks: 30 April/1 May-8/9 May.

F.C. Form 'Y',
Vol. 10.

O.R.B.
No. 253 Sqdn.
A.H.B./111/E253/1.

There was a scattered raid on the Tyneside area on the night of 30 April/1 May by some twenty-five aircraft but the attack was not concentrated, and no serious damage was done. During the night, however, a Turbinlite team recorded its first success at 0142 hours, a Turbinlite Havoc of No. 1459 Flight left Hibaldston with a satellite Hurricane IIC of No. 253 Squadron. Apart from a 10/10th layer of low cloud, the weather was excellent with clear moonlight. An enemy aircraft was detected and when the range had closed to 500 yards could easily be identified as a He.111. The Hurricane pilot attacked from 100 yards before the Turbinlite was switched on and the He.111 dived into the cloud after which a fire was seen lighting up the cloud. Strikes had been observed by both pilots and since the fire died down quickly, it was assumed the enemy aircraft had sunk in the sea. The aircraft was claimed as destroyed. This was the first occasion on which a Turbinlite team shot down an enemy aircraft, although the existence of the Turbinlite did not contribute in any way to the destruction of the Heinkel.

On the nights 1/2 and 2/3 May the country was completely free from bombing but on 3/4 May Exeter sustained a heavy attack. This proved to be the last of the concentrated Baedeker raids.

F.C. Form 'Y',
Vol. 10.

At 0045 hours the first of approximately sixty enemy aircraft appeared from the direction of Caen and Cherbourg. Flying at heights varying from 9,000 to 20,000 feet, they crossed the English coast at various points between Poole and Torquay and concentrated on Exeter. The weather was excellent, so that the raiders had little difficulty in finding the city and delivering a sharp attack.(1)

A.H.B./111/70/234.
A.W.A.S. Report.

Incendiary bombs were dropped during the first eight to ten minutes and these were followed by high explosive, and later a mixture of bombs. A certain amount of machine-gunning and cannon-firing was also reported. Fighter Command put up eighty-three aircraft to intercept the raiders with some

(1) The alert was sounded at 0145 and the all-clear at 0238.

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success: four Ju.88's and one Do.217 were claimed as destroyed and one unidentified enemy aircraft as probably destroyed.(1)

By 9 May the Bomb Census staff had recorded the fall of 166 high explosive, thirty-seven unexploded and at least 5,000 incendiary bombs. Damage due to fires was serious and wide-spread. Several conflagrations occurred, and one in the centre of the city extended over approximately sixteen acres. Once a fire caught hold, it spread rapidly for several reasons. First, the streets in the city were very narrow and even High Street - the main through traffic artery - was only forty to fifty feet wide. There were also very few squares, church-yards or open spaces. Secondly, many of the buildings were constructed of timber with only a light stucco facade to simulate stone. Moreover, since the city was the chief shopping centre in Devon, most of the buildings in the centre contained combustible contents. Finally, a light wind from the north-east was strong enough to spread the fires.

The total civilian casualties were 147 killed, 75 seriously injured and 419 slightly injured. Casualties among the National Fire Service were surprisingly light and consisted of only two men with legs fractured and two with fractured arms.

On the following night, 4/5 May, two waves of raiders, totalling some seventy enemy aircraft, made a scattered attack on the Cowes district of the Isle of Wight. A considerable weight of high explosive bombs was dropped at Cowes but, in spite of the large number of aircraft, relatively few casualties were caused. The attack differed from the other raids in the Baedeker period in two ways. First only a very small proportion of incendiary bombs were dropped; and secondly Cowes contained factories of great importance to the war effort. Several of these were damaged and four workshops of Messrs. Saunders Roe Ltd. were destroyed.

On the three nights, 5/6 to 7/8 May, the total number of enemy aircraft operating over the British Isles was only eight and on the 7/8th two of these were destroyed. On the 8/9th, however, a force of approximately fifty-five enemy aircraft operated over the eastern parts of Suffolk and Norfolk. Some fifteen attacked Norwich but on 1 May a mobile barrage of forty balloons had been deployed in the city and this was effective protection against the accurate, low-level bombing which it had suffered in previous raids. In addition, three decoy sites had been constructed in the neighbourhood. The result of these two improvements in the city's defences was that the majority of the bombs fell outside the city and only slight damage was inflicted. Fighter Command despatched thirty-seven aircraft on interception patrols and a He.111 was attacked by a Beaufighter of No. 409 Squadron but no claim was made.

This was the last raid of the Baedeker period, although isolated extensions of this type of attack took place at Canterbury on 31 May/1 June, 2/3 June and 31 October/1 November.(2)

(1) A Beaufighter of No. 307 Squadron destroyed two of the Ju.88's, one of which fell near Topsham Barracks, Exeter. According to German records eight bombers failed to return.

(2) See below p. 62.

SECRET

(iv) Summary and Conclusions

F.C., O.R.B.,
App. May.
A.H.B./IIM/A2/3A.
and
F.C. Form 'Y',
Vol. 10.

Night Int. Summ.
No. 7 F.C., O.R.B.,
App. May.
A.H.B./IIM/A2/3A.

Enemy Documents
A.H.B.6. Trans.

During the Baedeker period it was estimated that the enemy flew 716 sorties, against Fighter Command's 1,208 interception sorties. Enemy losses are difficult to assess. Fighter Command claimed thirty-seven aircraft destroyed, eight probably destroyed and twenty-eight damaged; in addition, Anti-Aircraft Command claimed nine destroyed, one probably destroyed and four damaged. Estimates from German sources give a total of thirty-four aircraft destroyed and eight damaged by enemy action over the period. This total does not include aircraft attacked while on the ground but includes those lost by other intruder action.⁽¹⁾ Four aircraft were also lost and two damaged due to operational flying accidents. Taking the mean of these figures, it therefore seems likely that between four and five per cent of the attacking enemy force was destroyed.

N.A.D. (42) 4.

A.M. Pamphlet
No. 248, Chap. 8,
pp. 174-8.

Enemy Documents
A.H.B.6. Trans.

A.H.B./IIG/114 and
A.M. Pamphlet
No. 248, Chap. 8,
p. 196.

A.D.I.(K.) Reports
No. 100/1942 and
No. 12/1946.

N.A.D. (42) 4.

A.D.I.(K.) Reports
No. 100/1942 and
No. 12/1946.

F.C. Form 'Y',
Vol. 10.

Although such a loss was not prohibitive and for an air force with adequate reserves might not even be considered serious, it represented a considerable strain on the Luftwaffe's resources at the time. During the Baedeker period both aircraft and crews from the Ergaenzungsgruppen (Reserve Training Gruppen) were sent to reinforce Luftflotte 3's long-range bomber and bomber-reconnaissance units. This short term policy of reinforcement was doubtless brought about by the fact that all available trained reserves were required for the Eastern Front, both to resist the Russian winter offensive and to prepare for the German offensive, which opened in June. The use of crews with little experience over the United Kingdom, however, meant that losses amongst the Ergaenzungsgruppen were heavy. For example, on the night of the 3/4th, during the attack on Exeter, five out of the seven aircraft lost belonged to the Fourth Gruppen; and over the whole period, sixteen out of the thirty-four aircraft destroyed by enemy action, were Fourth Gruppen aircraft. This was a serious matter for the Luftwaffe, since the loss of instructors further retarded the training programme which was already well behind schedule.

The strain on enemy crews - particularly inexperienced crews - was also considerable. Apart from the effect of intruder activity, aircraft frequently made two sorties in one night and one prisoner of war crew reported that they had carried out seven raids in the course of six nights. Moreover, flying times were increased by the fact that the enemy invariably operated from bases in Holland and north-west France, instead of the nearer airfields in the Pas de Calais area.⁽²⁾

Great efforts were made to ensure secrecy and the movement of enemy aircraft before the raids, was undertaken at low altitudes and in W/T silence. This attention to security was also observed during the raids themselves. When the enemy aircraft flew from Dinard to attack Norwich on 29/30 April, they took a circuitous route over France to the Belgian coast,

F.C. Form 'Y',
Vol. 10.

N.A.D. (42) 2.

- (1) It also includes daylight losses over in the U.K. but during the Baedeker period only one enemy bomber was claimed to have been destroyed by day. This was a Ju.88 which was shot down on 25 April by a Hurricane of No. 43 Squadron.
- (2) Perhaps because of R.A.F. intruder activity.

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then flew northwards up the North Sea in order to disguise the objective until the last possible moment and finally approached the target from the north-east.

R.A.F. Monograph,
'Balloon Defenses
1939-1945',
Section 27.

F.C. Op. Instr.
No. 20/1942.
A.H.B./IIM/A2/3A
and
A.H.B./IIB/119/1C.

FC/S.22104/II,
Encl. 24A.

No new schemes of night fighting were introduced to combat the Baedeker raiders. Apart, however, from the redeployment of anti-aircraft guns, three mobile balloon barrages were formed. The first of these was in operation over Norwich by 1 May and the remaining two at Canterbury and at Salisbury were operating before the end of the month. By moving these barrages from place to place and by substituting dummy barrages, consisting of 'L.Z.' balloons filled with air for real barrages, it was also hoped to create the impression on the enemy that all the Baedeker Target Towns were adequately protected.

The importance of the balloon barrage as an effective means of defence against concentrated bombing is sometimes overlooked. Of the thirty-seven towns most heavily attacked during the year, twenty were protected by balloons. The average raiding efficiencies⁽¹⁾ for these two classes of target were 38 per cent against those protected and 65 per cent against those unprotected by balloons. The lack of adequate defences in and around the Baedeker towns was undoubtedly the main reason for the high levels of raiding efficiencies during the Baedeker raids, and the greatest single deterrent to concentrated bombing appears to have been the presence of a balloon barrage.

A.W.A. Report
BC/18A.
A.H.B./IIB/47/3.

The effects of the Baedeker raids on our war production was very slight: nor was it prolonged. Considerable damage was, however, inflicted upon residential and private property, in addition to 975 civilians being killed and 870 seriously injured. Had the raiding continued there is little doubt that a severe strain would have been thrown on the local administering authorities. But by the spring of 1942, the German Air Force in the west was no longer capable of sustaining a prolonged offensive. Indeed the losses, both in crews and aircraft, which it suffered during the Baedeker raids represented a curtailment of its striking power which it could ill afford.

A.H.B./IIB/1/69.

Perhaps the most significant fact about the raids was that the primary tasks of the majority of enemy units taking part

A.W.A. Report
BC/15.
A.H.B./IIB/47/3.

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- (1) The enemy's 'Raiding Efficiency' is defined as the proportion of H.E. bombs dropped on land within 50 miles of the target, which fall within the target areas. It takes no account of wastage within the target area nor of the total weight despatched and should not be confused with the enemy's overall bombing efficiency. This is defined as the ratio of the effective weight of bombs which damaged vulnerable parts of the objective, to the total weight of bombs despatched from enemy airfields.

Ibid.
BC/18A.

Raiding efficiencies of 97% and 91% were achieved against Norwich on 27/28 April and 29/30 April. The average efficiency of the nine attacks at the end of April and the beginning of May was 74%. For a specific example of the efficiency of a balloon barrage see below p. 175.

had previously been attacks on shipping and minelaying.⁽¹⁾ Considering the Luftwaffe's strength and equipment at the time, this was a sound military policy. The attacks on non-industrial cathedral cities, however, were a thoroughly uneconomical way of applying the night bombing effort. They illustrated both the unsound basis on which German strategical air planning was then based and once again emphasised the defects of a system of Command, where political considerations may be allowed to assume an overriding importance.

Small Scale Widespread Attacks: 9 May-27 July 1942

(i) Enemy Operations.

It is difficult to find any clear policy behind the German night operations which took place between the close of the Baedeker raids and the attacks on Birmingham at the end of July. Although the enemy flew a relatively large number of sorties - including a substantial number against land targets in the second half of June - few of the attacks were concentrated.⁽²⁾ The slight loss in war production was in fact occasioned much more by the time lost by the necessity of taking cover during air raid warnings, than by direct bomb damage. On the whole, the enemy gave increased attention to shipping, in the form of minelaying and spasmodic, and for the most part ineffective, attacks on convoys.

During the two weeks following the Baedeker raids enemy activity fell to a low level, probably owing to the strain which had been placed on aircrews during the Baedeker raids. Apart from a scattered attack in the Hull area on 19/20 May by some thirty aircraft, enemy operations consisted solely of minelaying sorties off the East coast.

N.A.D.(42) 4.
and
F.C. Form 'Y',
Vol. 10.

On the nights of 31 May/1 June, 2/3 and 6/7 June, Canterbury was attacked. On the first raid less than half of the total of fifty enemy aircraft operating, actually attacked the city, although the weather was good and the distance from target to base short. This may have been caused by the activities of our night fighters. Concentrations of both high explosive and incendiary bombs were good. On 2 June, however, a balloon barrage was deployed over the city and this had a notable reduction on the 'raiding efficiency' of the second attack on 2/3 June which fell from 86 per cent to 24 per cent.⁽³⁾ The third attack on 6/7 June was not serious. Both in intent and effect the raids were similar to the Baedeker attacks but the damage was by no means so severe. After the raid on 31 May/1 June, the Germans described Canterbury 'as a strong garrison town and of economic importance as a grain marketing centre. This raid repays Cologne three-fold. Canterbury burning everywhere.' Whether the Germans - particularly those living in Cologne - believed statements such as this, is unfortunately not recorded.

A.W.A. Report BC/15.
A.H.B./IIB/47/3.

Ibid.

-
- (1) During the Baedeker period 23 April-9 May, there was not a single report of enemy minelaying.
 - (2) During the period 9 May-27 July, it was estimated that the total number of enemy sorties was 1,440. German sources are not available.
 - (3) 'Raiding Efficiency' is defined above p. 54.

N.A.D. (42) 4 and 7.
F.C. Form 'Y',
Vol. 10.

Enemy Documents
A.H.B.6. Trans.

Out of the total of eighty-five enemy aircraft operating during the three nights night fighters claimed five destroyed, three probably destroyed and two damaged. These claims were probably excessive, although on all three nights, night fighter activity seems to have had a marked effect on the standard of bombing accuracy.

N.A.D. (42) 4.

Apart from these attacks, during the period 24 May-17 June, the enemy appeared to be taking somewhat half-hearted anti-invasion measures. Enemy minelaying aircraft were reported either in the Thames Estuary or off the Sussex-Hampshire coast on eight nights and on four, shipping in the South-western Approaches was unsuccessfully attacked.⁽¹⁾ On 24/25 May and 3/4 June the Poole Harbour area was attacked but the raids were not concentrated and the damage caused was not serious. On the first occasion a decoy fire (known as a 'starfish') was lit on Brownsea Island and succeeded in attracting no less than 18 tons, or nearly one third, of the total weight of high explosives dropped that night.

Ibid.

A.W.A. Report
BC/15.
A.H.B./IIB/47/3.

During the second half of June, the enemy launched a series of small attacks on land targets, chiefly those which were situated near the coast. The attacks were curious, in that they were extremely widespread and bombs fell at such widely dispersed places that it was difficult, except in one case (the attack on Weston-super-Mare on 28/29 June), to determine the enemy's objective. The enemy also employed new tactics. His aircraft approached the coast in a tightly packed mass but spread out over a wide area on crossing the coast. This was presumably an attempt to defeat our G.C.I./A.I. method of interception by saturation and was partially successful.

N.A.D. (42) 4.

F.C. Form 'Y',
Vol. 10.

The raid on Weston-super-Mare on 28/29 June was carried out by about forty enemy aircraft. The first of these crossed the coast at Sidmouth at 0143 hours and the last departed at 0255 hours. The attack was thus concentrated, during which thirty to forty heavy calibre high explosive bombs were dropped and at least seventy fires were started. Only one of the raiders was claimed to have been destroyed by a Beaufighter of No. 307 Squadron.

The other attacks, which caused little damage, were carried out against the following areas:-

N.A.D. (42) 4.

| | |
|-------------|-------------------------------------|
| June 21/22. | Southampton. |
| 24/25. | East Anglia and Midlands. |
| 26/27. | Norwich. |
| 27/28. | Axminster and Weston-super-Mare. |
| 29/30. | Tees-side and Midlands. |
| July 1/2. | South Wales and South-West England. |

Out of a total number of 254 enemy sorties during the seven raids, Fighter Command claimed to have destroyed thirteen aircraft.

F.C. Form 'Y',
Vol. 10.

During July the majority of the enemy effort was again switched to the East coast. Small scale bombing attacks were

F.C. Form 'Y',
Vol. 10.

(1) Minelaying took place on 30/31 May, 6/7, 7/8, 8/9, 10/11, 13/14, 14/15 and 15/16 June; shipping attacks on 29/30 May, 13/14, 15/16, 16/17 and 17/18 June.

carried out against Tyne and Tees-side on three nights (6/7, 7/8 and 25/26 July) and against East Anglia on four (11/12, 21/22, 22/23 and 23/24 July). Enemy minelayers also operated on several occasions both in the Thames Estuary and in the outer Bristol Channel.

(ii) Improved Interception Results

Ibid. and
N.A.D. (42) 4
and 7.

During the period 9 May-27 July, Fighter Command claimed the destruction of sixty-one enemy aircraft.⁽¹⁾ The claim in itself is not remarkable but when the monthly totals are compared it will be seen that the night fighter force was meeting with increasing success. The following table makes this clear.

| | Total No. Enemy Sorties | Enemy Aircraft Destroyed by Fighters | Percentage of Enemy Attacking Force Destroyed |
|-----------|-------------------------------|--------------------------------------------|-----------------------------------------------------------|
| February | 318 | 2 | 0.6 |
| May 9-31 | 580 | 9 | 1.6 |
| June 1-30 | 760 | 24 | 3 |
| July 1-27 | 444 | 28 | 6.4 |

N.A.D. (42)
2, 4 and 7.

It is unfortunately not possible to compare these claims with figures from German sources. Even, however, if Fighter Command's claims were in excess of the aircraft actually destroyed, it seems plain that in July, night fighters were destroying a very much greater percentage of the enemy attacking force, than they had been, during the earlier part of the year.

The reason for this steady increase was twofold. In the first place, it was much easier to intercept enemy aircraft, when they were making overland sorties at medium altitudes, than when they were operating at low altitudes, some distance out to sea. During the second quarter of 1942 the enemy made approximately nine times the number of overland sorties as he made in the first quarter of the year.⁽²⁾ Moreover, 'cat's-eye' fighters, using searchlight controlled methods of interception, could be employed against overland raiders, in addition to the G.C.I./A.I. fighters.

W.S.D.
Outgoing Flimsies
No. 13.

N.A.D. (42) 4.

Secondly, A.I. supplies had improved and by the end of June, one Beaufighter squadron and two Mosquito squadrons were equipped with A.I. Mark V. In addition, the 10-centimetre A.I. Mark VII had been introduced into the night-fighter force and by June four squadrons possessed one flight each of aircraft equipped with the new version. One of the advantages of the Mark VII equipment was that it enabled interceptions to be carried out at much lower altitudes than either the Mark V or earlier versions.

Indeed, so successful was the G.C.I./A.I. method of interception proving, that the Air Officer Commanding of No. 11 Group found it necessary on 5 July to issue a reminder

- (1) This total and the totals which follow do not, of course, include intruder claims or claims for aircraft probably destroyed.
(2) 1268 (April-June) as against 143 (January-March).

H.Q. F.C. Int.
Estimates.
(55692) 85

FC/S.23289,
Encl. 124A.

of the value of searchlight methods of interception. 'It seems', he said, 'that there is a tendency to treat this (i.e. searchlight) method of interception as primarily for practices, and there is a danger that as soon as enemy aircraft approach, all efforts are concentrated on G.C.I. or C.H.L. interceptions and the possibilities of Searchlight interceptions are overlooked.'

Thus by the middle of 1942 the night-fighter force was exacting a steady and mounting toll of enemy raiders over this country. These losses were not large compared with those, which the Luftwaffe was suffering on the Eastern Front but in view of the lack of replacements, either in aircraft or air-crews, for the West, they ensured that a heavy and sustained air offensive by the Luftwaffe against the United Kingdom was, temporarily at least, out of the question. This did not preclude the possibility of occasional heavy raids against this country and the effects of the three such raids on Birmingham must now be considered.

The Raids on Birmingham: 27/28, 29/30 and 30/31 July 1942

A.H.B./IIH1/69.

In 1942 Birmingham dominated the country's output of light metal alloy products and non-ferrous metals, with special extrusion plants and rolling mills. The machine tool industry was also largely represented and manufactured products included transport vehicles, complete aircraft, aircraft components, armaments and ammunition and various semi-finished products. It contained more than three hundred key points and was therefore from the German point of view a target of major importance.

A.M. Pamphlet
No. 248, Chap. 8,
p. 196.

On Goering's personal orders, and as a result of Bomber Command's successful attack on Hamburg on 26/27 July, a raid was carried out on 27/28 July. Originally only this raid was planned but the enemy was stung into carrying out two further attacks at short notice, after another severe raid on Hamburg on 28/29 July. These took place on the nights 29/30 and 30/31 July. Evidence from crashed aircraft and prisoner of war sources indicated that at least eleven Gruppen took part.⁽¹⁾ An interesting feature of the raids was the concentration of enemy aircraft at a small number of bases for the commencement of the sorties. IV/K.G.4, IV/K.G.40, III/K.G.53, IV/K.G.55 and II/K.G.100 all started from Chartres; Gruppe 106, which had recently transferred from Dinard-Pleurduit to Chateaudun, joined III/K.G.26 at Rennes; while K.G.2 started from Deelen and II/K.G.40 from Soesterberg. This enabled a pincer movement to be made on Birmingham, the aircraft from Chartres and Rennes approaching the target from the west and those from Deelen and Soesterberg from the east.

A.D.I.(K.) Report
No. 228/1942.

Ibid.

On 27/28 July, the aircraft from France skirted Land's End and flew northwards up St. George's Channel, finally turning east over central Wales. Those of III/K.G.26, for example, hugged the Irish coast and pin-pointed their position by the Tusker Rock, Blackwater and Arklow Light. Flying heights varied and were left to the discretion of individual crews, but the majority flew up the St. George's Channel at sea-level,

A.D.I.(K.) Report
No. 228/1942.

(1) These were:- II, III, IV/K.G.2, IV/K.G.4, III/K.G.26, IV/K.G.40, III/K.G.53, IV/K.G.55, IV/K.G.77, II/K.G.100 and Gruppe 106.

Ibid.

climbing to pass over Central Wales. Bombs were released from 8,000 to 10,000 feet (i.e. from above the balloon barrage) and the return to base was made via the Norfolk coast at very low heights to avoid night fighters and heavy A.A. guns. The aircraft from Holland made landfall at the Wash, flew westwards at 9,000 to 12,000 feet and having carried out their bombing at that height, returned to base by the same route at about 2,000 feet.

A.H.B./IIH1/11.

The raid consisted mainly of an incendiary attack and lasted over two hours. Many fires were started and several factories, including the Aero Works at Castle Bromwich, were damaged. Nevertheless, the attack was not concentrated either in time or place, and widespread bombing also occurred in East Anglia and in south and south-west England. Fighter Command flew 168 interception sorties and out of the estimated number of sixty enemy aircraft operating, claimed eight destroyed, six probably destroyed and five damaged. According to enemy records seven bombers failed to return.

A.H.B./IIH1/69.

F.C. Form 'Y',
A.H.B./IIM/A2/3A.

The second raid on 29/30 July was the heaviest of the three. It was estimated that over a hundred enemy aircraft were employed.⁽¹⁾ They used the same routes as on the first raid but the concentration was better, although bombs were also reported in Wales, Lancashire, the North Midlands, East Anglia and London. In Birmingham the fire position was serious and 363 fires were reported. Factories and works which were damaged included United Wire Works,

A.H.B./IIH1/69.

A.H.B./IIH1/11.

F.C. Form 'Y',
A.H.B./IIM/A2/3A.

Metropolitan Carriage Works, B.S.A. Small Arms, Wolseley Motors and the Nechells Gas Works. There were also serious fires at the Railway Station and the B.B.C. studio. During the course of the two raids 198 civilians were killed and 480 seriously injured. On 29/30th Fighter Command flew 163 interception patrols and claimed three enemy aircraft destroyed, two probably destroyed and six damaged. Four enemy aircraft were also claimed as destroyed by the guns of Anti-Aircraft Command. Actual German losses appear to have been six bombers.

A.D.I. (K.) Report
No. 228/1942.A.W.A.S. BC/16.
A.H.B./IIB/47/3.

On the following night, 30/31 July, a smaller force of approximately forty-five enemy aircraft again launched an attack on the Birmingham area. The approach to the target was shortened, however, and the aircraft from the French bases crossed the English coast between St. Alban's Head and Weymouth, while the aircraft from Holland approached as before over the Norfolk coast. The attack was to be devoted to indiscriminate bombing and of the ten tons of bombs dropped, the majority fell outside the city in the Wolverhampton and Walsall areas. Neither damage nor casualties were serious.

Enemy Documents
A.H.B.6.

The total claims for the three raids were twenty-three enemy aircraft destroyed (including six by anti-aircraft guns), nine probably destroyed and fourteen damaged. German documents give the losses for the period as twenty-one

Enemy Documents
A.H.B.6. Trans.

(1) The estimated number of enemy aircraft operating on 27/28 July corresponds very closely to estimates derived from German sources, but the estimate of 100 aircraft on 29/30 July would appear to be somewhat high unless K.G.2 had an almost 100% serviceability rate of its initial establishment on this raid. German figures are not available for this latter date.

aircraft destroyed and three damaged, in addition to seven destroyed and three damaged due to operational flying accidents. At least ten per cent of the attacking force was therefore destroyed by night fighters. This was a satisfactory achievement by Fighter Command and may have been the decisive factor, which governed the cessation of large scale raids on this country.

F.C. Int. Summ.
No. 348 F.C.,
O.R.B., App.,
July.
A.H.B./IIM/A2/3A.

A.D.I.(K.) Report
No. 228/1942.

Ibid.

The raid on 29/30 July was the heaviest attack on this country since the attack on Bath on 25/26 April. But the raids on Birmingham are of interest not primarily because of the damage which they caused but because they represent the peak of the German Air Force's capabilities at this time. As with the Baedeker raids, crews from the Reserve Fourth Gruppen were employed. IV/K.G.55, for example, detailed five of its nine instructor crews to take part: two of these were lost, one on 27/28 and another on 30/31 July. As an example of how units were pressed into service a prisoner related that on the night of 29/30 July, Oberst Harlinghausen had planned a torpedo operation for III/K.G.26, which had recently arrived from a torpedo course in Italy. When the Birmingham raid was ordered, Harlinghausen telephoned Goering requesting permission to continue with the torpedo operation, but permission was refused. The Gruppe flew on the raid and lost four experienced crews.

A.W.A.S. BC/16.
A.H.B./IIB/47/3.

Although the raids were carried out in bright moonlight, the standard of bombing accuracy was poor, so that in spite of the number of enemy aircraft used, the damage was not severe. Moreover, although the attacks were primarily delivered against military targets, it is impossible not to feel that, as in the case of the Baedeker attacks, the strategical conception of air warfare had once more become subordinated to political expediency.

The Decline in Enemy Night Bombing: August-September 1942

(i) Enemy Operations: Internal Problems in the German Air Force.

In spite of the exaggerated accounts which Hitler's Propaganda Ministry gave of the terrible destruction which the Luftwaffe was bringing to one British city after another, it was becoming increasingly obvious to the German High Command that night bombing was neither preventing heavy and growing Royal Air Force attacks on Germany nor seriously affecting British war production. Moreover, the enemy's night attacks were becoming increasingly costly.

From June onwards, therefore, the number of overland day sorties was constantly increased, largely at the expense of the night effort.

A.W.A. Report
BC/16.
A.H.B./IIB/47/3.

| | No. of Night Sorties (overland) | No. of Day Sorties (overland) | Total overland |
|--------|---------------------------------------|-------------------------------------|-------------------|
| June | 400 | 130 | 530 |
| July | 383 | 153 | 536 |
| August | 341 | 279 | 620 |

F.C. Form 'Y',
O.R.B., App.,
Aug.
A.H.B./IIM/A2/3A.

During August a series of small scale attacks on the East coast took place and bombs were dropped over widespread areas causing little damage. On 20/21 August Portsmouth was bombed by fifteen enemy aircraft with little effect. This attack may

N.A.D. (42) 7. have been a result of the Dieppe Raid. The number of enemy minelayers operating also fell from ninety-three in July to twenty-eight sorties in August. During September the total number of enemy night overland sorties fell to 105, the lowest figure since February. On the nights of 4/5 and 8/9 September, propaganda leaflets of the Dieppe raid were dropped in the Portsmouth and Chichester areas and two small raids were made on districts in Cornwall on 24/25 and 25/26 September. Minelaying sorties during the month fell to a paltry eleven.

Ibid. and
F.C. Form 'Y',
O.R.B., App.,
Sept.
A.H.B./IIM/A2/3A.

Ibid.

This sharp decline in enemy activity was a clear indication of the failing strength and effectiveness of the German night-bomber force. Losses of German bombers over this country had steadily increased during the year and in particular those suffered during the raids on Birmingham and the Dieppe raid were serious. In addition to this, the training programme for bomber aircrew was becoming disorganised. The use of Ergaengsgruppen crews during the Baedeker and Birmingham raids had caused difficulties and in the summer of 1942, the problem was aggravated by a shortage of aircraft fuel, which resulted in a curtailment of flying hours in bomber training. By the end of the year these factors together with the necessity of sending emergency reinforcements in an attempt to relieve the encircled Sixth Army at Stalingrad, brought about a critical situation for the German bomber force, from which it never fully recovered. In the late summer of 1942, however, the most noticeable effect was a serious drop in the operational strengths of the bomber units based in the West. The average operational strength of K.G.2, for example, in January was eighty-eight crews: in September it was twenty-three. Moreover, any losses suffered were becoming increasingly difficult to replace.

A.M. Pamphlet
No. 248,
Chap. 9,
pp. 204-5.

A.M. Pamphlet
No. 248, Chap. 8,
p. 196 and
N.A.D. (42) 7.

A.H.B./IIG/114.

(ii) Interception Results: Reorganisation of Turbinlite Flights

N.A.D. (42) 7.

During August and September night fighters destroyed thirty enemy aircraft. This represented about three per cent of the total enemy force operating against the United Kingdom. The fall, compared with the figure of over six per cent for July, may be explained by the greater number of overland sorties during that month. Difficulties in intercepting the low-flying enemy bomber still existed, although aircraft which were equipped with A.I. Mark VII were meeting with some success. For example, on 19/20 September, a Beaufighter of No. 25 Squadron engaged and probably destroyed a Do. 217 100 miles east of the Tyne.(1)

F.C. Form 'Y',
O.R.B., App.,
Sept.
A.H.B./IIM/A2/3A.

FC/8.22104/II,
Encl. 52A.

The Turbinlite scheme continued to remain something of a 'white elephant'. On 15 July the Air Officer Commanding-in-Chief reported to the War Cabinet that Turbinlite aircraft were meeting with little success in the face of the tactics then being employed by the enemy and that no real opportunity had occurred for assessing their true worth. He proposed, therefore, that they should be given a further three months trial before taking any decision as to their further employment.

Enemy Documents
A.H.B.6, Trans.

(1) Confirmed by German records.

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A.M. File
C.S. 2110,
Encl. 56A and
N.A.D. (42) 7.

FC/S.27050,
Min. 97.

On 1 September, however, the Turbinlite flights were reformed into ten Turbinlite squadrons, composed of 6 plus 1 Boston Turbinlite aircraft and 6 plus 1 Hurricane IIC satellite fighters.⁽¹⁾ This change was made necessary, since all but three of the Hurricane squadrons, which were previously employed as satellite fighters, had been posted overseas. In addition, it was thought that a closer degree of co-operation might produce better results. Continued inactivity and lack of success was reacting adversely on the Turbinlite crews, who were beginning to lose faith in the Turbinlite scheme. Even allowing for the much greater number of A.I. sorties flown (and hence detections) the following figures prove the marked superiority of the A.I. Mark VII equipped over the Turbinlite aircraft.

FC/S.27050.

| <u>Period</u> 1 April- 30 Sept. | <u>Dete-</u> <u>ctions</u> | <u>Visuals</u> | <u>Com-</u> <u>bats</u> | <u>Destroyed</u> | <u>Prob.</u> <u>Dest.</u> | <u>Damaged</u> |
|---------------------------------------|-------------------------------|----------------|----------------------------|------------------|------------------------------|----------------|
| A.I. Mark VII | 215 | 95 | 59 | 28 | 11 | 14 |
| Turbin- lites | 38 | 11 | 5 | 1 | - | 2 |

Ibid,
Min. 98.

In spite of the fact that where possible Turbinlite aircraft were given priority over A.I. fighters, the latter were destroying more than five times the number of enemy aircraft for an equivalent number of detections. Nevertheless, the Air Officer Commanding-in-Chief was reluctant to disband the new organisation, until the value of composite squadrons could be tested.

A.H.B./110/114.

Thus by September, German night operations against the United Kingdom had fallen to a low level; nor was there any likelihood of stronger attacks being launched in the near future. From the German point of view, the chief aim during the remaining three months of 1942 was to prevent the incurring of further losses.

Further Reduced Activity: October-December 1942

(i) Enemy Operations and Interception Results

N.A.D. (42) 12.

F.C. Form 'Y',
O.R.B., App., Dec.
A.H.B./111/A2/3A.

Enemy night activity against the United Kingdom during the last three months of 1942 was on a smaller scale than at any time since before the night attacks began in the autumn of 1940. During October and November only 199 enemy aircraft were plotted within forty miles of the coast, excluding the Shetlands area. Small scale raids were made on Tyneside and on the East Midlands area; each on two occasions in October,⁽²⁾ while on 31 October/1 November Canterbury was again attacked. During the whole of November only two enemy sorties overland were reported, and in December the number only rose to thirty-two. There was also little enemy minelaying activity, although the sixty-nine minelaying sorties in December represented more than half the total enemy night effort during the month.

N.A.D. (43) 1.

Order of Battle,
3 Sept. 1942.
F.C. Form 'Y',
O.R.B., App., Dec.
A.H.B./111/A2/3A.

- (1) Nos. 530-539 Squadrons.
- (2) Tyneside on 11/12 and 16/17 October: East Midlands on 21/22 and 24/25 October.

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A.W.A. Report
BC/17.
A.H.B./IIB/47/3.

F.C. Form 'Y',
O.R.B., App., Oct.
A.H.B./IIM/A2/3A and
German Documents
A.H.B.6.

The raid on Canterbury on 31 October/1 November was the heaviest during the period and followed an afternoon attack which has already been described.⁽¹⁾ The night attack opened when fourteen enemy aircraft approached Canterbury from the south-east at 2000 hours. In spite of the fact that the balloon barrage was rising and had only reached about 1,000 feet, the raiders did not descend below 4,000 feet. The attack was not pressed home and only two bombs fell within the Borough boundary. At 0039 hours a second wave of twelve aircraft made a further attack, which was slightly more successful but on neither occasion was there any severe damage caused. During the night Fighter Command flew 113 interception patrols and three Beaufighters of No. 29 Squadron destroyed four Do.217's.

Altogether night fighters claimed the destruction of seven enemy aircraft between October and December. The 10-centimetre type of A.I. Mark VII continued to prove its superiority over the earlier versions as these figures for October and November show:-

N.A.D. (42) 12.

| | Attempted Inter- ceptions | A.I. Contacts | Visuals | Combats | Enemy Aircraft Destroyed |
|----------------------|---------------------------------|------------------|---------|---------|--------------------------------|
| A.I. Mk. IV and V | 45 | 15 | 4 | 3 | 1 |
| A.I. Mk. VII | 31 | 17 | 8 | 6 | 5 |

Ibid.

FC/S.22104/II,
Encl. 61A.

Trials with the new Mark VIII set had meanwhile been satisfactory and it was hoped to equip two Beaufighter squadrons with this version in January 1943. Mosquitos equipped with A.I. Mark VIII were also expected to be in operation before the end of February 1943.

N.A.D. (42) 12.
and (43) 1.

F.C., O.R.S.,
Report No. 417.
A.H.B./IIB/39/2.

The sharp decline in the proportion of enemy aircraft destroyed in the last three months of the year - seven out of an estimated total of 385 enemy sorties - may be explained by the relatively few number of enemy overland sorties. More than seventy per cent of the total enemy night effort consisted of minelaying and anti-shipping sorties, which were much more difficult to intercept than overland attacks. The poorer weather was also a hindrance to successful interception.

(ii) Failure of Searchlight Aided Interception System

F.C., O.R.S.,
Report No. 399.
A.H.B./IIB/39/2.

Ibid.

The interception method using searchlights and 'Fighter Boxes', which was inaugurated in November 1941, has already been described.⁽²⁾ It achieved little success throughout the year. During the four months from July to October, for example, 291 'boxes' were manned on thirty-five nights but the result was only one enemy aircraft probably destroyed. Insufficient evidence made it difficult to assess with any accuracy the causes of this failure but during September and October the system failed on approximately 80 per cent of the occasions to give the fighter aircraft adequate indication of the locality of the target. A further ten per cent of the failures were probably attributable to bad weather conditions.

(1) See above Chap. 3, p. 29.

(2) See above p. 40.

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N.A.D. (42)
7 and 12.

On the whole, the lack of success seemed to be due to purely internal causes and not to the inexpertness of the personnel applying the scheme. It was not, however, due to a lack of S.L.C. equipment and the number of S.L.C. equipped searchlights steadily increased throughout the year.(1)

F.C., O.R.S.,
Report No. 399.
A.H.B./11/39/2.

The scheme was, nevertheless, not abandoned and in December a report by the Operational Research Section at Fighter Command recommended that future searchlight interception operations should be recorded in a more complete and standardised form. In this way, it was hoped that the causes of failure could be discovered and rectified.

(iii) Simplification of the Night Air Defence System

At a meeting of the Night Air Defence Committee of the War Cabinet on 17 December, the Prime Minister decided that the time had come to simplify the night air defence system and to concentrate on those measures, which experience had shown to be most effective. On this date, therefore, both the Turbinlite and Albino schemes were abolished.

FC/S.22104/11,
Encl. 55A and
N.A.D. (42)
3rd Meeting.

By October the technical advances which had been made in A.I. methods of interception left the Turbinlite system with few advantages. On 13 October the Night Air Defence Committee agreed that it would be unwise to abandon the scheme prematurely, but suggested that plans should be drawn up for using the resources employed in the Turbinlite scheme, should it eventually be decided to scrap the project. Finally on 17 October, it was decided to abolish the scheme and the ten squadrons were officially disbanded on 25 January 1943. A small unit equipped with Boston III Turbinlite aircraft and satellite fighters was, however, retained at Heston for experimental purposes, in case a change in the tactical or technical situation should make it necessary to re-establish the Turbinlite squadrons.

N.A.D. (43) 1.
and
A.M. File
C.S. 2110,
Encl. 82A.

N.A.D. (42) 12.

The Air Officer Commanding-in-Chief asked that six Mosquito Intruder aircraft should be added to each of the ten ex-Turbinlite squadrons, so that these could then be used for manning the searchlight boxes in the event of heavy attacks on this country or for offensive operations during periods of enemy inactivity. This was agreed to by the Air Ministry in December.

FC/S.22104/11
Encl. 81A.

N.A.D. (42) 9.

Albino was the code name given to a free balloon barrage which was established in the London, Birmingham, Bristol, Portsmouth, Liverpool and Hull areas on 10 September 1941 and was ready to be launched with a favourable wind.(2) The scale of enemy attacks, however, did not justify a release and by October 1942 the rubber in most of the balloons had so deteriorated that new balloons would have been required, if the scheme

(1)

N.A.D. (42)
7 and 12.

| | 30 May | 1 September | 1 December |
|---------------------------------------------------|--------|-------------|------------|
| No. of S.L.C. Searchlights Operationally Deployed | 1,521 | 2,172 | 2,715 |

(2) A short history of the development of Albino is given at FC/S.22104/II, Encl. 70A.

N.A.D. (42)
4th Meeting.

N.A.D. (43) 1.
FC/S.22104/11,
Encl. 66A.

N.A.D. (43) 1
and
FC/S.22104/11,
Encl. 81A.

N.A.D. Papers
passim.

Air Int. Comm.
28 Oct. 1942.
A.H.B./11/69/46.

R.A.F. Monograph:
'Royal Air Force
Signals in The
Second World War',
Vol. V, Part II,
Chap. 7.

A.W.A. Report
EC/18A.
A.H.B./11B/47/3.

A.H.B./11H1/69.

A.W.A. Report
EC/18A.
A.H.B./11B/47/3.

A.M. War Room
Manual of Bomber
Command Operations.

was to have been continued. Moreover, by this time the training and equipment of the night-fighter squadrons enabled them to operate successfully in much poorer weather conditions than was the case when Albino was introduced. At a meeting of the Night Air Defence Committee on 17 December 1942 the First Lord of the Admiralty urged the Albino should be retained on a reduced scale as an alternative to our other means of defence but the Prime Minister decided that Albino had been given a fair trial and that the scheme was using too much manpower. There was also the possibility that were Albino used, it would cause more damage to our own aircraft operating over enemy occupied territory than to enemy bombing or minelaying aircraft. Albino was therefore abolished on 24 December. Petard, the free barrage for use against enemy minelaying aircraft in the Thames Estuary had already been abolished two months earlier.⁽¹⁾

By the end of 1942 the A.I./G.C.I. method of interception was thoroughly proven. The new versions of A.I., which were coming into service, were more efficient at low altitudes than the earlier type and with a high standard of training of the night fighter crews and good co-operation with ground stations, interceptions could and were being effected some distance out to sea. The success of radar interception therefore allowed other methods to be dropped. The problem of identification, however, remained and throughout the year the Night Air Defence and Interception Committees discussed the possible air-to-air use of infra red lights and telescopes. Trials with infra red equipment in October gave some promise of success and it was found that a night-fighter could easily identify a friendly aircraft at a range of 4,500 to 5,000 feet. The infra red system was never operated, however, as I.F.F. (Identification Friend or Foe) Mark III had been successfully developed by this time and a start was to be made equipping all day-fighter aircraft on 1 February 1943.

General Summary and Conclusions

During 1942 it was estimated that German aircraft flew 2,369 night overland sorties against the United Kingdom and on 158 nights dropped a total of 2,710 tons of bombs. April was the month of the heaviest nightbombing with 815 tons and April and May together received approximately half the total weight of bombs dropped by night during the year. When it is remembered that the bomb weight dropped in one night on Coventry on 14/15 November 1940 amounted to more than 500 tons, it will be seen that the night air offensive against the United Kingdom in 1942 was of modest proportions.⁽²⁾

The most frequently attacked town was Yarmouth but the most heavily bombed were the Baedeker cities of Bath, Norwich, Exeter and Canterbury. Considerable concentrations of incendiary and high explosive bombs, both in space and time, were achieved in most of the Baedeker raids and damage, particularly to residential and private property, was in some cases

(1) See below Chap. 5, p. 78 et seq.

(2) During June and July 1942 R.A.F. Bomber Command dropped more than 14,000 tons on German targets or more than five times the tonnage dropped by the German Air Force in the course of the whole year.

severe. The effect on our war production or potential, however, was negligible. Three raids were carried out against Birmingham at the end of July, the first of these on the 27/28th being notable for the fact that this was the first occasion on which more than a hundred enemy aircraft had flown overland since July 1941. Apart from Birmingham and the Baedeker cities, ports and coastal towns were the main targets for night attacks.

Ibid.

During the first and last three months of the year, the major proportion of the enemy offensive was directed against shipping, either in the form of direct attack or by minelaying, but an assessment for the whole year shows that out of the 5,729 sorties flown, 43 per cent were against land targets, 32 per cent against shipping and 25 per cent were devoted to minelaying.

During the course of the year Fighter Command aircraft flew over 16,000 night sorties.⁽¹⁾ German losses are difficult to assess with any accuracy. The following claims were advanced by Fighter Command:-

| | <u>Destroyed</u> | <u>Probably Destroyed</u> | <u>Damaged</u> |
|--------------------------------------------------|------------------|-------------------------------|----------------|
| N.A.D. (42) 2, 4, 7, 12 and N.A.D. (43) 1. | | | |
| A.I. Fighters | 124 | 33 | 81 |
| 'Cat's eye' Fighters | 14 | 3 | 11 |
| Turbinlite and Satellites | 1 | - | - |
| Intruders(2) | 43 | 7 | 45 |
| | <u>182</u> | <u>43</u> | <u>137</u> |

Enemy records give German Air Force losses as:-

Enemy Documents
A.H.B. 6.

Long Range and Reconnaissance Bomber Losses by Day and by
Night against United Kingdom (excluding losses against
shipping)

| <u>Due to Enemy Action</u> | | <u>Not due to Enemy Action</u> | |
|----------------------------|----------------|--------------------------------|----------------|
| <u>Destroyed</u> | <u>Damaged</u> | <u>Destroyed</u> | <u>Damaged</u> |
| 205 | 46 | 39 | 81 |

A.W.A.S. Estimates
A.H.B./IIB/47/3.

Even although the German daylight bombing effort represented only one seventh of the combined day and night total, Fighter Command's claims of enemy aircraft destroyed would seem to be somewhat optimistic.⁽²⁾ But it seems reasonable to assume that approximately 150 enemy aircraft were destroyed.

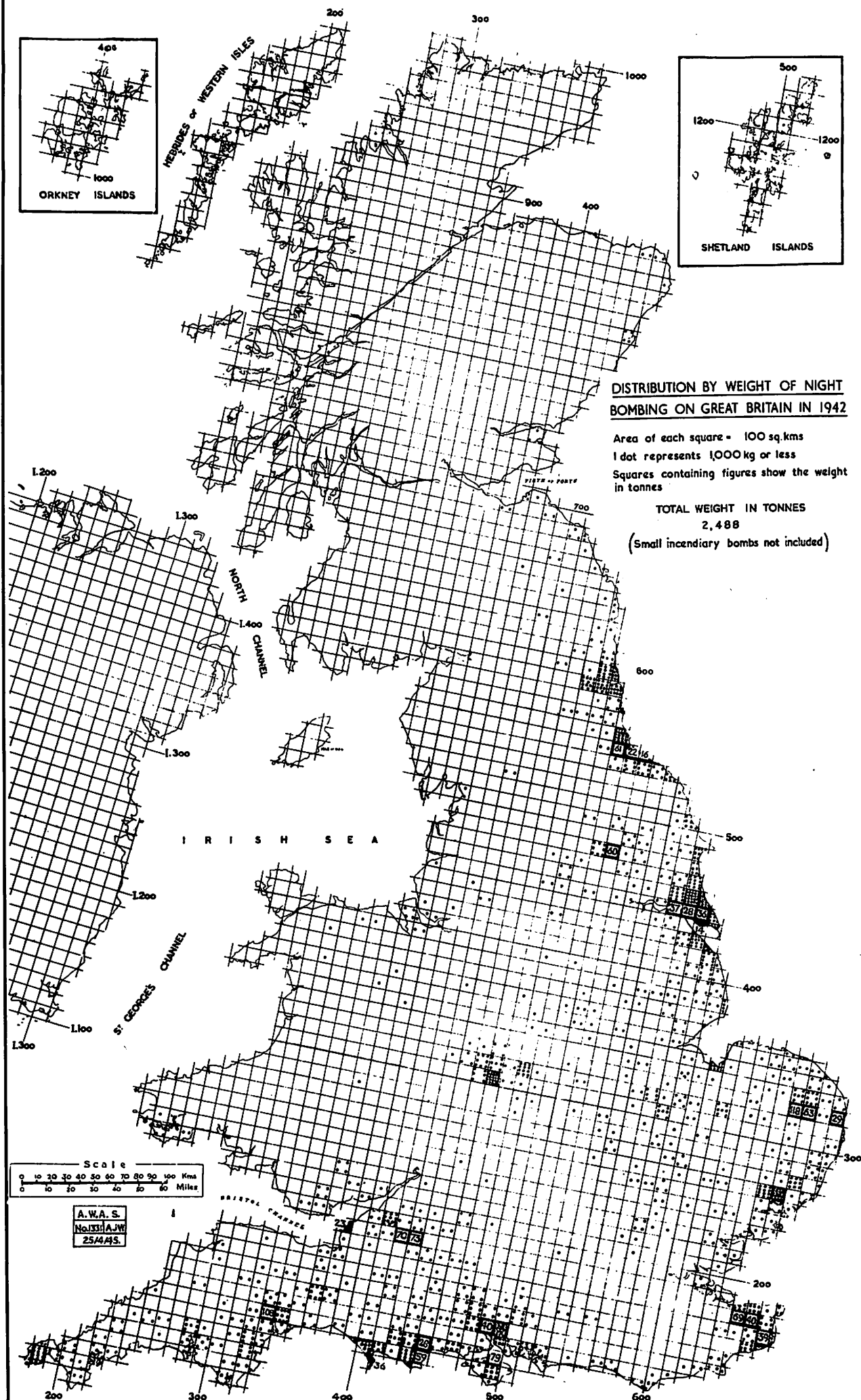
A.W.A.S. Survey
No. 1,233.
A.H.B./IIB/47/3.

Fighter Command's own losses amounted to forty aircraft destroyed over Great Britain by night during the year.

Statistics, however, relating to sorties, bomb weights and losses provide only one part of the picture of the night

Report BC/G/10.
A.H.B./IIB/47/4.

- (1) Intruder claims are included since they occur in the German totals of losses.
- (2) A.W.A.S. gives an estimate of 178 enemy aircraft destroyed by night, of which 140 were destroyed overland. (Report published in March 1943).



defences and German attacks during the year. Behind the scattered and for the most part ineffective raiding by the German Air Force, there lay the threat of heavier attacks. And there is little doubt that if German arms had met with success in Russia and the Mediterranean, air operations against Great Britain would have been on a much greater scale. The question of whether Fighter Command followed a policy of over-insurance is considered elsewhere in this narrative;⁽¹⁾ but it is perhaps worth remembering that the Allied victories in Russia and in North Africa could not be foretold at the beginning of the year.

FC/S.22104/II,
Encl. 79A.

The size of the night-fighter force fluctuated slightly as squadrons were withdrawn from service overseas but remained at about twenty-five squadrons throughout the year. In December, it consisted of twelve Beaufighter squadrons in the line, two Beaufighter squadrons reforming, six Mosquito squadrons and three single-engined squadrons equipped with either Hurricanes or Typhoons. In addition, there were two intruder squadrons equipped with Boston III's and Mosquitos. Progress was made in the sphere of re-equipment rather than expansion, the later marks of Beaufighters and Mosquitos taking the place of Beaufighter I's, Defiants and Boston III's. By the end of the year, for example, there were no first line Defiant squadrons, although six had existed in January.

The A.I./G.C.I. method was easily the most successful form of night defence. The Turbinlite system brought few advantages to the interception problem and the scheme was abandoned at the end of the year; and the 'cat's eye' fighter, which in previous years had achieved limited success, was overshadowed by the technical improvements of A.I. interception, which no longer made the defending fighter dependent upon bright moonlight or illumination by searchlights. Moreover, A.I. Mark VII, which was first introduced into the night-fighter force in the spring, had a much better low altitude performance than the earlier versions and so helped to solve the problem of intercepting enemy aircraft, which operated at low altitudes some distance out to sea (i.e. beyond the normal G.C.I. station's range). Such aircraft were difficult to intercept but some success was achieved by using C.H.L. stations with their greater range.

Throughout the year the progress in night fighting results was paralleled, apart from the 'Baedeker' and Birmingham raids, by a steady decline in the strength and effectiveness of German attacks. This decline was largely caused by internal strains in the German Air Force, but even if the enemy had been able to mount much stronger attacks, there is no doubt that he would have suffered heavy casualties. For the raids on Birmingham showed that, even when the enemy was operating in some strength overland, Fighter Command was capable of destroying more than ten per cent of the attacking force.

For Fighter Command the year was thus largely one of consolidation and unremitting patrol work. If there were no spectacular achievements, Fighter Command's success must be measured not by the number of enemy aircraft destroyed, but by the relatively few occasions on which British towns and industries were troubled by night air attacks. And this success was due in no small way to scientific progress, and in particular, to the development and production of radar interception equipment.

(1) See below Chap. 9.

CHAPTER 5

THE AIR DEFENCE OF SHIPPING IN HOME WATERSIntroduction

R.A.F. Narrative:
'The R.A.F. in,
Maritime War,
Vol.II, Chap.10,
and A.H.B./ID/
12/145.

The main burden of the defence of shipping was of course, borne by the Royal Navy and Coastal Command. In November 1940, however, Fighter Command officially assumed responsibility for the air defence of shipping within forty miles of the British coast.

The approaches to the four major ports of Plymouth, Southampton, London and Hull lay within range of the German Air Force. However, the only alternative to the use of these ports - their immobilisation and the concentration of shipping on ports further removed from the German bomber airfields, such as Liverpool and Glasgow - was impossible, since such a concentration would have resulted in an intolerable strain being placed upon the already overworked and overloaded, interior road and rail transport system. Coastal shipping was therefore essential, although it was constantly threatened by air attack.⁽¹⁾

Enemy aircraft and E-boats operating from French and Dutch bases, constituted the main threat against such shipping and were engaged upon two distinct types of operations, anti-shipping strikes and minelaying. The latter were the more dangerous and were also more difficult to counter. Closely supporting these tasks were the operations of reconnaissance aircraft, which reported the position of shipping to enemy aircraft and ships.

Before, however, turning to the problems concerned with the defence of shipping, which faced Fighter Command at the beginning of 1942, the progress made during the previous year may be briefly summarised, since it was during 1941 that most of these problems arose.

A.M. Pamphlet
No. 248, Chap.
4, p.108.

The campaign against shipping in British Coastal waters⁽²⁾ began as a definite objective with the creation of Fliegerfuehrer Atlantik in March 1941.⁽³⁾ Organisation of the new Command, however, proceeded slowly and by June, when larger numbers of enemy aircraft became available, the British defences were correspondingly stronger. Moreover, the German High Command at that time, seemed to have no clear conception of the uses to which its air forces in Western Europe could be most profitably devoted and Harlinghausen was ordered to organise overland attacks as well as anti-shipping strikes. The minelaying forces were operated

FC/S.27587,
Encl. 7B.

A.M. Pamphlet
No. 248, Chap. 4,
p.105.

- (1) Approximately 2,000 ships sailed between the Thames Estuary and the Firth of Forth each month, carrying cargo which, if it had been transferred overland, would have required some 12,000 goods trains.
- (2) For a full account, from which the following summary is largely extracted, see the following R.A.F. Narratives: 'The R.A.F. in Maritime War', Vols. II and III; and 'Air Defence of Great Britain', Vol. IV.
- (3) The A.O.C. of the new Command was General major Harlinghausen, who in 1939 was one of the pioneers of shipping attack with bombs.

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independently under Fliegerkorps IX, despite continued protests from Fliegerfuehrer Atlantik, that all anti-shipping operations in Coastal waters should be under his control.

War Cabinet,
Weekly Resume'

FC/S.23680,
Encl. 4A.

During January and February the German offensive against coastal shipping steadily increased in weight and, during March, resulted in the sinking of twenty-four ships and the damaging of forty-four. There was, moreover, another disturbing feature about the month's activities, since about one fifth of all the attacks recorded were delivered while fighters were close to the ship which was attacked. Fighter Command responded to these unpleasant facts by devoting 7,876 sorties, or 49 per cent, of the total daylight defensive effort in April to the direct protection of shipping.

War Cabinet
Weekly Resume'

FC/S20350,
Encls.66B and
72A.

This immediately brought about some improvement in the rate of sinkings, but too many attacks were still being made on ships which were actually being escorted or had fighters close at hand. It was therefore decided to equip escort vessels with R/T sets to enable them to draw the attention of patrolling fighters to the whereabouts of enemy aircraft but progress was slow, and by June only five ships had been so fitted.

FC/S.23680,
Encl. 39A.

In July only one merchant vessel was sunk in daylight but this was chiefly because 86 per cent of the German operations was by night, when, in fact, seven ships were sunk. These night attacks proved difficult to counter, for although attempts were made to give increased fighter protection to convoys after dark it was found that the presence of a standing escort at night conferred little real benefit and tended to confuse the anti-aircraft defences of the convoy. Fighter Command therefore recommended that fighter escorts should be withdrawn at night and that the convoys should rely on their anti-aircraft weapons and on the indirect protection given by night fighters, in their attempts to intercept the aircraft responsible for the attacks.

Neither direct air protection, improved anti-aircraft defences nor new methods of interception, however, provided a complete answer to the problem and for the rest of the year night and dusk attacks, especially off the coasts of Northumberland, Durham and East Anglia continued to cause anxiety. Furthermore, as winter approached, new methods of attack in daylight, under cover of weather conditions, which frequently hampered fighters, together with the introduction of the Do.217 bomber and a threat of increased torpedo-bomber activity all added to the difficulties of Fighter Command.

R.A.F. Narra-
tive 'The R.A.F.
in Maritime
War', Vol. III,
App. XXXVI.

During the year, nearly two thirds of all German offensive daylight sorties were despatched against shipping.⁽¹⁾ Against these, Fighter Command flew 53,883 sorties which represented nearly half the total daylight defensive effort. This large number of sorties devoted in the main to convoy patrols helped to keep down shipping losses but in both time and materials it was an expensive method of defence. It was also far from infallible. Twenty-six ships were sunk by direct air attacks

(1) The actual figure of 9,386 sorties is based on Fighter Command estimates, as German records cannot be broken down sufficiently to give a more accurate assessment.

in Home Waters during the second half of the year and while this was a great improvement on the total for the first six months - which was ninety-eight - the sinkings indicated that the German shipping offensive was by no means defeated.⁽¹⁾

Ibid. Even more serious were the minelaying operations by enemy aircraft and surface craft; between July and the end of December forty-two ships were sunk.⁽²⁾ Moreover, mining sorties by enemy aircraft were increasing and, during December alone, seventeen ships totalling 58,065 gross tons were sunk.

The Enemy Anti-Shipping Offensive: January - March 1942

(i) Shipping Attacks and Allied Losses

A.M. Pamphlet No. 248, Chap. 4, p.109. At the beginning of 1942 the British and American supplies, which were being delivered to Russia by the Arctic route began to assume a greater target importance for the Germans than coastal shipping and the focus of their anti-shipping operations therefore began to shift to the Arctic supply routes.⁽³⁾ Nevertheless, the anti-shipping units and the minelaying force, which remained to operate against Great Britain during 1942 amounted to a combined strength of some 130 Ju 88's and Do. 217's. Fliegerkorps IX, operating under Luftflotte 3, continued to operate minelaying aircraft but was given the added tasks of shipping attack along the East coast and daylight bombing over England.

FC/S.23680. A.H.B./IIG/98, Encl. 87A. During January there was a slight decrease in the total number of enemy attacks. Activities by day, however, showed a substantial increase on that of the preceding months, although the majority of attacks were still taking place during the hours of twilight and darkness. Over half occurred while fighters were in the vicinity, and two were delivered while aircraft were actually patrolling the convoy or ship concerned. One attack was reported as being delivered by torpedo-carrying aircraft, which dropped bombs but no torpedoes, and masters of merchant vessels also reported that enemy seaplanes had alighted and taken off from the water in the South-Western Approaches. On the whole the weather was good during the month but the prevalence of cloud often allowed hostile aircraft to evade the defending fighters. Altogether three ships of 9,262 gross tons were sunk. This was not an excessive rate of loss but mining also accounted for a further eleven ships of 10,079 gross tons during the month.

Ibid.

Admiralty Document DR.1337.

Fighter Command flew 3,260 defensive shipping sorties by day and 324 by night, during which claims were made for one enemy aircraft destroyed and one damaged. Our own losses amounted to only one aircraft and this was not due to enemy action.

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- (1) It must also be remembered that German anti-shipping operations during the second half of 1941, averaged only half the number of sorties that were despatched during the first half of the year.
 - (2) This total includes shipping sunk by mines laid by E-boats.
 - (3) For figures of enemy anti-shipping effort see App. No.6.

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FC/S.23680,
A.H.B./IIG/98,
Encl. 89A.

During February, the enemy offensive both by day and by night showed a substantial increase on that of the previous four months. Moreover, the attacks were concentrated on the East Coast, while in January the No.10 Group area was the most heavily attacked. New tactics were also adopted in the .. attacks, in that the enemy aircraft worked in pairs. The first would appear out of machine-gun range and while the attention of the anti-aircraft gunners was held by this decoy, the second aircraft would make a gliding attack from the opposite direction, only opening up its engines, when the bombs were released.

On five separate days during the first half of the month, the enemy took advantage of low cloud cover to operate comparatively large numbers of aircraft (between fifteen and thirty-five on each occasion) in quick succession. The attacks all took place between 1200 and 1600 hours and were delivered by units which normally acted as minelayers by night.

The largest of these attacks occurred on 2 February. At 0930 and 1010 hours six enemy aircraft approached the East Anglian coast from the direction of Holland and flying at heights between 2,000 and 5,000 feet. They flew close to the coast between Cromer and Southwold but no convoys were attacked, although a trawler was sunk off Cromer. Between 1240 and 1445 hours a second attack by twenty enemy aircraft was delivered against shipping off the East Anglian and Lincolnshire coasts and a second trawler was sunk. The raiders also made brief landfalls at Lowestoft (1305 hours), Skegness (1338 hours) and Southwold (1339 hours) and bombs were dropped at Southwold and Skegness causing some damage to property.

F.C. Form 'Y',
O.R.B., App.,
Feb. A.H.B./
IIM/A2/3A.

No.19 Sqdn.
O.R.B. A.H.B./
IIM/E19/2.

Two Spitfire VB's of No.19 Squadron took off from Ludham at 1306 hours and were patrolling off Cromer below cloud at 1,300 feet, when a Do. 217 was seen going north. This enemy aircraft was chased by one of the Spitfires but escaped in cloud. Soon after this, two more Do. 217's were seen heading north in line astern and after a ten minute chase in and out of cloud, the pilot of one of the Spitfires was able to get in a long burst of fire from 300 to 400 yards astern. No result was seen from this attack but after a second astern attack from 200 to 300 yards, the port engine of the enemy aircraft caught fire. Two of the crew baled out and the aircraft was last seen gliding through cloud.

Ibid.

This was a typical day's activity. It illustrates the way in which the enemy attacked land targets, if no suitable shipping objectives were found; and it shows the difficulty of interception in poor weather conditions.

During the month there was a noticeable change in enemy reconnaissance tactics. Aircraft no longer flew up and down the convoy lanes but instead appeared to prefer flying parallel to and up to 100 miles from the coastline, with only occasional deviations towards the convoy lanes.

The enemy's increased effort did not, however, bring a corresponding increase in Allied shipping losses. Mining was responsible for the loss of four ships totalling 12,328 gross tons but only two ships totalling 3,700 gross tons were sunk by direct air attack during February. This was a satisfactory improvement and partly no doubt reflected the increased

Admiralty
Document
BR. 1337.

(55692)100

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A.H.B./IIG/114
p.10. A.H.B.6.

number of sorties flown by Fighter Command during the month - 4,246 by day and 442 by night. Anti-aircraft defences aboard ships were also strengthened and altogether seven enemy aircraft were claimed as destroyed, three probably destroyed and thirteen damaged. During five weeks in February and March K.G.2. lost thirteen crews after scoring only slight successes.

FC/S.23680.
A.H.B./IIG/98,
Encl. 90A.

During March, the enemy offensive gave signs of slackening. Although there was no appreciable drop in the number of attacks, the enemy changed the area of attacks from the East to the South coast with comparatively poor results. Only two ships totalling 884 gross tons were sunk. By day there was a noticeable decrease in the use of twin-engined bombers and instead extensive use was made of Me.109 fighter-bombers, which approached their targets at low-level in order to avoid radar detection.

FC/S.23555,
Encls. 3A, 37A
and 43A.

A further indication of the improving situation was given by the fact that in March 1941 No.10 Group had increased its anti-shipping patrols in the Irish Sea and St. George's Channel areas owing to greater enemy activity. In March 1942, however, the navigational risks of night sailings by convoys were considered to be greater than the risk of enemy daylight attacks in these areas and were consequently cancelled. Protection of shipping in the Bristol Channel east of the Helmslight float (except dawn and dusk protection for ships of categories I or II) was also abandoned during the month.

FC/S.23680.
A.H.B./IIG/98,
Encl. 90A.

Altogether Fighter Command flew 3,370 sorties by day and 389 by night during March in the defence of shipping. Fighter activity was, however, severely restricted by cloud. Sixty-eight per cent of all the enemy attacks were carried out under six to ten-tenths cloud cover and, although many contacts were made, these resulted in few combats and only one enemy aircraft was claimed as damaged. On the other hand, ships' guns claimed three enemy aircraft destroyed and one probably destroyed.

Thus at the end of the first three months of the year the German anti-shipping offensive ceased to be the serious menace it was during the spring and summer of 1941. Although the German effort in March had showed a comparative decrease, the change in the situation also reflected the increased anti-aircraft defences of convoys and the system of air defence, which Fighter Command was providing for shipping in Home Waters.

(ii) Enemy Minelaying Operations

FC., O.R.B., F.C.I.S.
No.322 A.H.B./IIM/
A2/3A, App.P. A.M.
Pamphlet No.248,
Chap.4, P.116 & Enemy
Documents A.H.B.6.

During the first three months of the year the enemy air forces available for minelaying were estimated at 150 aircraft, comprised of 60 Do. 217's and 30 Ju.88's operating from Holland and 30 Ju.88's, 20 He.111's and ten He. 115's from France. This was an over-estimation as German records show that at this time the combined strength of Fliegerfuhrer Atlantik and Fliegerkorps IX did not amount to more than 130 aircraft. Moreover, German serviceability rates frequently dropped below fifty per cent during that period.

Nevertheless, with the sea and air forces at his disposal, the enemy was carrying out a successful mining offensive. During December 1941 seventeen ships, totalling 58,065 gross tons,

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had been sunk by mines and for the first three months of 1942 the sinkings continued at a relatively high rate.⁽¹⁾

| | <u>No. of Ships Sunk</u> | <u>Total Gross Tonnage</u> |
|------------|--------------------------|----------------------------|
| Admiralty | January 11 | 10,079 |
| Document | February 2 | 7,242 |
| B.R. 1337. | March 4 | 12,328 |
| | <hr/> | <hr/> |
| TOTAL | 17 | 29,649 |

These losses were more than double those which were due to direct air attack.

With his limited resources, minelaying provided the enemy with the economical method of maintaining the offensive against shipping in Allied Home Waters.⁽²⁾ Whether ships were sunk or not, the effort which was required in both men and equipment to combat this form of attack was considerable. Moreover, shipping was forced to move in well defined lanes, where it was more easily located and could be attacked both by aircraft and E-boats. The main benefits, from the German point of views, which accrued from minelaying were:-

- (i) The forces needed to carry out such operations were not large.
- (ii) The aircraft employed were not subject to anti-aircraft fire either from the coast or from shipping.
- (iii) Interception by defending aircraft was not easy due to the minelayers' erratic tracks.
- (iv) Low-flying enabled aircraft to avoid radar detection.
- (v) Great accuracy was not essential, so that inexperienced crews could be employed, often under R/T control of more experienced crews.

An analysis of enemy minelaying in the Thames Estuary during the period revealed the main lines along which operations were carried out. The nights preferred were those when the moon was either below the horizon or obscured by cloud. It was usual for the first raider to reach the target area about one hour after sunset, to be followed by others at short intervals; concentration of aircraft was not aimed at. The most common height of approach was between 6,000 - 12,000 feet and when the target area was reached it was circled in an anti-clockwise direction.

In January the main weight of operations was concentrated against the Thames Estuary, especially the outer part as far as Harwich, and on six nights 80 per cent of all sorties were directed to this area. One operation by twenty aircraft also took place in Liverpool Bay on 10 January, in combination with bombing attacks on the Liverpool docks. The only other area in which operations took place was the Tyne - Tees, where fifteen aircraft operated on 15 January.

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- (1) These figures also include losses due to mines laid by E-boats, which are considered below p. 80.
 - (2) During 1942, minelaying operations represented one quarter of the enemy's total of night operations.

Ibid,
Encl. 159A.

In February the enemy shifted his forces to the Humber area where minelaying occurred on four nights (16/17, 26/27, 27/28 and 28/1 March) comprising 66 per cent of the month's operations. The Thames Estuary and the Tyne - Tees area were also visited on one night each by twenty-five and thirty aircraft respectively.

During March, however, the Thames Estuary was again the chief target area receiving two-thirds of the enemy sorties for the month. The Humber and Tyne - Tees areas were also visited. (1)

Ibid, Encl.
150B.

The problem of how to deal with aerial minelayers had, of course, occurred during 1941 and the mounting losses due to enemy mines in the autumn of that year resulted in a special meeting being held at the end of December.

Defensive Measures by Fighter Command

(1) Protection of Convoys

11Gp. Op. Instr.
No. 13. FC/
S. 23310, Encl.
11A.
Op. Instr. No. 66.
FC/S. 23310,
Encl. 30A.

On 6 April 1941, No. 11 Group had issued comprehensive instructions for the protection of shipping from air attack. These were constantly revised and kept up to date until 7 February 1942, when a new instruction was issued which incorporated various details which experience of convoy protection patrols had brought to light during the previous year.

Constant twenty-four hour standing patrols, or even constant patrols during the hours of daylight, were impossible without devoting the major part of Fighter Command's strength solely to this task. The Naval Authorities therefore specified five categories of importance for the shipping which required protection. These were:-

FC/S. 23328.

Category I 'Units of exceptional value' such as a damaged capital ship or a merchant ship with irreplaceable equipment.

Category II 'Most important units' such as capital ships, troop convoys or convoys of special importance.

Category III 'Important units' such as cruisers, routine convoys or minesweepers engaged on work which could not suffer interruption.

Category IV 'Valuable Units' such as group sailings, minesweepers on routine work, destroyers or independently routed merchant ships.

-
- (1) The lack of distinction between the habits of minelayers and long-range bombers on anti-shipping sorties, makes it impossible to state explicitly whether some of the aircraft suspected of minelaying were not in fact anti-shipping bombers, which failed to locate their target. An added difficulty is the fact the combined operations of mine-layers and bombers attacking coastal objectives took place necessitating a fairly arbitrary distinction.

Unfortunately it has been found impossible to check these figures by reference to German records, the scanty nature of which, in 1942, militates against a presentation by type of operation.

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Category V 'Minor units' such as minesweepers on passage, motor launches or small craft.

Each Group was responsible for affording protection to shipping on its coastal front but support could be obtained from other Groups should the scale of enemy activity be so great that the individual group could not meet the demands on its aircraft or should weather conditions be such that the operation of its own aircraft was impossible.

Four degrees of protection were provided:-

- (a) Fighter Escort
- (b) Fighter Patrols
- (c) Fighter Protection
- (d) Fighter Cover

The degree of protection to be given was left to the discretion of the Group Controller. Ships in Categories I and II were normally granted Fighter Escorts, while no fighter protection was normally given to units in Category V. The four degrees of protection were defined as follows:-

Fighter Escort. A specified number of aircraft, for example one section or one flight, was maintained in the close vicinity of the convoy for a definite period. Aircraft were on no account to leave the convoy in order to pursue an enemy aircraft. The height of the escort was maintained at 3,000-5,000 feet and the aircraft were forbidden to fly directly over the convoy in order to avoid mistakes in identification by the ship's gunners. The escort terminated at dusk, the withdrawal being signalled to the convoy by the fighter leader approaching from seaward at 5,000 feet and giving short flashes on his landing lamps. Any aircraft approaching the convoy after this signal would then be fired upon as hostile.

Fighter Patrol. A specified number of aircraft were maintained in a shipping lane or focal area such as the Thames Estuary, for the general protection of shipping. No. 11 Group, for example, provided patrols from the Barrow Deep Lightship to the Sunk Lightship and occasionally detailed a Wing to sweep from Sheppey to Southwold.⁽¹⁾ This gave additional protection to shipping in the area and at the same time could be used for training purposes. Aircraft engaged on Fighter Patrols were instructed to avoid convoys at night for the reasons already given.

Fighter Protection. Aircraft were maintained at readiness at forward airfields in the Sector, past which shipping was proceeding. The number of aircraft was left to the discretion of the Group Controller.

Fighter Cover. No aircraft were detailed for special protection but the Group Controller was informed of the ships' positions should an attack develop in the area.

(1) The aircraft were drawn from the North Weald, Hornchurch, Biggin Hill and Northolt Sectors.

FC/S.23310,
Encl. 30A.

Ibid, Encl.
32A.

FC/S.27222,
Encl. 5.

FC/S.24487,
Encl. 50A.

Contact between fighters and escort vessels was maintained by V.H.F. R/T; and until the development of sufficient C.H.L. low-looking radar equipment enabled reasonable warning to be given of low-level raiders, the fighter was largely dependent upon surface direction towards the enemy aircraft.

No. 12 Group
Op. Instr.
No. 33, FC/
S.26802,
Encl. 12A.

All these measures were designed for the close protection of coastal convoys and they remained in force throughout 1942. Further measures were, however, required to deal with enemy long-range reconnaissance and weather aircraft. Such aircraft normally operated outside the range of single-engined fighters. A Coastal Command Squadron (No. 248) of Beaufighters was therefore moved to Bircham Newton and from 31 January 1942 one section of two aircraft was usually held at readiness under the orders of the Coltishall Sector Commander. The exact number of aircraft and the degree of readiness depended on the day to day situation and this was discussed between the Headquarters of Nos. 16 and 12 Groups.

FC/S.27587,
Encl. 3A.

Ibid, Encl. 4A.

Ibid, Encl. 3B.

During the beginning of the year, an officer from Fighter Command Headquarters⁽¹⁾ made a tour of the various naval bases where Convoy Conferences were held and gave a series of lectures to the Masters of merchant vessels on the fighter defence system for the protection of convoys. Later in September Commander Faichmeyer R.N.R. reciprocated these talks by giving lectures to Fighter Operational Training Units on convoy work from the naval point of view. Both these series of lectures were important, in that they helped to foster an atmosphere of co-operation between the fighter pilots and the crews of merchant vessels. Moreover, it was hoped that by better flying discipline on the one hand and more restraint in the use of anti-aircraft guns on the other, the number of friendly aircraft which were fired on by Allied ships would thereby be reduced.

FC/S.23680.
A.H.B./IIG/98,
Encl. 90A.

By March the number of sinkings of ships in convoy had been severely reduced and in that month not a single ship was sunk in daylight. This was a satisfactory achievement but both the Admiralty and Fighter Command were concerned by the amount of shipping which was being sunk by mines.

(ii) Defence against Minelaying Aircraft

A.M. File
S.2713,
Encl. 150B.

Ibid.

On 22 December 1941 a meeting was held at Fighter Command Headquarters between representatives of the Admiralty and Fighter, Anti-Aircraft and Balloon Commands. Various measures against enemy minelayers were discussed and particular attention was given to the Thames Estuary as the area to which the majority of the German sorties were directed. The Air Officer Commanding-in-Chief Fighter Command pointed out that total prevention could not be expected and the most that could be done was to make minelaying comparatively unprofitable to the enemy. This general conception of the problem was accepted and it was decided to institute certain measures in order to implement the plan of campaign.

Fighter Command itself undertook to have the restrictions on unseen fire relaxed as far as possible in the affected area and to accelerate the provision of C.H.L. Stations, which would offset the existing difficulty of tracking enemy aircraft

(1) S/L. A.L. Quance (Convoy Liaison Officer).

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flying below 5,000 feet. No. 11 Group also undertook to arrange fighter areas clear of gun zones in the Thames Estuary and to arrange 'fighter nights' in consultation with other Commands, when the weather was suitable.

A.M. File
S.2713,
Encl. 156A.

By 26 February 1942, a fair amount of progress was reported. Twelve paddle steamers were being converted to 'Eagle' ships, mounting the maximum amount of light anti-aircraft guns, a searchlight and radar. A Maunsell Fort had been sunk off Harwich and four new types were in the process of being sited in Liverpool Bay. Anti-Aircraft Command had redispersed twenty-four heavy anti-aircraft guns in the North Foreland area, sixteen in the Foulness area and the same number at Clacton-on-Sea. Twenty-one searchlights equipped with S.L.C. were also allotted to these areas. In the Bristol Channel, four 3.7" guns were sited with two S.L.C. equipped searchlights on Flatholme Island; and in the Humber, two Bofors guns were sited at Spurn Head and sixteen at Immingham and Kellingholme. Arrangements were also in hand for the siting of four twenty-barrelled Naval U.P's each at Blythe, Sunderland, Hartlepool and Teesmouth.(1)

This redistribution of anti-aircraft guns and searchlights was sufficiently comprehensive so long as the enemy aircraft came within range but more positive measures were needed if the Air Officer Commanding-in-Chief's intention to make mine-laying unprofitable was to be fulfilled. Fighter Command therefore instituted a free balloon barrage under the code name of Petard for intercepting minelayers, which were operating at low altitudes in the Thames Estuary.

N.A.D. (42) 2,
16 April.

Petard became operational on 10 February and during February and March seven deployments were made, two of which, on the nights of 18/19 March and 31 March/1 April, developed into releases. On the first occasion, the few enemy minelayers made an unusual 'tip and run' raid and it was doubtful whether the barrage reached the area in time. On the second occasion the barrage was released when 'Y' service information indicated that minelaying in the Estuary was extremely probable; no enemy aircraft, however, appeared. These were the only nights during the year that releases took place. The barrage was held at readiness for a further seven months but on occasion when the weather was favourable, there were either too few minelayers to justify a release or the risk of damaging Allied aircraft was too great. Consequently on 28 October Petard was abolished and the personnel employed were returned to their parent units in Balloon Command. Fighter action therefore remained the chief form of defence against minelayers and the special tactics adopted by Nos. 11 and 12 Groups, in whose areas the major portion of enemy minelaying operations took place, must be briefly described.

N.A.D. (42),
4, 7 and 12

A.M. File
S.2713,
Encl. 157A.

No. 11 Group, while still using A.I. equipped aircraft to intercept enemy minelayers in the Thames Estuary, also sent fighter aircraft some distance out to sea under C.H.L. control in order to intercept the enemy aircraft, while they were still flying a steady course at a reasonable height.(2)

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- (1) U.P. = Unrotating Projectile = Rocket Projectile.
 - (2) Fighters had been controlled by some C.H.L. Stations since July 1941. The use of such stations for interception purposes has already been described. See above p. 43..

(R.A.F. Monograph:)
Royal Air Force
Signals in the
Second World War,
Vol. V. Part IV, Chap.
12.

The efficiency of intruder operations against the enemy bases was also improved by co-operation with No.2 Group of Bomber Command. The latter Group's aircraft were able to reach Soesterberg, Schipol and Leeuwarden which were out of reach of No.11 Group's aircraft, which concentrated on Eindhoven and Gilze-Rijen.

No.12 Gp. Op.
Instrs. Ncs. 32
and 35. A.M.
File S.2713,
Encl. 157B.

In order to combat enemy minelayers operating from Flamborough Head to Yarmouth up to a distance of fifty miles out to sea, No.12 Group, from the beginning of 1942, instituted two operations - Parchment and Subject - which were designed to intercept enemy aircraft at night en route to and from their minelaying areas. The aircraft which operated from the Schipol, Eindhoven and Gilze - Rijen areas usually approached the target area at heights varying between 3,000 and 18,000 feet but when over the target area height was reduced to 1,000-3,000 feet. This made G.C.I. and C.H.L. control and free lance A.I. patrols abortive.

Operation Parchment was carried out by single-engined fighters during the period of effective moonlight.⁽¹⁾ As soon as the first enemy plots appeared, travelling from Holland in a north-westerly direction, Controllers at Coltishall, Digby and Kirton ordered one pre-selected searchlight in each sector, situated as near to the coast as possible, to be exposed vertically. Each of the Controllers then ordered five fighters to take off and orbit the searchlight beam at consecutive height intervals of 500 to 1,000 feet, according to the height at which the enemy aircraft were flying. The aim of the Controllers was to allow the fighters to cut the stream of enemy aircraft as nearly at right angles as possible, when they were passing the individual fronts or to vector them, through the middle of the target area, if the enemy aircraft were circling their target.

Ibid.

FC/S.27224.

Operation Subject was designed for the same purpose as Parchment but was to be used during the non-moon period.⁽²⁾ In this case Havoc aircraft, accompanied by single-engined satellite fighters, intercepted enemy aircraft by means of silhouette detection against the water. As soon as it became apparent that enemy aircraft would either pass across or operate off the Group front, the Group Controller ordered Wittering or Kirton to despatch a Subject circus to operate in the area. The Circus consisted of three Havocs, each accompanied by a satellite fighter. The Havocs were equipped with a number of four-inch training flares to illuminate a wide area, when the circus arrived above the enemy aircraft. When the Havocs released the flares, the satellite fighters broke formation and carried out a downward search. On completion of the operation, the aircraft would either return independently to base or be taken over by Sector Control for further commitments.

At best, however, these were but temporary expedients, until such time as technical improvements in the sphere of raid reporting should provide the necessary amount of warning

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- (1) Eight days before to five days after the full moon inclusive. This was the 'fighter-night' period.
 - (2) Six days after the full moon to one day before the first quarters inclusive, i.e. between the 'fighter-nights' period.

to enable defending fighters to locate and destroy the enemy at night in all weather conditions. The solution to the problem of the aerial minelayer, was therefore largely the same problem which faced the night defences in general and, like this, had to wait upon technical developments.

(iii) Defence against E-Boats

The number of E-boats employed against shipping in Home Waters was rarely more than twenty but they were fairly actively engaged. Between December 1941 and October 1942, they torpedoed and sank fourteen ships totalling 23,094 gross tons. Fifty-one mining operations were also carried out during this period, in which some 1,902 mines were laid.

Admiralty N.I.D.
(15/X.237/48.

FC/S.26966,
Encl.1A.

In December 1941, No.12 Group instituted Operation Marksman, which was the code name for the attack of E-boats which had damaged by surface vessels and were unable to reach their bases under cover of darkness, or undamaged E-boats which were returning to base in daylight.⁽¹⁾ The difficulty of bombing such small targets was realised but it was hoped to exploit their vulnerability to cannon-fire. For this purpose it was intended to use both the single-engined cannon-fighters of No.12 Group and the Beaufighters of No.16 Group, Coastal Command. In order to overcome the difficulties of navigation of the fighter aircraft, the Beaufighters would lead the fighters to the target area. If the exact position of the E-boats was unknown or if Beaufighters were not available, sweeps by cannon-fighters over the Texel, IJmuiden and the Hook of Holland would be undertaken.

Ibid.

By 19 February 1942, however, a fresh scheme was under consideration by the Admiralty, Coastal Command and Fighter Command for the use of Whitley aircraft equipped with long-range A.S.V.⁽²⁾ in co-operation with motor gunboats. The Whitley was extremely vulnerable to enemy fighters, however, and this, together with continuing difficulties in locating E-boats resulted in the scheme being allowed to lapse; where-upon active counter-measures against E-boats became the special concern of the Royal Navy.

Ibid.

Between January 1942 and February 1943 Fighter Command aircraft flew 113 sorties specifically against E-boats at sea and made 53 attacks. Thirty-six attacks were also made by aircraft on other duties. On only five occasions was damage to either the boats or their personnel claimed and no E-boat was lost.

F.C. Form 'Y'
Admiralty N.I.D.
F.D.S.X237/48.

In a report in June 1942 the German Senior Officer E-boats commented for the first time on the presence of enemy air forces. He stated that 'the strength of the enemy air forces compels E-boats to operate more and more during the hours of darkness'; and in a subsequent report in October: 'torpedo attacks by E-boats cannot be carried out during the periods of full moon in the Dover Strait, owing to the presence of enemy night fighters equipped with radar.' From these two remarks it therefore appears that Fighter Command was at least curtailing E-boat activity.

Admiralty
N.I.D./F.D.S.
X.354/50.

Admiralty
N.I.D/F.D.S.
X.237/48.

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- (1) The main E-boat bases on the Continent were IJmuiden, Rotterdam, Ostend and Boulogne; Cherbourg was also occasionally used.
 - (2) Air to Surface Vessel i.e. Surface-sweeping radar.

In proportion to their numbers E-boats were a serious menace. As with minelaying aircraft, the answer to their activity lay in the development of technical equipment, which could ensure adequate warning and accurate location. More indirectly, the growing strength of Fighter Command hampered their operations by making reconnaissance extremely difficult and therefore made anything but swift anti-shipping strikes hazardous and unprofitable.

The Enemy Shift of Attack and Consequent Failure of Anti-Shipping Offensive: April - May 1942

During the first three months of 1942 the German anti-shipping offensive had succeeded in sinking twenty-four ships totalling 43,495 gross tons.⁽¹⁾ This was less than half the corresponding total for the last three months of 1941 and represented a satisfactory achievement on the part of the defences, since the overall German effort during both periods remained about the same. Nevertheless, an average of two ships were being lost each week and each month Fighter Command was flying more than 4,000 sorties in the direct defence of shipping.

R.A.F. Narrative: 'The R.A.F. in Maritime War', Vol.3.

FC/S.23680
A.H.B./IIG/98,
Encls. 91A &
92A.

A.H.B./IIG/114,
p.10.

During April and May, however, not a single ship was lost by direct attack at sea and only eight vessels, totalling 10,074 gross tons, were sunk by mines. Moreover, the number of enemy daylight sorties was actually greater than in March.⁽²⁾ This change in the situation was due in part to the various defensive measures, which had been planned at the beginning of the year and were now beginning to take effect. In particular, the anti-aircraft defences of convoys were much improved. There had, however, been no increased defensive effort by Fighter Command. The situation, in fact, resulted from a German change in strategy, which was indirectly dictated by Royal Air Force bombing attacks on Germany and the transfer of aircraft to the Eastern Front.

A.D.I.(K)
Report No. 15/
1946.

A.H.B.6 Translation No.VIII
/37 Report to
Generaloberst
Jeschonnek
(Chief of the
Luftwaffe
General Staff).

By April the Germans had transferred a large proportion of their anti-shipping units to the Arctic in an attempt to halt the flow of war materials to Russia and operations in British Home Waters were relegated to a minor category under Generalmajor Kessler.⁽³⁾ Kessler showed a sounder appreciation of the importance of coastal shipping to the Allies than did his superiors when he stated 'in no other area is so great a volume of essential shipping moved with such regularity and such concentration over such clearly defined shipping lanes as in the coastal areas around Great Britain.... I am convinced that the "Achilles heel" of the English is their shipping and that only in this domain can a really deadly blow be struck against them'. But these views, even if they had been shared by the German High Command, could never have been implemented. The forces at Kessler's disposal were far too meagre to carry out an effective anti-shipping

A.H.B./IIG/98,
Encl. 91A.

A.M. Pamphlet
248, Chap. 4,
p.109.

- (1) By aircraft, E and U Boats
- (2) The number of attacks in April, however, was only ten - as against 31 in March. This was no doubt partly due to the lack of cloud cover for the enemy during April.
- (3) Generalmajor Harlinghausen was wounded during an attack on an escort vessel in the Bristol Channel in October 1941. His deputy held the post of Fliegerführer Atlantik until Kessler was appointed on 6 January 1942.

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offensive. Nevertheless, had Kessler been allowed to concentrate on anti-shipping operations, there seems little doubt that losses would have continued to be inflicted on Allied Coastal shipping. But this he was not allowed to do.

The growing weight of the Bomber Command offensive against Germany and particularly the Royal Air Force attacks on Lubeck and Rostock brought about a change of German air strategy in the West and Vergeltungsangriffe (reprisal raids) were given top priority. This meant that Kessler's already limited bomber force was diverted to overland night attacks against towns and cities in the United Kingdom. Thus during the period of Baedeker raiding which extended from 23 April to 9 May, the enemy night effort against shipping dropped very considerably. A German official lecturer confidently - and in the light of later events, somewhat ironically - stated the position. 'A fundamental change in the conduct of air war took place from April 1942 when reprisals were called for as an answer to enemy terror attacks against the Reich.' The war against shipping was thus allowed to take second place after the requirement for reprisals raiding had been met.

A.H.B./IIG/114,
pp. 10-11.

In an attempt to continue with anti-shipping attacks, Jafue 2 and Jafue 3 (German Fighter Control Headquarters), which commanded the fighter units approximately east and west of the Seine respectively, established one Staffel from each of their subordinate units and with these short day raids on British shipping was continued.

A.D.I.(K),
Report No.12/
1946.

During the months of April and May, Fighter Command claimed the destruction of nine anti-shipping aircraft, three probably destroyed and seven damaged. Our own losses amounted to six aircraft but only one of these was due to enemy action. These months represent the time of failure of the German anti-shipping offensive of the previous eighteen months. They also illustrate the dwindling strength of the German Air Force in the West and the thoroughly unsound strategical principles upon which enemy air operations were based at this time.

FC/S.23680
A.H.B./IIG/98,
Encls. 91A and
92A.

The Enemy Anti-Shipping Offensive Fades Out: June - December 1942

(i) Operations: June - August

The majority of the attacks on shipping during June were carried out by Me. 109 fighter-bombers and incidents occurred exclusively in Nos. 10, 11 and 12 Group areas. The total number of daylight attacks was only five and while seven attacks were also carried out by night and by twilight, these resulted in the loss of only one small ship of 345 gross tons.

FC/S.23680,
A.H.B./IIG/98,
Encl. 94A.

July was the prelude to two months of greatly increased enemy activity both by day and by night. Long-range bombers were used more extensively, although without success. The fighter-bomber force was also more active and was responsible for the sinking of two ships, totalling 1,460 gross tons in No.10 Group area. The fighter-bombers - Me. 109's and F.W.190's - normally operated in pairs or in fours and were well camouflaged, so that when flying at sea level they were difficult to detect, particularly in hazy weather. The lack on an early warning system, however, remained the chief obstacle for the patrolling fighters.⁽¹⁾

Ibid,
Encl.95A.

(1) The problem of intercepting low-flying fighter attacks was considered above. See. Chap. 3.

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Ibid,
Encl. 98A.

A.M. Pamphlet
248, Chap.4,
p.113.

FC Form 'Y'.
O.R.B., App.,
Aug.
A.H.B./IIM/A2/
3A.

During August the enemy anti-shipping effort reached its peak, in terms of sorties, for the year. Fighter-bomber attacks decreased but the return of II/K.G.26 from Norway to North-west France allowed a considerable increase in the long-range and reconnaissance bomber effort. Since June this unit had been undergoing a torpedo conversion course and was armed with Ju.88's. On 3 August eight of its aircraft made a night torpedo attack on a convoy off the Scilly Isles and succeeded in damaging one ship. In September, however, the Gruppe returned to Banak in Norway in order to operate against Anglo-American convoys to Russia. The attack on 3 August was the first occasion during 1942, in which torpedoes were used, as III/K.G.26 had been misused in a series of reprisal raids on Birmingham, although it was specially trained for torpedo work.⁽¹⁾

The month, however, affords excellent evidence to show how dangerous it is to think of offensive power simply in terms of sorties. Although the enemy flew an estimated total of 887 sorties during August, only eleven attacks were carried out; and these were inaccurate, so that no ship was in fact sunk. Indeed a curious fact about enemy anti-shipping operations during the summer, was the way in which an increase in sorties was accompanied by a general decrease in the number of attacks. The relevant statistics for May to August make this plain.

F.C.O.R.B.
App. D.5 Aug.
and F.C. Form
'Y' A.H.B./IIM/
A2/3A.

| | <u>No. of Sorties</u> | <u>No. of Attacks</u> |
|--------|-----------------------|-----------------------|
| May | 648 | 30 |
| June | 589 | 12 |
| July | 828 | 24 |
| August | 887 | 11 |

A.M. Pamphlet
No.248,
Chap.4, p 116

The reason for this is not clear. It seems unlikely, for example, that the enemy reconnaissance effort was greatly increased. The most probable explanation would seem to lie in the number of enemy anti-shipping crews, which failed to find their objectives. This would agree with the known fact that the standard of training of aircrew engaged in anti-shipping operations was very poor at this time.⁽²⁾ A substantial proportion of enemy day sorties also took place beyond the range of Fighter Command's aircraft.⁽³⁾

FC./S.23680
A.H.B./IIG/98,
Encl. 98A.

Whatever the cause, there is no doubt that the enemy anti-shipping offensive was achieving little success. Fighter Command made no claims in August but the good defensive power of ships in convoy resulted in ships' guns claiming seven enemy aircraft destroyed, one probably destroyed and two damaged.

A.M. Pamphlet
No. 248,
Chap. 4, p.109.

A.M. Pamphlet No. 248,
Chap.4, p.116
A.H.B./IIG/98, Encl.
98A.

- (1) Torpedo development in the G.A.F. was extremely slow and it was only in December 1941 that the G.A.F. was allowed to organise its own torpedo force. By June, however, the whole of I/K.G.26, equipped with 42 He.111's, was trained and II/K.G. 26 was undergoing a conversion course, as mentioned above.
- (2) Largely because of the number of experienced crews, which was lost during the Baedeker raids and other overland bombing operations.
- (3) 275 out of 649 enemy day sorties during August.

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A.M. File
S. 2713,
Encl. 166A.

Admiralty
Document
BR. 1337

Enemy minelaying operations also dwindled rapidly over the period. During June several areas were attacked which until this time had remained free from mining in 1942. On the night 4/5 June, fifty enemy aircraft laid mines off Flamborough Head, combining the operation with raids on Yorkshire Coastal targets. Six nights (7/8 - 15/16 June) were also occupied with mine-laying between the Solent and Beachy Head. As a result of mining, four ships totalling 2,310 gross tons were sunk in June. These were, however, the only losses due to mining during the period. From the end of June the decline in mine-laying was most notable and only 121 sorties were flown during July and August.

During the whole three months, Fighter Command claimed eight enemy aircraft destroyed, two probably destroyed and six damaged. Over the same period ship's guns claimed ten enemy aircraft destroyed, three probably destroyed and five damaged. Our own losses amounted to ten aircraft but only three of these were due to enemy action.

(ii) Operations: September - December

FC/S. 23680
A.H.B./IIG/98,
Encl. 99A.

F.C. Form 'Y',
O.R.B., App.,
Sept. A.H.B./
IIM/A2/3A
Ibid, Oct.

Ibid,
Encl. 101A.

F.C., O.R.B.,
App., Dec.
A.H.B./IIM/A2/
3A. Form 'Y'.

During the autumn and closing months of 1942 the enemy offensive against shipping gradually petered out. After September no night attacks were recorded and while sporadic daylight attacks continued, these brought little success and no ship was lost by direct attack at sea during the remainder of the year. Fighter-bombers continued with their tip and run tactics using cloud cover and in an attack on Dartmouth on 18 September sank three ships which were in harbour. These tactics were continued during the following month and on 16 October a number of barges were sunk near the mouth of the River Dart.

During November, more enemy long-range bomber units were withdrawn to the Mediterranean and there were no fighter-bomber attacks; and in December the sole enemy success was the sinking of two ships and the damaging of sixteen in Poole Harbour, all but one being the result of an attack by a Do. 217 on 16 December under heavy cloud cover. Weather conditions were very poor on this day and the only aircraft which was detailed to intercept this raid - a Mosquito of No. 264 Squadron was unsuccessful.

Ibid.
Admiralty
Document
BR. 1337.

Minelaying during the period was also at a much reduced level and amounted to a total of only about one hundred sorties, mostly off the East Coast. No ships were lost due to mines during September but during the remaining three months five small ships were sunk, totalling 2,673 gross tons. (1)

In view of this decrease in enemy activity, Fighter Command flew only half the number of defensive sorties which it had maintained during the spring and summer.

During the three months Fighter Command claimed three enemy aircraft destroyed while ships' guns claimed one. There were no claims for enemy aircraft probably destroyed or damaged. Our own losses amounted to four aircraft, two of which were due to enemy action.

(1) This total includes E-boat attacks.

General Summary and Conclusions⁽¹⁾

A.M. Pamphlet
No. 248, Chap. 4,
p. 116.

The German Air Force anti-shipping campaign of 1941-1942 was a failure. The German High Command had expected to end the war in the West with the Battle of Britain, but with the prolongation of that assault, followed by the improvisation of the long-range bombing attacks and later the decision to concentrate on British supply routes, the High Command had no long-term policy. Consequently when heavy attacks could have been made on British shipping, the necessary air forces were not available; while after the attack on Russia on 14 June 1941, the Eastern Front became an increasing drain on the resources of the Luftwaffe.

At no time during 1942, did the German offensive against coastal shipping produce critical losses, in spite of the fact that more than eighty per cent. of all enemy sorties during the year were directed against shipping.

The most dangerous months from the Allied point of view, were, January and February, when eighteen ships totalling 30,283 gross tons were sunk by direct air attack and by mines. This was more than half the total for the whole year. Various measures, however, were taken to increase the protection of convoys and to limit the operations of enemy minelaying aircraft and by March, Allied losses were considerably reduced in spite of a slight increase in the number of enemy sorties.

During April, Allied losses fell still further, largely owing to the diversion of a substantial part of the German effort to overland reprisal raiding; and after this month the German offensive gradually began to fade out. In August, the enemy effort reached its peak in terms of sorties flown but there were few actual attacks and no losses were sustained either through direct attack or mines.

Towards the end of the year tip and run attacks by fighter-bombers increased, no doubt as a result of the enemy's declining bomber strength in the West;⁽²⁾ but these too met with little success.

The difficulties of intercepting enemy aircraft at night and in cloud over the United Kingdom have already been considered.⁽³⁾ Similar difficulties frequently occurred in the case of anti-shipping aircraft and the lack of complete and thoroughly efficient early warning and location system, meant that Fighter Command was forced to fly a very large number of protective patrols.⁽⁴⁾ Estimates vary as to the exact number of enemy sorties flown during the year but the total amounted to approximately 7,000 to 8,000 sorties or less than one fifth

(1) See Appendix No. 6.

(2) The success of fighter attacks on the south coast, must also have given the enemy grounds for hoping that similar success would be obtained if fighters were used against shipping.

(3) See above Chaps. 3 and 4.

(4) During the year Fighter Command flew the following sorties in the direct defence of shipping:-

| | |
|----------|--------|
| By Day | 38,022 |
| By Night | 2,709 |
| Total | 40,731 |

F.C. Form 'Y',
O.R.B., Apps.

F.C. Form 'Y',
O.R.B., Apps.
A.H.B./IIM/A2/
3A.

of the Fighter Command total.⁽¹⁾ Thus in addition to sinking some 60,000 tons of shipping, the German anti-shipping offensive caused Fighter Command to devote approximately forty per cent. of its total flying effort throughout the year to the direct defence of shipping. This was the limited success of the German offensive. It was, moreover, a campaign in which the enemy sustained relatively light casualties. Here again, German and British assessments do not agree and the German figures of eighty-seven aircraft destroyed during the year is substantially larger than the British claims of forty-seven aircraft destroyed.⁽²⁾

German
Documents
A.H.B.6.

Behind these partial successes, lay the much greater advantages which the enemy might have gained, had he possessed a really efficient organisation for co-ordinating and directing anti-shipping operations. Fliegerfuhrer Atlantik never received the unqualified support of the German High Command. The training of new aircrew for anti-shipping operations was also poor and the constant wastage of experienced crews by their diversions to overland bombing and reprisal raiding gravely impaired the efficiency of the anti-shipping force.

A.M. Pamphlet
No. 248, Chap. 4,
p. 116.

From the Allied point of view, the continued success of the convoy system has already been noted. This was strengthened both by the increase in ships' armament and the number of protective fighter patrols and during the year only sixteen per cent of the ships sunk and fifteen per cent of those damaged were in convoy. Fighter losses were also very small and only seven aircraft were destroyed by enemy action during 1942.

Whilst it may be admitted that the number of enemy anti-shipping aircraft, which were destroyed during the year, was not large, it should be remembered that the primary duty of Fighter Command was to protect Allied shipping from air attack. In the February Operational Instruction, which has already been described, occurs the following passage:-

FC./S. 23310,
Encl. 30A.

Ibid,
para. 4(iv)(a).

'Cases have occurred of Escorts being drawn off in pursuit of single enemy aircraft, apparently deliberately. Care should be taken to avoid falling into this trap, and an Escort Leader must constantly bear in mind that his primary duty is to protect the convoy, and he should not therefore, leave it unless an enemy aircraft is actually engaged over the convoy and it is only necessary to leave the vicinity of the convoy to conclude the engagement.'⁽³⁾

The success of Fighter Command therefore lay in the large proportion of Allied shipping which reached port in safety and in the failure of the German Air Force to make any appreciable difference to the amount of shipping maintained in British coastal waters.

A.H.B.6.

Enemy
Documents
A.H.B.6.

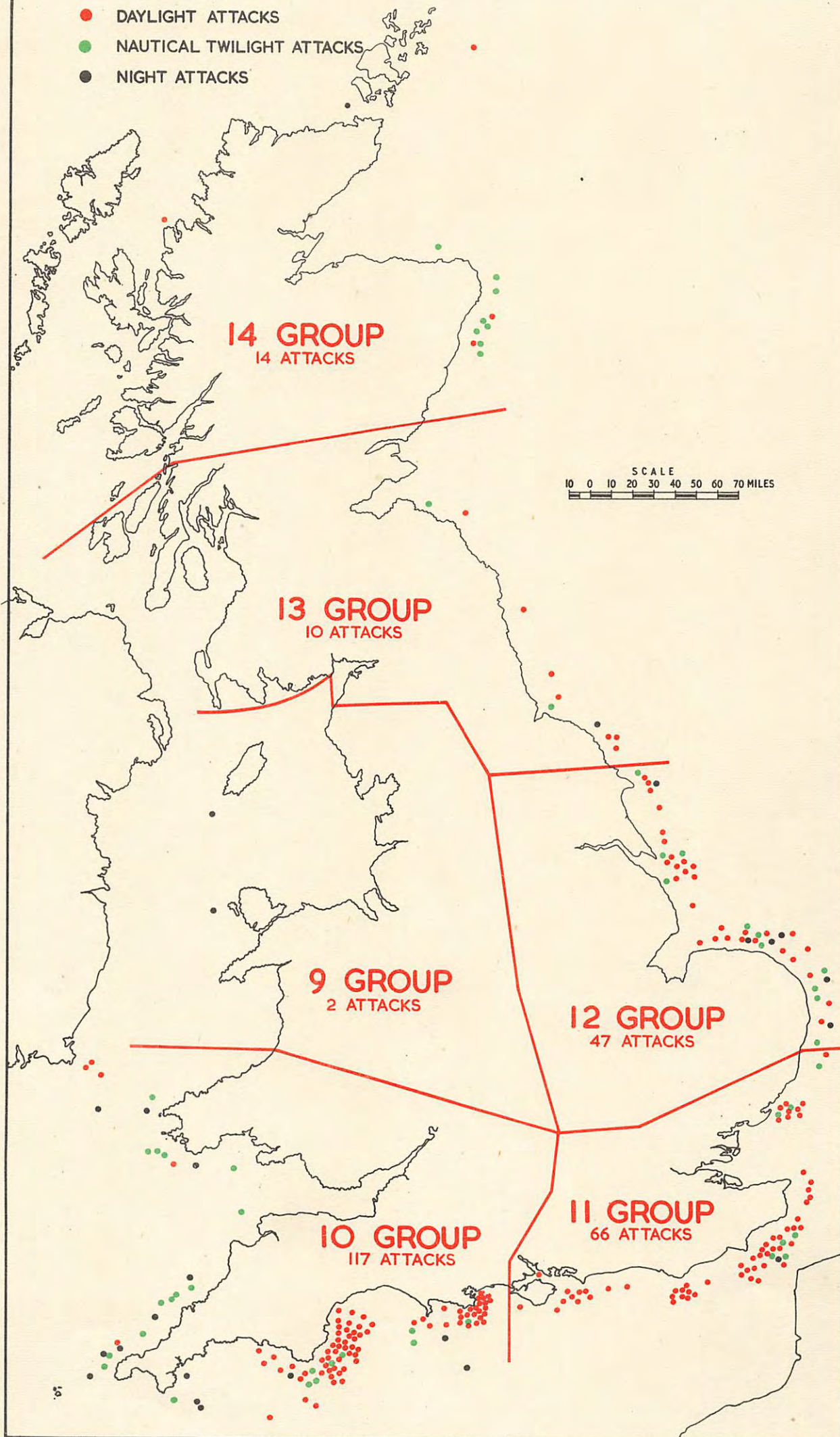
- (1) German records cannot be broken down by type of operation. The above estimate is by Fighter Command.
- (2) Twenty-seven destroyed by Fighter Command and twenty by ships' guns. The discrepancy may be caused by the fact that various German units normally employed on anti-shipping work were used for reprisal raiding and losses sustained, during these overland attacks may be included in the anti-shipping losses total.
- (3) Original underlining.

GERMAN AIR ATTACKS ON COASTAL SHIPPING IN FIGHTER GROUP AREAS DURING 1942

AUTHORITY:
F.C.O.R.S. DIAGRAMS 1843-2980
A.H.B. II G/98

LEGEND

- DAYLIGHT ATTACKS
- NAUTICAL TWILIGHT ATTACKS
- NIGHT ATTACKS



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PART II
OFFENSIVE OPERATIONS 1942

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CHAPTER 6

THE DAY FIGHTER OFFENSIVE: JANUARY - JUNE

Introduction - The Day Offensive during 1941⁽¹⁾

Apart from political aims, the object of the fighter offensive during 1941 was twofold. Enemy ground targets, ships and above all aircraft were to be destroyed and it was also hoped that by their destruction, the enemy would be prevented from withdrawing flying units from the West and sending them to Russia. This was the chief reason for the intensive period of operations which began in July 1941.

Records of
6th Abteilung
A.D.I.(K)
Report No.
373/1945.
A.H.B.6.Trans.

It is clear, however, from German records that the offensive failed to bring about any substantial change in the enemy's order of battle. Two experienced single-engined fighter Geschwader were certainly retained in northern France and although it is possible that but for the offensive these Geschwader might have been employed elsewhere, it is unlikely that the enemy would have entirely denuded northern France of first-line fighters. At least the threat of an offensive would always have existed.

FC/S.26678,
Encl. 1A.

By October 1941, the Air Staff decided that a restriction in the scale of Fighter Command's operations was necessary owing to the poorer weather and shorter days. By this time operations were unlikely to affect the situation in the East. Moreover, the growing demands from other theatres of operations called for a conservation of fighter resources, which would not be possible if the scale of operations were maintained at the level of the previous months. Occasional circuses⁽²⁾ were undertaken to keep the enemy on the alert but the main burden of the offensive was carried out by small numbers of aircraft attacking shipping and fringe targets on as wide a front as possible. This emphasis on the need for conserving aircraft was stressed again in November, when the Deputy Chief of Air Staff informed the Air Officer Commanding-in-Chief Fighter Command that the War Cabinet was intent upon building up a strong force by the spring of 1942 and that aircraft should not be hazarded more than necessary, although vital operations were not to be abandoned.

See Chap. 9.

Ibid, Encl. 8A.
and A.H.B./
1D3/592.

The entry of the United States into the war aggravated this problem of aircraft shortages. There could be little doubt that supplies from the United States would fall off during the period when she was building up her own air forces. At the same time, Fighter Command would have to provide aircraft for the Far East in addition to the Middle East. There was also the possibility that pressure might be exerted to make good the shortage that Russia would also experience, by drawing on the supplies that Great Britain possessed. On 10 December 1941, the Deputy Chief of Air Staff, therefore, told the Air Officer Commanding-in-Chief: 'There is no objection to large scale operations being undertaken at long intervals against objectives, the destruction or disorganisation of which is of major importance, for example, the bombing

(1) For a full account see R.A.F. Narrative: 'The Air Defence of Great Britain', Vol.IV, from which this summary is largely extracted.

(2) For a definition of various terms for offensive operations see Appendix No. 9

FC/S.26678,
Encl. 7A.

of important power stations with bombers escorted by fighter aircraft. We cannot, however, afford the constant drain which is imposed by minor operations, which constitute no more than a minor nuisance to the enemy.' The Air Officer Commanding-in-Chief informed the Air Officers Commanding of Nos. 10, 11 and 12 Groups of this policy of conservation on 15 November.

Enemy
Documents
A.H.B.6.

Access to German documents has shown that our claims of enemy aircraft destroyed during offensive operations were often far in excess of the facts. For example, between 14 June 1941 and the end of the year, we claimed the destruction of 731 German fighters, whereas the actual number destroyed, according to German records was only 135. Moreover, this result was obtained at a cost of 411 Fighter Command pilots.⁽¹⁾ Thus for every enemy aircraft that we destroyed, we lost an average of two and a half pilots. The offensive proved - as experience at Dunkirk had suggested - that it was possible for short-range fighters operating from the United Kingdom to assert a temporary and local air superiority over parts of northern France; and that it was possible, at a sufficient cost in flying effort and losses, to reduce the strength of the opposing fighter force for a limited period, providing the existing ratio between the resources of either side was maintained. But the optimistic intention of inflicting considerable losses on the enemy, by forcing him to fight when he would be at a tactical disadvantage, was in no way realised.

FC/S.24752,
Encl. 126A. and
FC/S.23203,
Encl. 129A.

One aspect of the fighter offensive, however, which met with limited success was the Channel Stop. During the first half of the year Blenheims of No. 2 Group were used for anti-shiping operations in the Channel area but on 8 October 1941 the responsibility for the Channel Stop was transferred from Bomber to Fighter Command.⁽²⁾ Nos. 402 and 607 Squadrons were equipped with the recently developed Hurricane-bombers and these, together with other squadrons from No. 11 Group, continued the offensive until the end of the year. Towards the end of 1941 the number of enemy ships which attempted daylight passage through the Straits of Dover was extremely small. It is difficult, however, to say how far this was due to our offensive naval and air operations and how far simply to a lessening of enemy requirements.

R.A.F. Narrative
'The R.A.F. in
Maritime War'
Vol.III, Chap.4.

The Situation in January 1942

At the beginning of the year the orders relating to the conservation of aircraft were still in force. Indeed the aircraft situation was growing worse. During the week ending 10 January the wastage for Spitfires and Beaufighters was:-⁽³⁾

A.H.B./
ID3/771B,
Part I,
Encl. 2.

FC/S.23203,
Encl. 129A
and
FC/S.24752
Encl. 47B

- (1) During the Battle of Britain, 10 July - 31 October 1940, the number of pilots lost was 448.
- (2) From this date Fighter Command assumed responsibility for day operations in the area Manston - Ostend - Dieppe - Beachy Head. Apart from this area, Bomber Command was responsible for anti-shiping operations (including reconnaissance) between Cherbourg and Texel. The change was partly occasioned by the heavy losses sustained by No. 2 Group's aircraft.
- (3) These figures elicited a sharp minute from the Prime Minister. The subject of wastage, however, is dealt with below in Chapter 9 of this volume.

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| | <u>Destroyed</u> <u>i.e. Cat. 'E'</u> | <u>Damaged</u> | <u>Totals</u> |
|--------------|------------------------------------------|----------------|---------------|
| Beaufighters | 5 | 14 | 19 |
| Spitfires | 15 | 56 | 71 |

Moreover, these figures corresponded very closely to the average weekly wastage for the previous two months. Fighter Command had, therefore, to be modest in planning offensive operations and for the first two and a half months of the year, Rhubarbs formed the majority of our offensive operations.

F.C. Order of
Battle,
Jan. 1942.
A.H.B./
IIM/A2/3A.

11G/500/13/
Ops, Encl. 9A.

At the end of January the number of first line day fighter squadrons, which were available for offensive operations, was fifty-five.(1) Of this total, fifty-three were equipped with Spitfire VB's but no long-range Spitfires of any type were yet operating.(2) Moreover, not all these squadrons had reached the same standard of training. In the middle of January the only really well-trained Wings in No.11 Group were those from Kenley and Northolt. The Biggin Hill Wing was adequately trained but in the opinion of the Air Officer Commanding the others were 'hardly fit for serious operations.'

FC/S.26678,
Encls. 18A
and 20.

The force was nevertheless quite capable for carrying out the tasks allotted to it in January but this fact itself caused a peculiar difficulty. This was the question of maintaining the morale of the fighter pilots, which was beginning to suffer from too much inactivity.(3) Partly because of this and partly owing to other reasons which will be considered later, the Air Officer Commanding-in-Chief hoped to increase the number of offensive sorties without contravening the Air Ministry directive. He was supported in this view by the Air Officer Commanding No.11 Group, who suggested that if the enemy failed to react to the fighter feint sweeps, that were taking place, Hurricane bombers should be included in the force. This was tantamount to calling for a revision of the whole policy of offensive operations but the policy of conservation was in fact continued until March.

Operations: 1 January - 23 March 1942

(1) Rhubarbs

During the first quarter of the year, Rhubarbs formed the major part of our offensive operations.(4) These were small scale operations normally carried out by two or four aircraft and consisted of cannon and machine-gun attacks on trains, barges and factories in the coastal areas of Belgium

A.O.C.-in-C.
Outgoing
Flimsies No.11,
18 Jan.

F.C. Form 'Y'
Vol. 9.

- (1) See Appendix No.7.
- (2) With the exception of Nos.66 and 152 Sqdns. (Spitfire IIA).
- (3) The problem was aggravated by a surplus of pilots in Fighter Command at this time; it was also reflected in the high accident rate in the Command at this time (See Chap. 9).
- (4) Between 1 January and 23 March, Fighter Command carried out 46 Rhubarbs, 17 Rodeos and 24 other offensive operations. See Appendix No.10.

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FC/S.26289,
Encl. 6A.

Ibid.

and northern France. The detailed planning of such operations was usually the responsibility of the pilots concerned, who selected the targets from a constantly amended list. On 17 October 1941 Fighter Command issued a memorandum on Rhubarb patrols, the intention of which was 'to keep the enemy defences in a high state of readiness and to interfere materially with the working of his war machine.' Three main classes of targets were described and appendices were given with the positions of individual suitable targets. The classes were the French electrical power system, the fuel distribution system (both by canal and rail) and the alcohol-fuel distillation plants. The memorandum also stated that the Intelligence Branch at Fighter Command was preparing further and more detailed target dossiers and that these would be issued direct to Stations.

Ibid,
Encl. 27A

Ibid,
Encl. 6A,
App. D.

Ibid,
Encl. 53A

F.C. Form 'Y',
Vol. 9 and
A.H.B./11/76/2.

On 11 November a further memorandum on offensive operations policy was issued by Fighter Command. It added enemy military camps, airfields and radio stations to the above list and stated the attacks on alcohol distillation plants were to be given special priority. The importance of these plants lay in the fact that their products supplemented German petrol supplies. Moreover, the large tanks presented useful landmarks to pilots and helped them to deal with the difficult problems of high-speed, low-level navigation both en route and in the vicinity of the target. The distillation season only lasts from December to February and during this period distilleries were attacked on several occasions. Apart from the alcohol plants, the most frequently attacked targets during the first three months of 1942 were barges, locomotives and trains. (1)

F.C. Form 'Y'
Vol. 9.

Typical of these attacks was an operation which took place on 5 January. The cloud base over the United Kingdom was at 2 to 3,000 feet lowering over France and the Low Countries to between 500 and 1,000 feet. There were showers but outside these the visibility was moderate to good. At 1525 hours two Spitfire VB's of No.485 Squadron left Kenley to attack an alcohol distillery at Fontaine-le-Dun near Dieppe. They crossed the Channel just above sea level and approached the target from the south at 1,000 feet. They attacked the tower of the distillery which was easily identified and an adjoining section of the target believed to contain distilled alcohol. Thin black smoke was seen to issue from the latter after it had been attacked. Hits were also seen on store-houses. The attacks were carried out almost from ground level, after which the aircraft successfully returned to their base.

FC/S.26289,
Encl. 68A.

Between 1 January and 23 March sixty-five Rhubarb operations were planned but of these nineteen - nearly 30 per cent - were uncompleted, abandoned or cancelled owing to unsuitable weather conditions. (2)

FC/S.25904
Encl. 43A.

-
- (1) After the cessation of attacks on distilleries, the Enemy Target Information Committee agreed that locomotives and transportation generally provided the most important targets.
 - (2) The weather was an important consideration. If it was too bad there was little chance of finding the target. Clear weather, on the other hand, was equally unsuitable since cloud cover was essential if our aircraft was not to be 'jumped on' by enemy fighters.

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Ibid.

It is difficult to believe that Rhubarb operations interfered with the working of the enemy war machine to any great extent. But it is possible that they achieved a certain amount of nuisance value, as did the similar enemy operations against south coast towns later in the year. Furthermore they provided an economic method of continuing the air offensive against the Continent during the winter months. Out of the 110 completed Rhubarb sorties from 1 January to 23 March, only seven of our aircraft were lost.(1)

(ii) Circuses and Other Offensive Sweeps

A.M. File
C.M.S. 868.

The policy of conserving fighter aircraft naturally meant that Fighter Command could afford to operate very few Circuses or other large scale offensive operations. In fact, only four Circuses took place during the period and the first of these was not carried out until 8 March. However, during February it was hoped to increase the size and depth of penetration of offensive sweeps, largely in order to perfect the training of the Wings in No. 11 Group and in the flanking Sectors. On 2 February the War Cabinet also decided that steps should be taken to bomb certain factories in occupied France.

F.C. Form 'Y'
Vol. 9.

The first two Circuses of the year took place on 8 March, the targets being Comines Power Station and marshalling yards at Abbeville. The bomber force on each occasion was composed of six Bostons of Bomber Command. Aircraft of Fighter Command also took part in a Ramrod by twelve Bostons against the Poissy aircraft factory near Paris later in the same afternoon and flew one Rodeo and one Feint Sweep. Altogether Fighter Command flew 369 sorties in the course of these operations. An Me.109 and an F.W.190 were claimed (2) as destroyed for the loss of three Spitfires.

Ibid.

The remaining two Circuses took place on 9 and 13 March against Mazingarbe Power Station and the marshalling yards at Hazebrouck respectively. During these operations we lost ten aircraft. Pilots claimed to have destroyed thirteen enemy aircraft but none of these is confirmed by German records.

Ibid and Enemy
Documents
A.H.B. 6.

In addition to the above operations, Fighter Command carried out twelve Rodeos, two Ramrods and eight Feint Sweeps, for the loss of seventeen aircraft. Our total losses on offensive operations due to enemy action between 1 January and 23 March amounted to thirty-two aircraft, although the overall wastage in the Command was considerably greater.

(iii) The Raid on Bruneval (Operation Biting):
27/28 February

A.P. 3231,
Part II,
Chap. 4,
pp. 56 - 8.

Towards the end of 1941, the Air Ministry received information that the Germans had a new type of radar equipment, which was playing an important part in the control of the enemy anti-aircraft defences situated at Bruneval near Cap d' Antifer. Counter measures to give adequate protection to our aircraft were being investigated but these were hampered by a lack of information about the apparatus. It was therefore decided by the Chiefs of Staff Committee on

F.C. Form 'Y',
Vol. 9.
Enemy Documents
A.H.B. 6

- (1) Aircraft on Rhubarb patrols also claimed the destruction of three enemy aircraft during this period.
- (2) Both these claims are confirmed by German records.

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21 January to carry out a parachute attack in an attempt to capture the apparatus. The troops so dropped were to be evacuated by sea.

The operation was completely successful but since it was not the especial concern of Fighter Command, the reader is referred elsewhere for a detailed account.⁽¹⁾

11G/S.500/70,
Encl. 28A.

Fighter Command's main task was to provide continuous fighter escort for the returning naval vessels on the morning of 28 February. Apart from a brief period at 0900 hours when the weather was bad at Tangmere, this was successfully achieved between 0710 - 1425 hours. The following forces took part::

Ibid and
Order of
Battle.
A.H.B/
IIM/A2/3A

| | | |
|-------|--------------------|---------------------------|
| No.11 | (Tangmere Wing. | Nos.41 and 129 Squadrons |
| Group | (Biggin Hill Wing. | Nos.124 and 401 Squadrons |
| | (Kenley. | No.602 Squadron |

No.10 Group Ibsley. Nos.234 and 501 Squadrons.

11G/S.500/70,
Encl. 37A.

In addition to these operations, Nos.23 and 41 Squadrons flew reconnaissance sorties and Havocs and Bostons of No.23 Squadron carried out diversionary attacks on the airfield and marshalling yards south of Le Havre during the period of the main parachute attacks.

The R.A.F. Force Commander for the operation was Group Captain Sir Nigel Norman, who worked in association with the Air Officer Commanding No.11 Group in planning fighter operations.

(iv) The Channel Stop and Operations against Enemy Shipping

FC/S.22179,
Encl. 44A.

Pursuing the policy of moving the main seaborne traffic through the Straits of Dover under cover of darkness, the enemy operated hardly any shipping in the Straits during daylight in January.

FC. Form 'Y',
Vol. 9.

Two destroyers of the Beitzen class made the westward passage on the night of 25/26 January and were attacked by Hurricane-bombers of No.607 Squadron, which were used for the first time by night under ground control from Swingate C.H.L. Station, unfortunately without result.⁽²⁾ A total of ten sorties by Hurricane-bombers were also made on the night 27/28 January and 31 January/1 February, again without results.

Aircraft of No.91 Squadron attacked a variety of small craft during January, one of which was sunk on the 22nd.⁽³⁾

During February the main event was the passage of the enemy naval units from Brest and the attacks on these vessels

CC/S.7010/7/1,
Encl. 55A.

Ibid,
Encl. 84A.

- (1) R.A.F. Monograph: 'Airborne Forces', Part II, Chap. 4, pp. 56-8. (A.P.3231).
- (2) This technique was developed throughout 1941. By 1 November 1941 a special detachment of six Beauforts from No.217 Squadron (Coastal Command) was established at Manston; but these aircraft were withdrawn by Coastal Command on 29 January 1942 owing to the shortage of crews trained in ground control and to the necessity for employing all available Beaufort aircraft in their normal torpedo-bomber role.
- (3) This was the French tug Luvois of 260 gross tons. The loss is confirmed by Lloyd's records.

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are described elsewhere in this narrative. (1) During the first week in February a detachment of Fleet Air Arm Swordfish arrived at Manston in order to fill the gap left by the withdrawal of the No.217 Squadron (Coastal Command) to its parent units. The Swordfish under ground control carried out successful reconnaissances on three nights, while Hurricanes dropped flares on the night 11/12 February to assist naval forces in the location of E-boats.

In spite of the restricted flying due to bad weather, aircraft of No.91 Squadron carried out seven attacks during the month, one of which resulted in the sinking of the German trawler John Mahn of 292 gross tons near Dunkirk on 12 February. (2)

FC/S.22179,
Encl. 48A.

During March five fair-sized vessels attempted or made the passage of the Straits and one of these, the French Jeanet Jacques of 3,493 gross tons, was sunk by naval forces. Poor visibility which prevailed generally at night severely limited air action. By day, however, four attacks were carried out by No.91 Squadron, one of which resulted in setting fire to a minesweeper which was subsequently beached.

Apart from Channel Stop operations, Fighter Command operated ten Roadsteads and four Fighter Roadsteads against shipping targets off the enemy occupied coasts of France and the Low Countries. These took place between 10 February and 15 March although on six occasions the target was not found. For the most part the targets consisted of small craft in convoy or enemy E-boats on passage. Several enemy ships were claimed as damaged but none were sunk for the loss of seven of our aircraft.

In general therefore the period was a quiet one, apart from the movement of the German battlecruisers up the Channel. This event concerned all three operational Home Commands and may now be described.

The Passage of the German Main Naval Units up the English Channel to Germany: 12 February (3)

(i) Introduction and the Break-Out

A.H.B./IIK/7.
Report of
Board of
Enquiry p.1.
Ibid, p.2.

The German battle cruisers Scharnhorst and Gneisenau were first located at Brest by air reconnaissance on 28 March 1941 and on 4 June they were joined by the cruiser Prinz Eugen. Bomber Command carried out a series of raids on the ships throughout 1941 and as early as 29 April 1941 a plan for dealing with a possible break up channel by the enemy ships was concerted between the Admiralty and the Air Ministry. The plan - Operation Fuller - was drawn up assuming that in all probability the ships would attempt the passage of the Dover Straits during the hours of darkness. The task of Fighter Command was to protect aircraft of Bomber and Coastal Commands, which would be attacking the enemy ships and a No.11 Group Operation Order to this effect was issued on 5 October 1941.

No.11 Gp.
Op. Order
No.127.

Until 1 February 1942 at least one of the three ships had always remained in dock but on that date all three were out of

-
- (1) See below pp. 94-102.
 - (2) Confirmed by Lloyd's.
 - (3) For a full account see R.A.F. Narrative: 'The R.A.F. in Maritime War', Vol. III, Chap. 5.

A.H.B./IIK/7.

dock and thought to be seaworthy. Photographic reconnaissance on 29 and 31 January also revealed the arrival in Brest of two destroyers, five torpedo boats and eight mine-sweepers, so that a break out appeared increasingly probable. On 3 February a full appreciation of the situation was passed to the Air Officers Commanding-in-Chief of Coastal, Bomber and Fighter Commands by the Admiralty and it was decided to put certain aspects of Operation Fuller into execution. This included extra reconnaissance patrols and mining by the Royal Navy and Bomber Command. On 4 February Fighter Command warned No.11 Group that the co-ordination of fighter action in 'Fuller' was the responsibility of No.11 Group and that No.10 Group would operate at their request. Finally on 11 February afternoon reconnaissance showed that Scharnhorst had undocked, after a short period in dock and that the number of destroyers in the harbour had now risen to six.

The break out was actually planned to take place at 1930 hours on 11 February but a Bomber Command raid on this night delayed the sailing until 2200 hours.(1) Ushant Island was, however, rounded just after midnight, the Island of Alderney was passed at 0530 hours and at dawn the first contingent of sixteen enemy fighters took station over the enemy squadron.

A.H.B./IIK/7.

Since the beginning of the month, Coastal Command had maintained three night patrols in the area. These were:-

- (1) The 'Stopper' patrol, off the entrance to Brest.
- (2) The 'Line S.E.' patrol, between Ushant and the Isle de Brehat.
- (3) The 'Habo' patrol, between Havre and Boulogne.

Ibid.

The patrols were flown by Hudson aircraft, equipped with A.S.V.(2) Unfortunately, on the night of 11/12 February, the A.S.V. sets became unserviceable on two occasions. In neither instance was a relief aircraft ordered, partly because there was a shortage of aircraft and partly, because it was considered that if the enemy ships were out, they would have passed through the areas of patrol before a relief aircraft could be got on patrol. A comparison of the patrols with the track of the enemy battle cruisers shows that, but for the technical failures, both the 'Stopper' and 'Line S.E.' patrols should have had an excellent chance of picking up the German ships. In fact, one of the aircraft on the 'Stopper' patrol appears to have been within A.S.V. range of the ships between 0020 and 0028 hours. The A.S.V. equipment was working satisfactorily but no mention is made in the log of the aircraft of any A.S.V. contact. The 'Habo' patrol, on the other hand, had no chance of success, since the German ships were still some way to the west at the time it was scheduled for completion.

S.1500/of 155,
Encl.10D,
Page 8.

(ii) Sighting Reports

By 0830 hours on 12 February the enemy ships had reached a position north of Le Havre unseen and unsuspected. At about

-
- (1) References for the German account are No.6 Supplement to Admiralty Battle Summary No.11, the German RG/18547 and the log of the Scharnhorst.
 - (2) Radar equipment capable of detecting large surface vessels at ranges up to 30 miles.

FC/S.24043,
Encls. 92A
and 96F.

this time the southern chain of early warning radar stations began to register plots of enemy aircraft just to the north of Le Havre. These were, in fact, the enemy fighters escorting the Brest group. They were noted by the Stanmore Filter Room Controller between 0825 and 0900 hours and were reported by him to No.11 Group and the Duty Air Commodore at Fighter Command. It was thought that they denoted some enemy air sea rescue operations.

Ibid,
Encl. 96C.

The usual early morning 'Jim Crows' took off from Hawkinge at 0830 and 0835 hours.(1) The westerly sortie reported on landing the presence of two small ships off Boulogne and one northbound off Berck. The easterly sortie sighted eleven small vessels to the east of Ostend and six more to the east of Zeebrugge, all westbound. These reports reached No.11 Group at 0950 and 1000 hours respectively and Roadsteads were prepared for attacking shipping south of Boulogne and off Ostend.

Also at 1000 hours, the Filter Room informed the Duty Air Commodore that the enemy aircraft were obviously orbiting a particular area and that this area appeared to be moving in a north-easterly direction at between 20 and 25 knots. As a result of these suspicious plots Fighter Command ordered No.11 Group to send out another reconnaissance and at 1035 this sighted what seemed to be twenty to thirty small vessels in convoy escorted by five sloops or destroyers in a position twelve to fifteen miles west of Le Touquet and steering north-east. A little to the north-westward of this convoy were two groups of E-boats steering east and one of the E-boats was laying a smoke screen. The two reconnaissance aircraft landed back at Hawkinge at 1050 hours and the report was immediately made to No.11 Group and the Vice-Admiral, Dover. The previously planned Roadstead operations were cancelled and a layer Roadstead was prepared to attack the convoy.(2)

Ibid,
Encls. 92A,
96F and 102A.

Meanwhile the Filter Room at Fighter Command reported that strong enemy jamming of our radar stations in Kent had been taking place from 0930 hours onwards. The Duty Air Commodore spoke to No.11 Group about this and asked for extra reconnaissance, if the weather permitted.

At 1052 hours the R.A.F. Liaison Officer at the Headquarters of Vice-Admiral Dover reported to No.11 Group that their C.H.L. stations had been plotting intermittent surface vessel indications since 1016 hours some twenty-five miles west of the mouth of the Somme. These plots were now becoming continuous having advanced to an area off Le Touquet and indicated the presence of two fairly large ships.

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- (1) 'Jim Crows' were standard reconnaissances carried out by Spitfires of No.91 Sqdn. in the Sea area between Ostende and the mouth of the Somme. The planning of 'Roadsteads' was largely based on these reconnaissances. The pilots were under standing order not to break W/T or R/T silence.
 - (2) During the detailed interrogation of the two reconnaissance pilots after the rush report was despatched, the pilot of the second aircraft said one of the ships in convoy appeared to him to have tripod masts and a high superstructure. Discussion as to the possible identity of this ship was still proceeding when the definite sighting report from Group Captain Beamish was received.

Ibid,
Encl. 960.

Board of
Enquiry
Evidence
pp.1-4.
A.F.B./IHK/
and F.C.
Form 'Y',
Vol.9.

Entirely unconnected with all these purely anti-shipping measures, a section of two Spitfires took off from Kenley at 1010 hours on a normal offensive sweep over the Channel against any enemy aircraft which might be operating. The aircraft were piloted by Group Captain F. V. Beamish and Wing Commander R. F. Boyd, special permission having been obtained by these two officers to carry out the operation in weather conditions which they considered to be too bad for inexperienced and younger pilots. They proceeded out over Dungeness towards the French coast and, when about ten miles from it, sighted two Me.109's flying south-westwards. Chase was given at full throttle and very soon afterwards at 1040 hours, a naval force was seen underneath the aircraft. This consisted of two large warships, recognised as battle cruisers, surrounded by about twelve destroyers with an outer ring of E-boats, all steering up the French coast between Berck and Le Touquet. The Spitfires were immediately attacked by nine to twelve Me.109's but, after a melee, the Spitfires broke away and made for base. They landed at Kenley at 1109 hours and reported the details to No.11 Group, who logged the time of receipt as 1125 hours. The information was immediately passed to Fighter Command and Vice-Admiral Dover. The Roadstead operation was cancelled and all fighter squadrons brought to readiness for a major operation. Within the next fifteen minutes all the air and naval authorities had been informed.

(iii) The Swordfish Attack

A.H.B./IHK/7
Report p.13.
and
A.H.B./II/52/
9470, Minute,
24 Feb.

On the morning of 12 February, the strength of No.11 Group in day fighter squadrons consisted of twenty-one Spitfire and four Hurricane squadrons. As arranged under Operation Fuller, No.11 Group was reinforced by Nos.10 and 12 Groups, so that the total number of squadrons engaged in the battle was thirty-four.(1)

At 1130 hours Fighter Command and No.11 Group were asked for a strong fighter escort to accompany an attack by six Swordfish of Coastal Command which had been set in motion by Vice-Admiral Dover as soon as the presence of major enemy naval units was confirmed. No.11 Group agreed to provide two squadrons (Nos.64 and 411) to attack the escort vessels in advance of the Swordfish and a further three (Nos.72, 124 and 401) to go out with the Swordfish as escort against enemy fighters.

Ibid,
Report p.6.

The rendezvous was fixed for Manston at 1225 hours. This gave the fighter squadrons very little time for briefing, take-off and the flight to Manston and it became apparent that the squadrons could not get to the rendezvous on time. The Controller at Hornchurch therefore rang up Lieutenant Commander E. Esmonde, leader of the Swordfish flights, at Manston and informed him that the fighters would

A.H.B./II/52/
9470, Minute,
24 Feb.

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- (1) No.11 Group was reinforced directly as follows:-
 (a) 3 Spitfire Sqdns. (Nos.118, 234 and 501) from No.10 Group to West Malling.
 (b) 2 Spitfire Sqdns. (Nos.412 and 609) from No.12 Group to Biggin Hill.
 No.12 Group participated directly in the battle in addition to reinforcements sent to No.11 Group, with:-
 3 Spitfire Sqdns. (Nos.19, 616 and 266)
 1 Whirlwind Sqdn. (No.137).

be late. Esmonde replied that he could not delay his departure⁽¹⁾ and when the first fighters arrived over Manston at 1228, the Swordfish immediately set course for the target.

CC/S.15155,
Encl. 6D.
A.H.B./IIK/7
pp. 185-191
and 360-364,
Report pp. 6-7
and
F.C. Form 'Y'
Vol. 9.

These ten Spitfires of No.72 Squadron maintained contact with the Swordfish until sighting the enemy ships at 1240 hours. They were then heavily attacked by Me.109's and F.W.190's and in the ensuing fight claimed the destruction of three F.W.190's. The task of escorting the 80 m.p.h. Swordfish with Spitfires flying at 250 m.p.h. proved a difficult one. When engaging enemy fighters, the Spitfires were necessarily manoeuvring over a wide area and the effective camouflage of the Swordfish, combined with the poor visibility made it hard to keep close contact. Although the Spitfires engaged the enemy vigorously, it is clear that all the Swordfish were heavily attacked by enemy fighters before they reached the enemy ships.

Lieutenant Commander Esmonde, although his aircraft was badly damaged, passed over the destroyer screen in face of heavy fire but was shot down before completing his attack.⁽²⁾ The other two aircraft in his flight released their torpedoes but both aircraft were shot down in the sea immediately afterwards. Some members of the crew were ultimately picked up. Of the second Swordfish flight, nothing is known after they were last seen crossing the enemy destroyer screen and flying steadily towards the German ships. There were no survivors.

Ibid.

The remaining two squadrons of the Biggin Hill Wing - Nos. 124 and 401 - although they missed the rendezvous at Manston, proceeded to the target and were in the vicinity of the German battle cruisers at the time of the Swordfish attack. They were immediately engaged with enemy fighters, of which they claimed to have destroyed two. One Spitfire was also lost. Thus, although their presence was unknown to the Swordfish, they contributed to the latter's protection to the best of their ability.

Ibid.

Nos.64 and 411 Squadrons were delayed in take-off from Fairlop by poor weather conditions and did not reach Manston until after the Swordfish had left. They then proceeded over to the French coast but failed to locate the German force and were not engaged.

(iv) Operations by Hurricanes and Hurricane-bombers

A.H.B./IIK/7,
Report p. 13.

Whilst the Swordfish attack was in progress, the Air Officer Commanding-in-Chief Fighter Command was in contact with Bomber and Coastal Commands, in order to find out when their main attacks were to be expected. During the earlier discussions between the three Commands regarding Operation Fuller, it had been agreed that close escort for bombers and torpedo bombers would be impracticable in the circumstances and that fighter support would take the form of fighter cover. An exception to this arrangement had, however, already been made for the Swordfish attack, which was settled between the naval authorities at Dover and No.11 Group.

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- (1) Otherwise the German ships would steam outside the range of the Swordfish.
 - (2) Lieut. Commander Esmonde was posthumously awarded the V.C.

FC/S.24043,
Encls. 95A
and 96B.

After consultation with Bomber and Coastal Commands, it was clear that the main attacks by these Commands could not be expected before 1400 hours. The Air Officer Commanding-in-Chief accordingly decided to conserve his main fighter force for employment later in the day. He considered, however, that everything possible should be done to attack the enemy escort vessels around the battle cruisers, with a view to reducing their flak power before the arrival of the bomber aircraft. Four strike forces of Hurricanes were therefore despatched.

A.H.B./IIK/7.
Report p. 13
and F.C.
Form 'Y',
Vol. 9.

At 1240 hours ten Hurricane-bombers of No.607 Squadron left Manston. After failing to find the enemy force, they returned to Boulogne where they attacked and damaged four small ships. Half an hour later eight cannon Hurricanes of No.3 Squadron escorted by twelve Spitfires of No.313 Squadron left to attack E-boats. They encountered light enemy forces between Gravelines and Dunkirk which they attacked, receiving heavy return fire.

At 1340 hours eleven cannon Hurricanes of No.1 Squadron escorted by twelve Spitfires of No.129 Squadron left Tangmere to deliver further attacks on E-boats. Both E-boats and destroyers were found north-west of Dover and these were attacked.

Ibid.

Finally at 1420 hours, eight Hurricane-bombers of No.607 launched their second attack in two hours. They were escorted by Nos.32 (Hurricane) and 41 (Spitfire) Squadrons. On its way to the target, the formation was attacked by two large groups of enemy fighters. As a result of these engagements the Hurricane-bombers became separated from the escort. However, they continued on their course and after a further heavy fighter attack, the main enemy force was sighted. Attacks were made on the escort vessels and one of some 600 tons was sunk.

Ibid.

From these four operations, six Hurricanes and three Spitfires failed to return, although one pilot was saved. On the last, three enemy fighters were claimed as destroyed. Whether these attacks contributed in any way to the Bomber and Coastal Command raids later in the day, is not known. It is certain, however, that, as in the Swordfish operation, the attacks were pressed home under difficult conditions and in the face of strong enemy flak and air opposition.

(v) Fighter Cover for Bomber and Coastal Command Attacks

A.H.B./IIK/7.
Report p. 14.

CC/5.15155,
Encl. 16C.

Whilst these operations were proceeding, the Air Officer Commanding-in-Chief Fighter Command learnt that the first attack by Beaufort aircraft of Coastal Command was to be launched from Manston at 1345 hours. To cover this attack the Kenley Wing⁽¹⁾ was ordered to proceed to Manston and thence to the target area. Owing to a variety of troubles, including the change over from bomb to torpedo racks, the Beauforts were late at the rendezvous at Manston and the fighters were therefore ordered to proceed to the target area maintaining high cover. They found the enemy battle cruisers and attacked the escort vessels with their cannon. Numerous enemy fighters were also seen and combats ensued, in which four enemy aircraft were claimed as destroyed.

F.C. Form 'Y',
Vol. 9.

(1) 3 Spitfire Sqdns. Nos.452, 485 and 602.

Fighter cover was also provided for two naval operations - the attacks by motor torpedo boats from Dover and Ramsgate and by the six destroyers stationed at Harwich. For the first, cover was provided by the Northolt Wing from 1230 hours onwards. The task of covering the destroyer attack was entrusted to ten Whirlwinds of No.137 Squadron. The squadron set off in three flights between 1310 and 1429 hours but none of them found the destroyers. This appears to have been due to the destroyers' alteration of course at 1318 hours, when they were forced to cross the main mine barrier, in order not to miss intercepting the enemy ships. Not far from the German force, the Whirlwinds were engaged by twenty Me.109's and four of our aircraft were shot down.

The most intense effort of Fighter Command during the day, however, was launched between 1405 and 1505 hours to cover the torpedo and bomber attacks expected to go out during this period. Apart from the Beaufort operation already mentioned, the two main attacks during this time were the main Coastal Command attack by twenty torpedo Beauforts and Hudsons and the first wave of Bomber Command's raid by seventy-three Wellingtons, Blenheims, Manchesters and Hampdens. Fifteen fighter squadrons were despatched as follows:-

Ibid.

- (a) The North Weald Wing (Nos.121, 223 and 403 Squadrons) left at 1405 hours and encountered some fifty enemy fighters over the target area, one of which was claimed as destroyed.
- (b) The Debden Wing (Nos.65 and 111 Squadrons) left at 1409 hours and in combat with enemy fighters over Dunkirk, claimed two as destroyed.
- (c) The Biggin Hill Wing (Nos.72, 124 and 401 Squadrons), making its second sortie of the day, left at 1445 hours. A number of enemy fighters were engaged but no claims were made.
- (d) The Hornchurch Wing (Nos.64 and 411 Squadrons), also making its second sortie for the day, was reinforced by Nos.412 and 609 Squadrons from No.12 Group. No contact was made with the enemy.
- (e) Nos.118, 234 and 501 Squadrons from No.10 Group left West Malling between 1415 and 1440 hours. The enemy ships were found after a search and in combats, two Me.109's were claimed as destroyed for the loss of three of our own aircraft.

Ibid.

The second and third waves of the Bomber Command attack consisting of 134 and 35 aircraft respectively were in the target area between 1600 and 1815 hours. Only fifty-four aircraft found the enemy force and the loss of fifteen of these was a heavy price to pay for no firm claim of hits on any of the major units. No.12 Group provided three Squadrons - Nos.19, 266 and 616 Squadrons - to cover the withdrawal of the bombers. They patrolled on a line some sixty miles east of the Norfolk coast but saw no enemy fighters.

Low cloud conditions interfered seriously with fighter tactics and few combats had decisive results. The general effect however, was that enemy fighters were unable to any great degree to molest our bombers and torpedo bombers. The aircraft which were lost were nearly all shot down by enemy flak.

(vi) Close of the General Narrative and Conclusions

A.H.B./IIK/31,
Encl. 16A.

No. 16 Gp.
O.R.B.

At 1257 hours just before the enemy force commenced to get outside the effective range of the Dover C.H.L. Station, the Admiralty asked Coastal Command for shadowing aircraft on the highest priority. Two Beaufighters and two Whitleys fitted with A.S.V. were accordingly despatched between 1510 and 2307 hours and from their position reports, it appeared that the enemy had split into two forces. In fact the Scharnhorst exploded a ground mine at 1431 hours and although not seriously damaged she began to drop astern of the Gneisenau.⁽¹⁾ The Gneisenau also suffered slight damage from a mine at 1955 hours.

A final effort to damage the ships was made at 2300 hours when eleven Hampdens and nine Manchesters of No. 5 Group took off to lay magnetic mines on the enemy's route. Thirteen mines were successfully laid in the Elbe estuary but neither the Gneisenau nor the Prinz Eugen encountered them.

The earlier position reports came too late to be of any value to our attacking forces and indeed by reason of navigational uncertainty in the poor weather conditions proved somewhat confusing. However, taken in conjunction with D/F bearings of German W/T signals obtained by the Admiralty from 2230 hours onwards, it seemed that the German force in two portions reached the Heligoland Bight just before dawn on the 13 February and that is in fact what happened.

A.H.B./IIK/7,
Report p. 15.

Public opinion in England was shocked by this successful and apparently unharmed challenge to our control of the narrow waters and a Board of Enquiry was set up by the Prime Minister under the chairmanship of Mr. Justice A. T. Bucknill.⁽²⁾ The Board considered the adequacy of the patrols outside Brest and remarked that in view of the known gap in 'Stopper' and the break down of A.S.V. on 'Line S.E.' it would have been prudent to order a relief for 'Line S.E.' and to carry out some kind of dawn reconnaissance further down the Channel. These remarks remain valid, although the Board assumed that the enemy force had escaped before 'Stopper' was properly established; whereas it now appears from German records that the enemy rounded Ushant while 'Stopper' was being patrolled.

Ibid,
pp. 16-17.

Attention was also drawn to the lack of intelligence liaison, whereby the significance of the early radar plots and the strong jamming interference was not immediately linked up with the possible escape of the enemy squadron.

Ibid,
pp. 17-20

The Board considered that the previous plans for the attack were adequate, although the early co-ordination of such

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- (1) At 2134^{hours} the Scharnhorst exploded a second mine. The steering gear and port engine were seriously damaged and brought the ship to a standstill. However, she finally got under way and managed to reach Wilhelmshaven at 0900 hours on 13 February. Both the Gneisenau and Prinz Eugen reached the River Elbe at 0700 hours on 13 February. On the night of 27/28 February the Gneisenau was put out of action for many months, after an attack by Bomber Command while in Kiel Harbour. She did not enter the war again.
- (2) Assisted by Vice Admiral Sir T. H. Binney and Air Chief Marshal Sir E. R. Ludlow-Hewitt.

SECRET

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attacks inevitably suffered from the late hour of discovery of the enemy's advanced position.

Ibid,
pp. 21-23.

In their conclusions, the Board expressed the view that it was doubtful whether the forces employed were sufficient to cripple the battle cruisers even if their movement out of Brest had been known as soon as they came out. Evidence leading to this view was given by the Assistant Chief of the Naval Staff, in which he said that the Admiralty were not expecting great results from the bombing attacks owing to the poor weather and the high speed of the target.⁽¹⁾ Indeed the Admiralty had never believed that these three ships could be sunk while negotiating the Channel route. The Board did, however, draw attention to the desirability of a higher standard of training in torpedo attack.

A.H.B./IIK/7,
Evidence
p. 11.

From the point of view of fighter operations, the weather was extremely poor throughout the day. When Group Captain Beamish first sighted the enemy ships, the cloud base was between 1,500 and 2,000 feet and by 1600 hours it lowered to about 400 feet. There was also a strong wind. There could therefore be no decisive fighter versus fighter contest over the enemy force.

F.C. Form 'Y',
Vol. 9.

The total number of fighter aircraft despatched in connection with the enemy ships was 416 of which seventeen were lost. One hundred and two made attacks on various enemy vessels, in the course of which they claimed to have sunk one 600 ton vessel and one E-boat. Sixteen enemy fighters were claimed as destroyed.

A.H.B./II/52/
9470,
30 March.

During the operations two incidents occurred, where Coastal Command formation leaders were led to expect fighter escort, which did not in fact materialise; and it became the especial concern of Fighter Command to analyse what had happened and to prevent a recurrence of such mistakes. In the first case involving No.86 Squadron, it was found that when the squadron had arrived at the rendezvous, the target had already been more than 200 miles away - that is, outside effective fighter range. Moreover, the available fighters had already been used to provide escorts for the destroyer attack.

Ibid.

The second incident, involving Nos.500 and 407 Squadrons of Hudsons, was proved to have been caused by the failure of No.16 Group to inform the squadrons that no direct escort would take place but that fighter wings would be operating in the target area at the time the attack was due to be delivered. This confusion between the two Commands as to the precise meaning of fighter 'escort' and fighter 'cover', together with other instances where the co-operation between the operational home commands was in need of improvement, led directly to the issue of a combined Bomber, Fighter and Coastal Command Operational Instruction on 9 April.⁽²⁾

F.C. Op.
Instr.
No.13/1942.

Necessarily, the operations against the German forces on 12 February were the primary responsibility of the Royal Navy and Coastal Command. Fighter Command's contribution to those operations was in the main carried out to the best of its ability. The mistakes which occurred were chiefly

(1) Approximately 27 knots.
(2) Considered below p. 108.

A.H.B./IIK/7,
Report p. 22.

due to the speed with which operations had to be organised. Indeed it was this pressing time factor which, more than any other, caused difficulties and confusion in the execution of a task, which under any conditions, would have been a most formidable one. To say that the German ships were lucky to make good their passage to Germany would be an overstatement: the operation was carefully planned by the enemy.⁽¹⁾ Yet it remains true that several disadvantages and mishaps, each one of no great importance, combined on 12 February to provide our attacking forces with serious difficulties. Moreover, it must be remembered (and the German Naval Staff took this view) that although the enemy achieved his tactical object, the operation was in one sense a strategic defeat for him. For by taking refuge in north German ports, the German ships abandoned their position on the flank of British sea communications.

The Change in Offensive Policy: 13 March

(i) Intelligence on German Fighter Strength and Decision to Recommence Circuses

F.C. Int.
Summ. No. 314,
Pt. II.

Ibid, No. 316,
Pt. II.

Ibid, No. 321,
Pt. III.

In the middle of February it became known, that there had been a redistribution of German fighters in the West, involving a reduction of forty single-engined fighters in the Brest and Pas de Calais areas. These moves were apparently made to increase the enemy fighter strength in Norway and Denmark, where a considerable bomber force was assembled to attack our north-bound convoys. It was estimated that the total number of German single-engined fighters in the West at this time was 305 - 310, with a further 70 in Reserve Training Units. Intelligence reports at the end of February referred to further reductions taking place in the fighter strength in the Bordeaux/Cherbourg and Pas de Calais areas.⁽²⁾ Our estimate of German fighter strength, however, remained between 305 and 330 aircraft throughout March. At the end of that month there were reports of some fighter reinforcements arriving in the Cherbourg and Le Havre areas but it was claimed that the use of He.113's in first-line units in the Brest area pointed to strained enemy fighter resources.

Enemy
Documents
A.H.B.6.

German records show that these estimates were substantially correct. The actual figures were as follows:

German Fighters Available to Oppose R.A.F.
Fighter Operations over France and the Low Countries⁽³⁾

| | <u>Establishment</u> | <u>Strength</u> | <u>Serviceable</u> |
|------------|----------------------|-----------------|--------------------|
| 7 February | 384 | 345 | 251) |
| (Reserves | 80 | 114 | 82) |
| 7 March | 344 | 311 | 225 |
| (Reserves | 80 | 118 | 98) |

- (1) It is probable, for example, that the operation was deliberately timed to take advantage of the warm front which the German meteorological organisation would have been able to predict, at least immediately before the sailing.
- (2) The War Cabinet Joint Intelligence Sub-Committee estimated on 23 February 1942 that unless the situation on the Russian front changed, the strength of the German Air Force on the Western Front was unlikely to exceed 1,000 aircraft of all types.
- (3) These figures are probably slightly too high, as certain Geschwader of J.G.1. were stationed in Germany. Certain of the units in these totals were also re-equipping with F.W.190's although they remained operational and so have been included.

On 6 March a meeting was held by the Chief of Air Staff to consider the possible ways of preventing the recovery of the Luftwaffe from its estimated weakness. He had already asked the Prime Minister to authorise the resumption of Circus operations but he also wished to consider the possibilities of the daylight bombing of Germany. Intelligence estimated that the German Air Force was weak, especially in fighter aircraft, but that the position was improving. To prevent this increase in power, and its consequent effect on the Eastern Front, it was necessary to increase the wastage on the German Air Force, and it was estimated that an additional loss of one hundred fighters a month might achieve this object.

The Air Officer Commanding-in-Chief Bomber Command doubted whether his Command would be able to stand the losses likely to be incurred by daylight bombing and pointed out that the result would probably mean a diversion from the night effort. The Air Officer Commanding-in-Chief Fighter Command, however, thought that the required wastage could best be achieved by a return to the circus type of operation, although he emphasised the limitations of his fighter force to provide cover for the bombers at the required radius. With the long-range tanks in use at that time, it was only possible to operate fighters as far as the mouth of the Scheldt, the Cherbourg peninsular and Brest.

Ibid.

The possibilities of daylight bombing were, in fact, left in abeyance but on 8 March the Prime Minister replied to the Chief of Air Staff's minute:

C.A.S. Folder.
A.H.B./ID3/592

'You are terribly short of Fighter aircraft and no one can tell how heavy the calls may be in the future. However, it pays us to lose plane for plane, and if you consider circus losses will come within that standard it would be worth while. I know that you cannot give an absolute guarantee'.

FC/S.26678,
Encl. 32A.

On 13 March the Air Staff, therefore, decided to recommence daylight circus operations over France, the primary aim being to hold and destroy as much as possible of the enemy's fighter strength on the Western Front. The circus operations were to be backed up by fighter sweeps but in order to meet the pressing demands for aircraft from overseas, it would still be necessary to avoid heavy wastage. This chiefly occurred at the limit of the fighter's range. The three groups concerned - Nos. 10, 11 and 12 - were informed of these decisions on 17 March. The planning for the operations was to be undertaken by the Air Officers Commanding of Nos. 2 and 11 Groups in collaboration. Wings from Nos. 10 and 12 Groups were also to take part in circuses by arrangement with the Air Officer Commanding of No. 11 Group.

Ibid,
Encl. 44A.

(ii) Selection of Targets

Evidence during the summer offensive of 1941 and operations during the beginning of 1942 showed that the Germans would only put up fighters in the defence of important targets on the continent. Should the targets selected be of insufficient importance to warrant German fighter protection, Fighter Command operations would be largely abortive, since the weight of bombs carried was not heavy enough to inflict any great amount of damage. In any case the primary aim of our offensive was to destroy enemy fighters. The problem

Op. Instr. No.
33 F.C. O.R.B.,
App., Nov. 1942.
A.H.B./IIM/A2/3A.
See Map No.4.

to be solved was therefore the selection of targets, within the range of our fighters, which the Germans would consider worth defending. For the Spitfire VB, Hurricane and Typhoon this range - i.e. maximum radius of action - was about 150 miles.

FC/S.25904,
Encl. 47A.

FC/S.26678,
Encl. 51B.

Targets were selected by the Air Ministry mainly for their economic importance and priority was to be given to the main electric power stations.⁽¹⁾ Secondly, six industrial factory targets were specified.⁽²⁾ In some cases the choice was governed by the geographical position of the target in relation to built-up areas, since it was hoped that our attacks would cause as few casualties among friendly civilian populations as possible. A total of fifty-eight targets was listed, of which forty-one were in France, twelve in Belgium and five in Holland.

Ibid.

With regard to the electrical targets, it was stressed that from the economic point of view continuous attacks on power stations would have a greater effect than attacks on any other objectives. This was because as the number of successful attacks on power stations was increased, the effect in disrupting supplies over a wide area was increased at a very much greater rate.

FC/S.26678,
Encl. 45A.

For Rhubarb operations, the Air Ministry in consultation with the Ministry of Economic Warfare, decided that the main types of targets would continue to be transportation objectives, including traffic on rivers and canals. The chief aim of these operations was the destruction of locomotives and interference with fuel distribution. Electricity, switching and transformer stations were listed as secondary objectives and gas plants and gasholders were also included.⁽³⁾ In addition to these targets it was also decided that the list of targets for circuses could be used as alternatives during Rhubarb operations.

Operations and Policy: 24 March - 31 May 1942

(1) 'Circuses', 'Ramrods' and Offensive Sweeps

F.C. Form 'Y'
Vol. 9.

The new offensive opened on 24 March with a large scale Circus operation against Comines Power Station and the marshalling yards at Abbeville. Further offensive operations - including two more Circuses and two Ramrods -

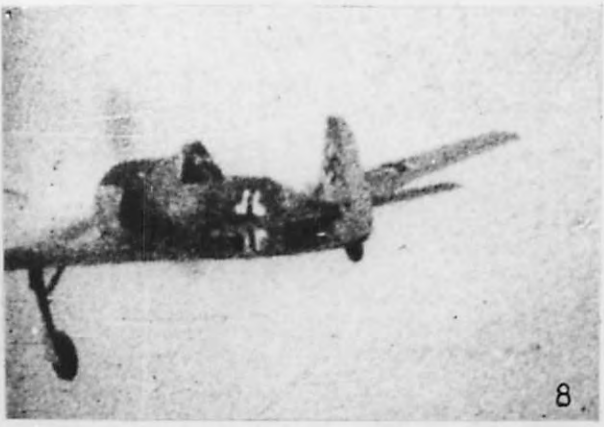
FC/S.22678,
Encl. 44A.

- (1) These were situated at: Pont a Vendin, Comines, Labiusserie, Mazingarbe, Sequedin, Lomme, Beuvry, Bully and Chocques.
(2) Industrial Targets

| Type of Factory | Name of Owners | Position |
|------------------------------|--------------------------------------------|----------|
| Steel and engineering | Fives-Lille | Lille |
| Loco. and wagon construction | Chemin de Fer du Nord | Lille |
| Chemical | Etabls-Kuhlmann | Harnes |
| Artificial silk and weaving | La Soie Artificielle de Calais | Calais |
| Airframe | Avions Potez | Meaulte |
| Shipbuilding | Ateliers et Chantiers de la Seine Maritime | Le Trait |

Ibid.

- (3) A special paper on gas plants and gasholders was issued by the Air Ministry on 19 March. It gave the positions of 39 such plants in Northern France and showed that large explosions as a result of fighter attacks were very unlikely and in any case would only occur some time after the aircraft had left the target area.



Combat of Spitfire V with Focke Wulf 190

C.A.S. Folder
A.H.B./ID3/592.
Enemy
Documents
A.H.B.6.

F.C. Form 'Y',
Vol. 10.

Enemy
Documents
A.H.B.6.

11G/500/13/
Ops,
Encl. 37A.

Ibid.

A.M. File
CMS.868
8 April 1942.

11G/500/13/
Ops, Encl.
37A.

Ibid,
Encl. 45B.

were conducted on each remaining day of the month, except on the 30th when the weather was bad. In the course of these attacks we claimed to have destroyed twenty-six enemy aircraft, at a cost of eighteen of our own aircraft. The balance was slightly in our favour and on 1 April the Chief of Air Staff was able to inform the Prime Minister that during March we had destroyed fifty-five enemy aircraft while losing thirty-four of our own. In fact, the correct total of enemy aircraft destroyed was only twelve.

During the first half of April the offensive was vigorously maintained and on one day - the 15th - Fighter Command flew 532 sorties in two Circuses against Cherbourg docks and Desvres airfield. The Germans reacted energetically, as had been hoped but they were also meeting with some success. In the first two weeks of April we lost forty aircraft, for the claimed destruction of only twenty-three enemy aircraft. In fact we lost four times as many aircraft as the enemy, as German records show only eleven aircraft as being lost during those two weeks. It was clear that the enemy was fighting fiercely and crews reported increased willingness to 'mix it' on the part of the enemy pilots.

On 13 April the Air Officer Commanding-in-Chief decided that, while there was no question of diminishing the scale of our offensive, the problem should be approached 'with a certain amount of caution and cunning'. He therefore instructed the Air Officer Commanding of No.11 Group:

'(a) To pick targets right on the coast, and not try to penetrate.

(b) To carry out a proportion of.....operations without bombers at all, since the Hun (was) apparently ready to react even though no bombers (were) present.

(c) To employ large numbers of squadrons with a view to out-numbering the Hun.'

Nevertheless, and in spite of the War Cabinet's sanction for 'disproportionate losses on isolated occasions', Fighter Command could not continue to suffer heavy losses for an indefinite period. The Air Officer Commanding-in-Chief thought that the enemy were taking advantage of the comparative lull on the Eastern Front in an attempt to frighten us off our offensive policy by intensive operations in the West. It seemed probable that these exertions could only be maintained for a few weeks and the Air Officer Commanding-in-Chief therefore decided to step up, rather than reduce, the scale of Fighter Command's operations. In this way he hoped to call the enemy's bluff.

The Air Ministry estimated that a total of 200 enemy day-fighter casualties per month from all causes on the Western Front would result in a decline of the enemy's strength and that 250 would necessitate reinforcement in the West at the expense of the single-engined fighter force in Russia. In order to ensure that the fighter wastage in the West was not less than 250 a month, it was necessary to inflict half these losses in battle.

On 24 April the Air Officer Commanding-in-Chief therefore instructed his Group Commanders to inaugurate Super Circus operations. This entailed an average of six bomber

Ibid.

sorties a day by the Boston and Blenheim squadrons of No.2 Group. Offensive operations in No.11 Group were to be maintained at their current level, until the opening of the German spring offensive in Russia, which the Intelligence Branch estimated would take place before the end of May. After this, the aim would be to increase the scale of operations by fifty per cent.

In order to provide a force adequate for these operations, No.11 Group was to be reinforced by the addition of one Spitfire squadron to each Sector, thereby raising the total number of Spitfire squadrons available in No.11 Group for offensive operations to thirty.⁽¹⁾ The reinforcement was to be completed by 15 May.

Whilst it was hoped that this intensification of our offensive would reduce our losses proportionately, it was clear that they meant a heavier numerical wastage. Moreover, the rising overseas commitments were causing Air Marshal Douglas great concern. The merits and importance of these commitments need not be discussed here⁽²⁾ but the Air Officer Commanding-in-Chief felt that he was being asked to carry out two different policies at the same time. 'On the one hand', he wrote to the Vice Chief of Air Staff 'I am being urged to push ahead with offensive operations with a view to wearing down the German fighter force in the West so as to help the Russians. On the other hand, you keep whittling away at my first line strength and reserves, the inevitable result of which will be that I shall not be able to maintain the desired offensive. You cannot have it both ways. Either I must have a directive to sit on the defensive and conserve aircraft, or else you must give me an adequate first line strength plus the necessary reserves to support an offensive policy.'

W.S.D. Out-
going Flimsies
No.13,
19 April 1942.

FC/S.26678,
Encl. 57A.

After several discussions with the Air Ministry, the Deputy Chief of Air Staff informed Air Marshal Douglas on 30th April that the intensification of the day fighter offensive was to be given first priority. This in no way solved the problem of maintaining the strength of the fighter force but for a time the matter was allowed to rest.

F.C. Form 'Y',
Vol. 10.

Meanwhile during the second half of April our losses continued to mount. This was in spite of our using large numbers of aircraft and not attacking targets which required deep penetration. From 16 to 30 April, we lost sixty-four aircraft for the claimed destruction of forty-four enemy aircraft. Only ten were in fact destroyed. During these weeks Fighter Command carried out nineteen Circuses, eleven Ramrods and nineteen Rodeos or other offensive sweeps. On the 30th

Enemy Documents
A.H.B.6.

FC/S.28146,
Encl. 38A.

| (1) | Squadron No. | From | To |
|-----|----------------|-----------|----------------|
| | 412 (R.C.A.F.) | Digby | Martlesham |
| | 133 | Kirton | Biggin Hill |
| | 331 (Nor) | Skeabrae | North Weald |
| | 164 | Peterhead | Skeabrae |
| | 154 | Duxford | Harrowbeer or |
| | | | Church Stanton |
| | 402 (R.C.A.F.) | Fairwood | Kenley |
| | 131 | Llanbedr | Merston |

(2) They are considered below in Chap. 9.

the Command flew a total of 733 sorties against Flushing harbour and Lannion airfield.

FC/S.28146,
Encl. 40A.

Ibid.

A Fighter Command Intelligence analysis of operations during both March and April showed that our offensive operations during April caused the enemy single-engined fighters to increase their daily average number of sorties to 220 compared with 55 a day in March. In spite of this, on only eight days in April did the enemy use some aircraft for more than one sortie a day. The report also showed that Circus and Ramrod operations produced a greater enemy wastage than Rodeos or sweeps and seemed to indicate that frequent four wing operations were more effective and less costly than a smaller number of larger operations.

F.C. Form 'Y',
Vol. 10.

During May our losses were less severe than in April but the total of sixty-one aircraft lost for the claimed destruction of forty-five enemy aircraft showed that we were still suffering larger casualties than the enemy. However, in spite of the fact that operations took place on every day, except two, between 16 and 31 May, the losses for the period were less than at any time since March. We lost twenty-five aircraft for the claimed destruction of twenty-seven. These figures more nearly approached the one-for-one sanction of the Prime Minister⁽¹⁾ but they in no way realised the aims of the Air Officer Commanding-in-Chief's original directive in March when he emphasised 'that the losses sustained by our fighters (should) not normally (be) greater than those inflicted on the enemy.' Nor was this small improvement in the situation permanent; the losses in the first half of June were so serious as to lead to modifications in our whole offensive policy.

FC/S.26678,
Encl. 44A.

(ii) Rhubarbs

11G/500/13/Ops,
Encl. 37A.

When reviewing the situation in the middle of April, Air Marshal Douglas stressed the importance of keeping the enemy fighter force continually on the alert. Herein lay the importance of Rhubarbs and other small scale operations. Moreover, by this time, we could appreciate more exactly what effect such attacks could have, from the enemy low-level fighter offensive against the South Coast.⁽²⁾

FC/S.26289,
Encl. 84A.

A.M. File
C.S.11377,
Encl. 13A.

Ibid,
Encl. 15A.

Throughout the period March to May the targets for Rhubarb operations remained, as before, chiefly transportation objectives. During March Fighter Command asked to be allowed to include enemy radar and radio beam stations in the list of Rhubarb targets. This permission was refused on 22 April, since the Air Ministry felt that few advantages would be gained from a widespread offensive against these stations. If, however, such attacks were withheld, until they could be used in support of a single important operation, great advantages might accrue.

FC/S.26289,
Encl. 75A.

Operations during March and the first part of April showed that aircraft on Rhubarbs were being lost owing to poor planning and general bad flying discipline. Air Marshal Douglas therefore issued instructions on 12 April, that such tempting targets as water towers and

A.H.B./II/73/1.

- (1) Although they hardly justified the bold claim by the D.D.F. Ops. on 11 May that 'we can claim to be achieving our aim within the limitations imposed by the War Cabinet.'
- (2) See above Part I, Chap. 3. passim.

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Ibid,
Encl. 92A.

windmills were not to be attacked. And on 21 May he repeated the order to avoid causing French civilian casualties wherever possible. In particular, passenger trains were not to be attacked.

ADGB/S.28847,
Encl. 3A.

By May the number of orders and instructions with regard to Rhubarb operations had become so numerous that the original Operation Instruction was difficult to follow. A new Instruction was therefore issued by No.11 Group on 25 May, which included all the amendments up to that date. No new principles were stated but a section on tactics was included, which contained a summary of the various points which had been gathered from the experience of operational pilots. Significantly, it contained a list of targets which were not to be attacked, including lighthouses and chateaux.

(iii) Operations against Enemy Shipping

Operations against the German battle cruiser squadron which made the passage of the Dover Straits on 12 February showed that the standard of co-operation between Fighter, Bomber and Coastal Commands was by no means perfect. In particular, confusion arose on that occasion as to the precise meaning and difference between fighter 'escort' and fighter 'cover'.

F.C.Op.
Instr.
No.13/1942.
A.M. File
C.S.11246,
Encl. 6A.

On 9 April the three Commands issued a joint Operational Instruction. The areas of responsibility allocated to the main fighter groups for escort and direct attack were as follows:-

- (1) No.10 Group. The English Channel west of 1° West (Pte. de Barfleur inclusive)
- (2) No.11 Group. The Channel, Dover Straits and North Sea between 1° West and Ostend.
- (3) No.12 Group. The North Sea east of No.12 Group land area and the coastal waters between Texel and Ostend.

The primary role of fighter in anti-shipping operations was to afford aircraft of Coastal and Bomber Commands the maximum freedom of action in their attacks. Requests for fighter co-operation for daylight strikes was to be made direct between Coastal, Bomber and Fighter Command Groups and strikes were to be co-ordinated to obtain the maximum benefit from the fighter effort available.

The area in which Fighter Command was to carry out daylight reconnaissance without special request, was the coastal water between Ostend and the mouth of the Somme. Weather permitting, these patrols were to be carried out at about two-hourly intervals. Night reconnaissances other than those flown by Hurricane-bombers in good weather, were to be carried out by Coastal Command aircraft.

Ibid,
App. 'A'.

Standard definitions to describe the various components of a large fighter force were also given and the following terms were defined.

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See App.
No. 9.

Escort
Escort Cover
Target Support
Free Lance
Forward Support
Rear Support
Diversion
Feint

Moreover, it was firmly stated that when 'escort' was to be provided, a definite time to set course from a specific departure point (Rendezvous) must be agreed and that in no circumstances was the striking force to orbit the departure point after the agreed time of departure. If Fighter Command could not provide the escort at the agreed time and place, the fighter group was to inform the group controlling the striking force, at least ten minutes before the estimated time of departure. The striking force could then be informed and instructed whether or not to proceed without the fighters.

FC/S.22179,
Encl. 50A.

Only one large vessel was detected making the passage of the Dover Straits during April. Air reconnaissance showed it to be an armed merchant vessel but, owing to bad weather, no air action was possible. As during the first three months of the year, movements of enemy small craft were mainly restricted to the hours of darkness. Aircraft of No.91 Squadron detected targets by day on six occasions and though damage was claimed, there was no verification of this.

During May, however, nine vessels over 1,000 gross tons passed through the Straits, which was the largest number since September 1941. These included a strongly escorted westbound raider (on the night 12/13 May), a sizeable tanker and several Sperrbrechers.⁽¹⁾ Bad weather again prevented air action, so that although there was a full moon at the beginning and at the end of the month, no attacks were carried out by Fighter Command aircraft in the area.

FC/S.20787,
Encl. 125A.
Op. Inst.
No.76.

The Vice-Admiral Dover was concerned at this increase in the amount of enemy shipping passing through the Straits at night and after consultation with the Air Officer Commanding-in-Chief of Fighter Command, new instructions were issued on 16 May in an attempt to curb this menace. The forces under No.11 Group at this time included:-

(a) No.174 Squadron. The squadron was to provide two Hurricane-bombers with bombs and two with flares to operate from Manston during the non Fighter Night period; and four Hurricane-bombers with bombs during the Fighter Night period.

(b) No.32 Squadron. The squadron was to provide two Hurricane IIC aircraft at West Malling to operate under Hornchurch control.

(c) No.418 Squadron. The squadron was to provide one Boston III aircraft at Bradwell, fitted with 250 lb. bombs. These aircraft were, however, only to be employed if a suitable target offered itself, and they were also used for intruder operations.

(1) Armed merchant ships, often equipped with heavy anti-aircraft armament.

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Ibid.

As before, the C.H.L. Station at Swingate was to be used for the control of aircraft intercepting shipping.⁽¹⁾ On information from the Vice-Admiral Dover the Controller at No.11 Group would decide whether or not a target was suitable for air attack. If the attack was to be made, the Controller would pass full details of the forces to be used to the Hornchurch Sector Controller who would arrange for the briefing of pilots and for making the necessary arrangements with the Controller at Swingate.

Apart from these arrangements for night operations, between 24 March and 31 May Fighter Command carried out three Roadsteads and six Fighter Roadsteads against shipping in the Channel and off the Belgian and Dutch coasts with varying claims for damages. On two of these occasions, however, the shipping was not located.

The Situation in June 1942

(i) The Course of the Offensive

By the beginning of June it was obvious that the fighter offensive was not justifying the hopes, or even the expectations, which had been placed on it in March. Our losses were considerable and, what was more important, at all times greater than those we were inflicting on the enemy. There were several reasons for this.

11G/500/13/Ops,
Encl. 71B and
FC/S.28978
Encl. 26B.

Perhaps the most important of these was the marked superiority of the F.W.190 over the Spitfire VB, with which the majority of Fighter Command's squadrons were still equipped. The F.W.190 had a better rate of climb, was faster and was almost as manoeuvrable as the Spitfire VB. Moreover, it was much more heavily armed, being equipped with four 20-mm. cannons and two machine guns.

11G/500/13/Ops,
Encl. 71B.

The enemy had also greatly improved his control and warning system since the early spring and had adopted new tactics. Instead of climbing out to intercept our raids before they reached the coast, enemy fighters were content to gain height in back areas and then move to a superior tactical position - i.e. up sun and with superior height - from which they could intercept without heavy losses. To counter this, we were forced to reduce the depth of our penetration and finally had to content ourselves with attacking targets along the enemy occupied coastline. This we did by making rendezvous at very low altitudes and approaching the enemy coast at sea level - i.e. 'under' the enemy radar cover. Formations would then climb rapidly and reach the coast at between 10,000 and 15,000 feet. In this way it was possible to attack coastal objectives with little or no interference from enemy fighters. Any attempt to penetrate, however, was met in strength by enemy fighters, which were usually in a very favourable tactical position.

Enemy Documents
A.H.B.6.

In addition to the enemy's general tactical and technical (in the F.W.190) superiority, the enemy fighter force had also been reinforced. On 4 April the number of serviceable first line fighters in the West was 217; a month later it was 263.

FC/S.20789
Encl. 125A.

- (1) Swingate was one of the main reporting stations in the radar chain but when it was used for controlling anti-shipping aircraft, the Army C.D./C.H.L. Station at Lydden Spout assumed Swingate's duties.

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Enemy
Documents
A.H.B.6.

All these factors combined to produce the relatively heavy losses, which we suffered in the first fortnight in June. During this period, we lost forty-two aircraft, for the claimed destruction of only twenty-two enemy aircraft. And German records now show that the actual total of enemy losses was even lower, amounting to only seven aircraft. Moreover, this was a rising loss rate as the following figures show:

R.A.F. Loss per one enemy air-
craft claimed destroyed

| | |
|--------------|------|
| 1 - 15 April | 1.45 |
| 16 - 30 " | 1.74 |
| 1 - 15 May | 1.7 |
| 16 - 31 " | 1.08 |
| 1 - 15 June | 1.9 |

In the face of the general shortage of fighter aircraft, together with the fact that there was no evidence of the Germans having transferred fighters from the Western to the Eastern Front, it was clear that our offensive policy needed modifying.

(ii) Modifications to Offensive Policy: 13 June

FC/S.26678,
Encl. 74A.

On 13 June the Assistant Chief of Air Staff (Operations) informed Air Marshal Douglas that the course of the offensive since March had been reviewed and that it had been found that 'the balance of casualties (was) turning against us.'⁽¹⁾ The Assistant Chief of Air Staff therefore asked that the day offensive should be adjusted in the light of the following four principles:

Ibid.

- '(a) Typhoons should be employed in day offensive operations as soon as they are available in sufficient numbers and trained operationally, with a view to determining the extent to which they will assist in restoring technical balance.
- (b) Fighter co-operation in combined operations such as the protection of day bomber formations, or the air defence of surface forces engaging in raids, should be wholehearted and thorough.
- (c) Deep penetration in circus operations should be avoided except in respect of bombing targets, the damage or destruction of which will justify an adverse casualty balance in the fighter forces involved.
- (d) Fighter sweeps designed to bring the enemy fighters into the air should be planned and conducted with restraint, and should aim at meeting the enemy in combat under favourable conditions. If the tactical conditions are likely to become adverse in any particular operation, combat should if practicable be avoided.'

It was nevertheless of vital importance that our pressure on the enemy should not be weakened to an extent which would allow him to reduce the size of his fighter force

(1) This was, in fact, an understatement. Since March our losses were constantly higher than those of the enemy.

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Ibid,
Encl. 80A.

on the Western Front. If Intelligence thought that this was happening or that the German fighter force was becoming dangerously weak, then it might be necessary to intensify our operations once again. Air Marshal Douglas informed his Group Commanders of these decisions on 17 June.

11G/500/13/
Ops,
Encl. 37A.

It will be remembered that two months previously - on 13 April - Air Marshal Douglas had already viewed the situation with concern and had ordered the Air Officer Commanding of No.11 Group to select targets 'right on the coast.' Nevertheless at that time the policy both at the Air Ministry and Fighter Command had been to intensify operations. The new decisions in June, however, clearly showed the necessity for restraint - at least until the Spitfire IX and the Typhoon could be used to nullify the superiority of the F.W.190. Moreover, the phrase 'our pressure.....should not be weakened to an extent which.....' strongly implied that the scale of our offensive should be somewhat diminished. In fact, during July Fighter Command flew approximately half the number of offensive sorties which were carried out in June.

(iii) Operations during June

F.C. Form 'Y',
Vol. 10.

During June Fighter Command flew more sorties than in May.⁽¹⁾ This was the result of the Air Officer Commanding-in Chief's Super Circus directive on 24 April. The month's operations included twenty Circuses, seventeen of which were carried out in the first ten days of the month. On 1 and 2 June no less than five Circuses took place against Bruges, Dieppe and Flushing docks, the Calais silk factory and a Camp in the Haut Foret D'Eu. Our losses on these two days were twenty aircraft for the claimed destruction of five enemy aircraft. The Debden Wing⁽²⁾ suffered particularly severely; on 1 June, when acting as target support for the attack on Bruges docks, it lost nine out of the forty-six Spitfire VB's which were engaged in a battle with about the same number of F.W.190's.

Ibid.

Such losses occurred when the enemy was in a superior tactical position and possessed a temporary numerical parity or superiority. This was evidence - if such were needed - to show the skill with which the Germans were countering our operations, since they normally flew less than one quarter the number of our sorties. On 26 June, for example, we flew 301 sorties consisting of a Circus against the docks at Le Havre and two Roadstead operations. The enemy only flew thirty-five sorties but succeeded in destroying two of our aircraft. We claimed to have destroyed one enemy aircraft.

Losses during Rodeos and other offensive sweeps were generally much less than during Circuses and Ramrod and altogether a total of twenty-four such operations in varying strength were carried out during the month.⁽³⁾

F.C. Form 'Y',
Vols. 9-10.

(1) Although not as many as during April. The figures are as follows:-

| | |
|-------|--------------|
| March | 2083 sorties |
| April | 7651 " |
| May | 5841 " |
| June | 5895 " |

(2) The Wing was composed of Nos.65, 71, 111 and 350 Squadrons.

(3) Fighter protection was given to the withdrawing convoy of Operation Bristle (a combined raid on the French coast between Boulogne and Le Touquet) on 4 June by the following squadrons: Nos.41, 91, 131, 133, 340, 401, 485 and 602. Unfortunately No.41 Squadron failed to locate the convoy on time, when it was attacked by 6 Me.109's which caused three fatal casualties. A similar raid (Operation Abercrombie) was carried out on 21/22 April but the weather was too bad for flying.

11G/S.500/84/Ops,
Encl. 21A and
passim.

11G/500/77/Ops,
Encl. 13A.

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FC/S.22179,
Encl. 52A.

Movements of large vessels in the Channel area showed some reduction from those of the previous month and only two vessels of importance, one a tanker and the other a 390-foot Sperrbrecher, made the passage of the Straits. Both were eastbound from Boulogne to Dunkirk and as usual sailed at night. Both vessels were attacked by light naval forces and a hit was claimed on the tanker. The Sperrbrecher was heavily escorted and in spite of an air diversion by No.11 Group aircraft, the naval forces were unable to launch a torpedo attack.

It was more evident that the enemy had introduced Dunkirk as a regular port of call, owing to the shorter nights and to avoid the risk of daylight air attacks. This must have resulted in some inconvenience to shipping, since it necessitated following narrower and shallower channels than those further seaward off Dunkirk, which had been used previously by vessels proceeding between Flushing and Boulogne.

F.C. Form 'Y',
Vol. 10.

Aircraft had few daylight opportunities during the month but fighters managed to make fifteen attacks on enemy small craft with varying, unconfirmed claims for damage. Hurricane-bombers of No.174 Squadron also made two attacks by night during the moonlight period. One of these was on the night of 28/29 June against a 330-foot Sperrbrecher and was awarded an assessment of seriously damaged.⁽¹⁾ Owing to enemy jamming of the C.H.L. Stations, the aircraft could not be used under ground control.

(iv) Conclusions

The situation in the middle of 1942 was thus one of virtual stalemate. Fighter Command had the advantage of numbers but the balance was redressed in favour of the enemy by the superiority of the F.W.190 aircraft. Until the Typhoon and the Spitfire IX could take part in operations, Fighter Command was faced with two alternatives. It could either maintain the offensive at the level of the previous few months and accept the possibility of comparatively heavy losses as the price of holding the enemy fighter force; or it could reduce the scale of the offensive, engaging in combat only when its formations possessed some tactical advantage. In either case it was unlikely that the chief aim of the offensive - to destroy German fighters - would be effectively realised.

ADGB/S.28847,
Encl. 16A.

What then had the offensive achieved during the first six months of 1942? In one limited field it appeared to have achieved some success. During the course of Rhubarb operations five trains or locomotives had been destroyed and eighteen stopped or damaged.⁽²⁾ This was not a very impressive total but, since Germany had to provide locomotives for 17,500 miles of track in Russia, the German transport system was under considerable strain.⁽³⁾ It therefore seemed that the destruction or even damage to locomotives was causing the enemy some concern.

-
- (1) There is no confirmation of this assessment.
 - (2) A further 66 had been destroyed or damaged by night.
 - (3) Captured Russian locomotives could not be used on the German gauge tracks.

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11G/500/13/
Ops,
Encl. 70B.

More generally, the difficulty for the enemy in providing aircraft for North Africa, the restrictions imposed on operational flying in South Russia, the comparative inactivity on the Western Front and the decision to quintuplicate fighter production in the aircraft factory at Vienna-Neustadt, all seemed to point to a serious lack of fighter reserves in the German Air Force.

Ibid.

On 6 July the Director of Operational Intelligence at the Air Ministry wrote confidently: 'There is no doubt that Fighter Command's offensive during the past few months has contributed substantially to the present satisfactory situation.' But the mirage of a defeated and critically weakened German fighter force which had drawn our offensive policy towards it during the spring and early summer, was evidently still in view, as the Director of Intelligence ended: 'Further intensive operations would be likely to cause the Germans most serious embarrassment.'

Enemy
Documents
A.H.B.6. and
F.C. Form 'Y',
Vols. 9-10.

We now know from German records that against our claims of 197 enemy fighters destroyed during March, April, May and June, the enemy in fact only lost fifty-eight - and this latter total includes all German fighters lost over the Western Front due to enemy action.⁽¹⁾ During these four months, Fighter Command lost 259 aircraft in the course of offensive operations. Thus, far from the terms of the Prime Minister's original 'one-for-one' directive being complied with, we were, in fact, losing more than four times the number of aircraft that the enemy were. Even on the basis of claims, our losses were consistently more than three times as heavy as the enemy's. Moreover, there is no evidence of the German fighter force in the West being reinforced, apart from the reinforcing which took place at the end of January before our offensive began.

It is clear, therefore, that by the middle of 1942 neither of the aims of the offensive - the wearing down of the German fighter force, with the consequent necessity of the enemy withdrawing units from the Russian Front - had been achieved or were even in the process of being achieved. In addition to this, our operational wastage was over half that of the Battle of Britain, at a time when other theatres of war, in particular the Middle East, were critically short of fighter aircraft.

(1) Including enemy fighters lost over the United Kingdom.

CHAPTER 7

THE DAY FIGHTER OFFENSIVE: JULY - DECEMBEROperations and Policy: July - August 1942(i) Reduced Scale of the Offensive

We have seen that by the end of June, the day offensive had reached a somewhat critical state and our general offensive policy - like the character in Ibsen's 'When We Dead Awaken' - seemed to be able to go neither forward nor backward but was 'stuck fast'. Operational losses, however, dictated a certain slackening in the scale of the offensive and during July, Fighter Command flew little more than half the sorties it had carried out in June. Nevertheless, there was no question of a major re-orientation of policy, although by the middle of the year the confidence of the early spring had largely disappeared. 'Intelligence shows', Air Marshal Douglas wrote to the Air Officer Commanding of No.11 Group on 10 July, 'that our fighter offensive is having an appreciable effect and that the losses we have sustained have not been fruitless. I do not propose to change your present "directive" but the Director of Intelligence's views⁽¹⁾ do point to the necessity of keeping up a reasonable scale of offensive effort when the fine weather returns.'

FC/S.26678,
Encl.91A.

During June losses on Circus and Ramrod operations were much heavier than those on Rhubarbs and offensive sweeps. In July therefore Fighter Command operated only four Circuses and two Ramrods. In spite of this, our operational losses during the month amounted to sixty-two aircraft,⁽²⁾ against the claimed destruction of twenty-nine enemy aircraft.⁽³⁾

F.C. Form 'Y',
Vol.11.

FC/S.26678,
Encl.96A.

Ibid,
Encl.105A.

On 24 July, the Intelligence Branch at Fighter Command issued a detailed report on the effect of attacks on railways and other transport targets on the enemy transport system. This showed that the system was under considerable strain in enemy occupied territory and consequently, on 9 August, the Command issued a revised target directive. Goods trains were to be attacked by day, whenever they could be clearly identified, and permission was also given to attack all trains by night.⁽⁴⁾ It was perhaps fortunate that the aim of Rhubarb operations could be more clearly defined at this time, since, with the partial cessation of Circuses and Ramrods, their importance in the general plan of the offensive was increased.

ADGB/S.28847,
Encl.39A.

In connection with Rhubarb operations, it was also agreed on 21 August that so called Mass Rhubarbs, involving 150 - 200 aircraft, were too expensive in casualties and that in future

A.H.B.6.
FC/S.26678,
Encl.105A.

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- (1) See above Chap. 6, p. 114.
 - (2) 28 of these were lost on the last two days of the month.
 - (3) Actual German losses were sixteen aircraft.
 - (4) Goods trains formed 80% - 90% of rail traffic by night in France. Moreover, since French civilians were not normally allowed to travel during curfew hours, it was thought that the number of Frenchmen on night passenger trains would be small.

the old form of operation, carried out by two or at most four aircraft, should be re-adopted.(1)

One important improvement in the situation during July was the increased supply of Spitfire IX's - aircraft which were capable of fighting the F.W.190 on approximately equal terms. On the 1st of the month only eight had been delivered to squadrons. At the end of the month, however, supplies had allowed three squadrons to be equipped and by the end of August this number rose to five.

W.S.D. Outgoing
Flimsies No.16
1 July 1942 and
26 July 1942 and
F.C. Orders of
Battle, July-August.

A.H.B./IIM/A2/
3A.

During August our losses showed a satisfactory fall from the previous month. They totalled thirty-four (excluding those on Operation Jubilee) against the claimed destruction of thirteen enemy aircraft. Moreover, the number of sorties flown was slightly greater than the number during July and we also operated ten Circuses. Nevertheless, it will be seen that our own losses were still consistently higher than those of the enemy. The improvement was in fact only relative and it cannot be said that the general offensive situation was any more favourable. The damage we were inflicting on French factories could not have vitally affected the German war effort. At the same time the enemy was given the opportunity to engage our aircraft on the most favourable terms to himself; and this opportunity was not being lost.

F.C. Form 'Y',
Vol.11.

A.M. File
C.S.16536,
Encl.5B.

The most important event during August was, of course, the combined raid on Dieppe, which took place on the 19th.(2) On 9 August, however, another event occurred which is of some historical importance. On this day, twelve Spitfire VB's of the U.S.A.A.F.'s 31st Pursuit Group took part in a Feint Rodeo in the Channel. This was the first occasion on which United States forces were engaged in the offensive, although two of their aircraft had carried out a defensive patrol on the previous evening.(3) On 8 August, a Joint American/British Directive on Day Bomber Operations involving fighter aircraft was issued. This defined the responsibilities of the British and American bomber forces and also stated that it was hoped to develop the day offensive in three phases. During the first of these, American day bomber forces under British fighter protection, re-inforced by American fighter forces, were to attack suitable objectives within the radius of action of the British fighter cover.

(ii) The Channel Stop and Operations against Enemy Shipping

F.C. Form 'Y',
Vol.11.

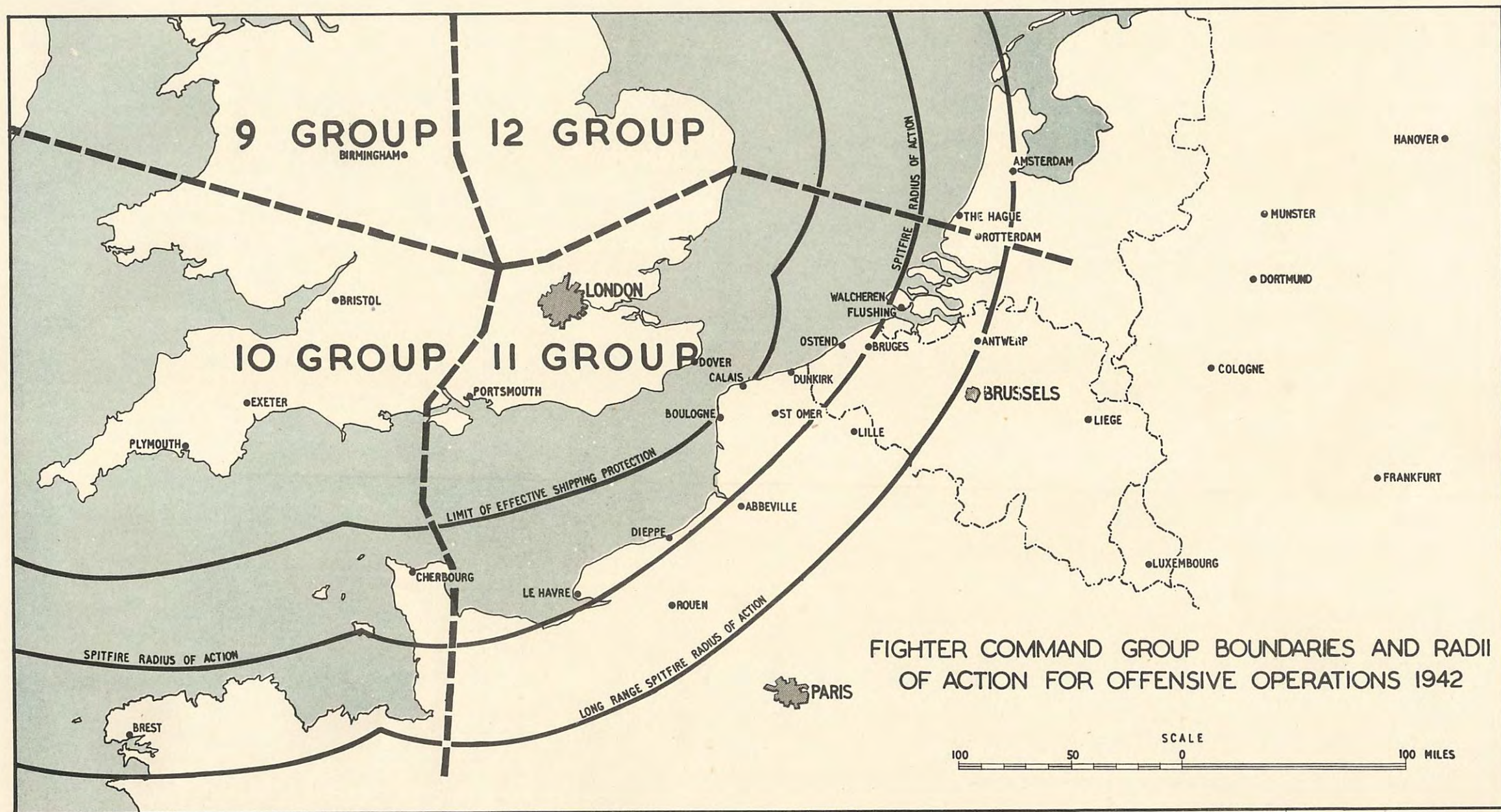
Over sixty operations against enemy shipping in the Channel or the North Sea took place during July and August but on more than half of these occasions no shipping was located.(4)

- (1) It was on a Mass Rhubarb on 15 July that Wing Commander Finucane was lost.
- (2) See below pp. 117-126.
- (3) Appendix No.11 gives a brief outline of Anglo-American air planning during the first part of the year and explains why the first fighter units in the United Kingdom were equipped with Spitfires.

(4) Roadsteads and Fighter Roadsteads: July - August

| | <u>Day</u> | <u>Night</u> |
|-------------------------------|------------|--------------|
| Total No. of Ops. | 38 | 26 |
| No. on which target not found | 27 | 13 |

F.C. Form 'Y',
Vol.11.



The difficulties in finding shipping by night, even when the fighter was ground controlled, can readily be imagined. By day, the problem was not much easier, since it entailed accurate navigation, over the sea - a type of operation for which the average fighter pilot was neither properly trained nor equipped. For this and other reasons therefore the Fighter Roadsteads were not meeting with much success.

FC/S.22179,
Encl.58A and
F.C., O.R.B.
July-August.
A.H.B./IIM/
A2/3A.

In the Channel Stop area (Ostend - Dover - Beachy Head - Dieppe) a total of 762 sorties were flown during the period by aircraft under Fighter Command control, in the course of which four aircraft were lost. On four moonlight nights Hurricane-bombers of No.174 Squadron found and attacked various light surface craft under the control of Swingate C.H.L. Station. Results of these attacks were difficult to observe but post war records do not substantiate any of the claims that were made.

CC/S.15213,
Encl.117A.

At the beginning of July, under the threat of a resumption of enemy-E-boat activity, the Admiralty agreed to place some Albacores of the Fleet Air Arm on trial in the Channel to supplement, particularly on dark nights, the effort of the Hurricane-bombers. In fact, the E-boat menace quickly faded but on 31 August the Admiralty gave permission for the Albacores to be used in their secondary role for general shipping strikes and some three weeks later provided twelve more Albacores for this task.

Ibid,
Encl.129A.
Ibid,
Encl.132A.

The Raid on Dieppe (Operation Jubilee): 19 August 1942

(i) Introduction and Outline of the Plan

JP(42)274(S)
2nd Revised
Draft.

When reviewing the history of Fighter Command during 1942, it should be borne in mind that plans were constantly being discussed for a landing operation or operations on the Continent. Thus in March the Chiefs of Staff Committee invited the Air Officer Commanding-in-Chief Fighter Command 'to prepare a brief appreciation with the object of diverting the German Air Force from the Russian Front.'

COS(42)65(o) and
COS(42)77(o),
27 Mar. 1942.

A.H.B./IIM4/1/2.

The question of an attack on Dieppe was first raised in April and on the 25th of that month, the proposed operation was given the code name Rutter. Planning continued during the next two months but owing to long periods of bad weather the operation was finally cancelled on 7 July. The next most favourable time for carrying out an attack on Dieppe would not occur until August and the Combined Commanders⁽¹⁾ therefore decided to launch the operation in that month, the code name being changed from Rutter to Jubilee.

TIM/11G/3/3
The Combined
Plan.
31 July 1942.

The raid was planned with the primary purpose of capturing the town of Dieppe by assault and occupying it for a limited period. Military tasks included the destruction of local defences, power stations and dock installations, the capture of prisoners and the destruction of airfield installations in

-
- (1) The Commanders were:-
Chief of Combined Operations: Vice Admiral Lord Mountbatten.
Naval Forces: Captain J. Hughes Hallet.
Military Forces: Major General J. H. Roberts.
Air Forces: Air Marshal T. L. Leigh-Mallory.

the vicinity of the town. It was also intended to capture and remove German invasion barges and other craft in the harbour. A subsidiary intention of the raid was to test the German reaction to such a landing and to test the defences at a point on the French coast within the area in which effective air cover could be provided by Fighter Command.

A.H.B./IIH/1/2

By August the plan was complete. Its chief elements were four flanking attacks to be followed by the main assault on Dieppe. The landings were to take place on eight beaches - three east of Dieppe at Berneval, Belleville sur Mer and Puits; three west of Dieppe at Pourville, Varengeville and a beach a quarter of a mile east of the River Saane; while the main attack was to be launched on two beaches at Dieppe itself. The object of the two outer flanking attacks was to capture and destroy batteries near Berneval and Varengeville. The destruction of these batteries was considered essential, if a naval force was to be maintained off Dieppe. Of the two inner flanking attacks, that to the east, to be delivered at Puits, was designed to capture another heavy battery and to attack the headland above Dieppe from the rear. The troops carrying out the landing at Pourville were to capture the fortified position known as Les Quatre Vents Farm and to take in the rear the west headland overlooking Dieppe. Other troops were to pass up the valley of the Scie and capture the airfield at St. Aubin and the Headquarters of the German division in that area at Arques la Bataille. The troops landing at the main beaches opposite Dieppe itself were to assist in the capture of the two headlands, capture the town and hold the harbour to enable the Naval 'Cutting Out' party to remove the barges and other craft that might be found there. The troops on the main beaches were to be supported by tanks. In all cases, the attacks were to be masked by smoke screens laid by air or naval craft, or both, and carried by naval and air bombardment.

Ibid.

(ii) Air Planning and Method of Operational Control

Ibid and
11G/S.500/98/
Ops, Encl.7A.

Fighter cover and general protection of the expedition against air attacks was to be provided throughout the hours of daylight but it was expected that the greatest danger from the air would occur during the landing and the withdrawal. The Combined Commanders therefore decided that the strength of the fighter cover should vary from two to six squadrons during the different phases of the operation with such reinforcements as should prove necessary.

Bombing and low-flying fighter attacks on selected targets were to be made in direct support of the assault, occupation and withdrawal, and smoke-laying aircraft were to be used to neutralise the defences, both in accordance with the prearranged plan and as the situation demanded, at the request of the Military Force Commander. Day bomber squadrons were also to be used to attack both pre-arranged and requested targets.

Ibid.

Tactical reconnaissance was to be made over the area, including the lines of approach of enemy reinforcements and Coastal Command A.S.V. sweeps were to be maintained throughout the night before the assault. Fighter reconnaissance patrols against surface vessels were also to be maintained throughout daylight hours.

It had been agreed between the three Force Commanders not to carry out any preliminary air bombardment on Dieppe, in order not to jeopardise the chances of tactical surprise.

A bombing attack was, however, planned against the enemy airfield at Abbeville-Drucat, with the object of interfering with enemy fighter operations. This attack was to coincide with the main withdrawal from the beaches as it was considered that this would be the time when the enemy fighters from the Abbeville area would be making their greatest effort.

A.H.B./IIJ/61/1
and
11G/S.500/98/
Ops, Encl.44A.

Intelligence reports upon which the Force Commanders were at this time largely dependent estimated that the German Air Force had about 260 front line single-engined fighter aircraft disposed between Brest and Texel as follows:-(1)

| | |
|-----------------|-----|
| Holland | 40 |
| Pas de Calais | 125 |
| Brest to Fecamp | 95 |

The bomber force in the West was estimated at 120 long-range bombers mainly disposed at the Dutch bases of Eindhoven, Soesterberg, Gilze-Rijen and Deelen, with a further 100 at Beauvais, Creil Chateaudun, Chartres and Rennes. It was considered unlikely that the enemy would be able to bring his fighters from as far west as Brest or as far north as Holland early in the operation. The fighter forces therefore likely to be encountered at the beginning of the operation were 50 from the Abbeville area, 50 from the Beaumont-le-Roger area and 20 from the Cherbourg area, together with a possible 30 and 45 from St. Omer and Courtrai respectively as reinforcements.

Ibid.

Air Marshal Leigh Mallory, the Air Commander had at his disposal seventy squadrons.(2) The composition of this force was as follows:-

| | | |
|-------------------|--------------|------------------------|
| Fighter | 48 squadrons | Spitfires |
| | 3 " | Typhoons |
| Close support | 6 " | Hurricanes |
| Army Co-operation | 4 " | Mustangs |
| 'Smoke' | 3 " | Blenheims (2), Bostons |
| Fighter bomber | 2 " | Hurricanes |
| Bomber | 2 " | Bostons |
| Intruder | 2 " | Bostons |

Allied and Dominion squadrons were well represented. They included five Polish, two Czech, one Belgian, one French, two Norwegian, nine Canadian, one New Zealand and three United States squadrons.

The assembly of these forces involved internal moves of squadrons within No.11 Group and the reinforcement of the

Enemy Documents
A.H.B.6.

- (1) The actual strength at the time was 356 but of this number only 255 aircraft were serviceable. The bomber strength was 175 long-range and 45 reconnaissance bombers.
- (2) Not including Coastal Command and Air/Sea Rescue units. A complete Order of Battle is given at Appendix No.14.

Group by fifteen squadrons from outside. These movements were all carried out on 14 and 15 August.

Ibid and
TLM/11G/3/3.

Control of all the air forces engaged was exercised direct by the Air Force Commander from Operational Headquarters at Uxbridge. Aircraft were despatched on instructions issued from No.11 Group Operations Room through the normal Group to Sector, Sector to Squadron dispersal points channels. The Military and Naval Force Commanders afloat were able to ask at any time for special air support from bombers or fighters by means of the W/T link provided between Portsmouth and the Headquarters ships and a listening watch maintained at No.11 Group Headquarters. The lowest squadron of the fighter cover operated on No.11 Group Guard No.11 Frequency, so that the Fighter Controller in either of the Headquarters ships could communicate with the squadrons of the fighter cover. All out-going close support fighter aircraft called the Headquarters ship by V.H.F. R/T, when approaching the enemy coast. The Fighter Controller could then at the request of either of the Force Commanders redirect fighters to attack any suitable alternative target that the situation demanded.

11G/S.500/98/
Ops, Encl.44A.

Units engaged on tactical reconnaissance were employed well beyond the area of fighter cover and consequently suffered a high casualty rate during the operation. The coast roads leading to Dieppe were reconnoitred every half hour and those from Amiens, Rouen, Yvetot and Le Havre - from which reinforcements might be expected - every hour. The aircraft operated from Gatwick, flying to Dieppe via Beachy Head. They contacted the Headquarters ship by R/T both on arrival and after completing their missions. They then returned to Gatwick and passed their information to the Air Force Commander by telephone. In fact, the only movement of note that they reported was that of five light tanks approaching Dieppe at 1210 hours.

(iii) Narrative of the Operation⁽¹⁾

11G/S.500/98/
Ops, Encl.44A.

The expedition sailed from the Portsmouth area at 2000 hours on 18 August and by 0300 hours on 19 August the first landing craft were being lowered from the parent ships off Dieppe. Despite a chance contact with enemy ships en route⁽²⁾ the force arrived at Dieppe approximately on time and the initial bombardment of objectives was carried out as arranged.

A.H.B./IIM/B11/
2A.

F.C. O.R.B.
Form 'Y',
A.H.B./IIM/A2/
3A.

Ibid.

During the period 0445 to 0550 hours, escort was given to smoke carrying aircraft of Bomber and Army Co-operation Commands, which laid a smoke screen over the headland to the east of Dieppe harbour. Four Boston III's of Nos.418 and 605 Squadrons engaged each of the two gun batteries to the south of Dieppe with bombs and machine-gun fire. Hurricane-bombers of Nos.174 and 175 Squadrons followed up these attacks with others on heavy gun emplacements in the target area with good results. Other Hurricane cannon fighters of Nos. 3, 32, 43, 245 and 253 Squadrons made a successful attack on buildings and machine gun emplacements at the Dieppe beaches, in

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- (1) A detailed report of the operation can be found in A.H.B./IIM/4/1/2 - C.B.04244 'The Dieppe Raid'. The purpose of this narrative is to recount the part played in the operation by Fighter Command.
 - (2) The enemy ships were detected by radar stations on the South Coast and warning signals had been sent out. It is not considered that the element of surprise was lost by this encounter (See Stacey, 'Can. Army 1939-45', pp. 65-66).



Boston flying above smoke screen at Dieppe.
19 August 1942.



Hawker Typhoon

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direct support of the forces which were going ashore.(1) Spitfires of Nos.65 and 111 Squadrons provided further cover for the disembarking troops. Very little opposition was encountered from the enemy air forces at this time, but a Ju.88 attacking a destroyer was shot down off Dieppe at about 0530 hours. Aircraft of Nos.59 and 502 Squadrons (Coastal Command) maintained A.S.V. search patrols, as planned, throughout the hours of darkness on the flanks of the expedition during the passage but no sightings were made.

F.C. Form 'Y',
Vol.11.

During the period 0550 to 0730 hours our troops were consolidating their positions and air cover was provided for them against moderate enemy fighter opposition, the number of enemy aircraft patrolling the position at any one time being estimated at one squadron. By 0640 hours the Western Commando force was successful in overcoming the battery position at 'Hess' near Varengeville. The final assault on this position was assisted by twelve Spitfires of No.129 Squadron, which attacked the battery with cannon and machine-gun fire as a preliminary to an assault by the ground forces. The observation post of this battery had previously been disabled by two Spitfires of the same squadron at first light. On the eastern flank, the attack on the beach at Puits had failed and with it the attempt to silence the guns on the headland east of Dieppe. On the main beaches the tanks were held up, owing to the failure of the Engineers to blast a way through the promenade wall. In view of these difficulties, a further smoke screen was called for on the eastern headland but no aircraft were immediately ready for this task. Bostons of Bomber Command were despatched to bomb gun positions south of Dieppe between 0605 and 0615 hours and further support was also requested to deal with gun emplacements east of the town. The later operations, however, were cancelled, when at 0740 hours, it was learned that a successful landing had been made on the beach at Puits. The smoke squadrons, which were on their way to attack the eastern headland, were also recalled.

A.H.B./
IIM/B11/2A.

At the beginning of the withdrawal period - 0730 to 1050 hours - the right wing of the landing force was making some progress but the centre was still held up. At 0752 hours twenty-four Hurricanes of Nos.3 and 43 Squadrons were despatched to deal with 'E' boats that were reported to be proceeding south from Boulogne, in view of the danger which these craft could be to the withdrawal from the beaches.

By 0830 hours the situation had deteriorated on the western flank and strong opposition was coming from the western headland. To deal with this situation ten Hurricane bombers of No.175 Squadron and eight Hurricane cannon fighters of No.253 Squadron escorted by eleven Spitfires of No.41 Squadron and twelve Spitfires of No.412 Squadron attacked the fortified headlands with good results.

At the same time the enemy air opposition increased considerably, twenty to thirty fighters being seen continuously in the area until 1000 hours when enemy bombers appeared, at first escorted by fighters. To achieve this the enemy

Daily Telegraph,
9 January 1943.

- (1) The first news of the landing was brought to the H.Q. in England by a pigeon. Two were released but one was immediately shot down. The second flew safely through the flak at about 50 m.p.h. It was named 'Beachcomber'.

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employed a considerable number of bombers from airfields in Holland, in addition to a small number from Beauvais. In face of this increase in the scale of enemy activity, and in order to cover the re-embarkation scheduled to take place between 1030 and 1100 hours, the strength of fighter cover over Dieppe was increased from three to six squadrons and at times to nine squadrons.

11G/3.500/98/
Ops, Encl.44A.

Meanwhile the situation in the several areas had continued to deteriorate and the time scheduled for the evacuation was deferred from 1030 hours to 1100 hours. In preparation for the re-embarkation, the 'smoke' aircraft were ordered to be prepared to operate between 1100 and 1130 hours over the central beach-heads.

Ibid.

At 1039 hours a request was made for maximum fighter support against machine-gun positions on both headlands east and west of the town and four close support squadrons with two squadrons of fighters as cover, took off. Meanwhile enemy bombers were concentrating on the landing craft and shipping but they were heavily attacked by the increased number of fighters acting as fighter cover, who claimed thirteen Do.217 and Ju.88's destroyed during the withdrawal period.

During the evacuation, the enemy batteries on the east and west headlands continued to give much trouble to our forces with their undiminished shelling of the beaches and in several areas the situation was critical. Constant and urgent demands were made by the Force Commander for bombing and close support attacks on the enemy gun positions and also for smoke screens.

By far the brightest side of the operations at this period was the successful prearranged attack by twenty-four Fortresses escorted by Nos.64, 401 and 611 Spitfire IX squadrons on the enemy fighter airfield at Abbeville - Drucat. About 25 tons of high explosives were dropped, together with incendiaries, and accurate bombing of the dispersal areas and the runways was achieved. This action caused much confusion to the enemy fighter organisation which was operating from the base and denied the use of the airfield to the enemy for about two hours at a time when the air battles were approaching the most crucial period.

Luftflotte 3
H.Q. 7th Appr.
of Dieppe
Landing
A.H.B.6.

F.C. Form 'Y',
Vol.11.

The attack on Abbeville was followed by a diversionary feint carried out by a Typhoon Wing (Nos.56, 266 and 609 Squadrons) escorting nine Defiants towards Ostend at 1115 hours in an attempt to draw off enemy fighters in that direction and away from Dieppe; no enemy reaction however was experienced.

Meanwhile the withdrawal from the beaches was proceeding and the scale of enemy activity had increased. His form of attack had also been changed and to meet this new situation squadrons of Spitfire IX's were added to the fighter cover at 23,000 feet, No.64 Squadron being airborne for this purpose at 1155 hours. The enemy was also employing Do.217's and Ju.88's against the ships and the fighter patrols found themselves in constant action against these aircraft and against enemy fighters. At midday the Hurricane bombers attacked the east and west headlands - Nos.3, 32 and 43 Squadrons were employed, escorted by Nos.129 and 118 (Spitfire) Squadrons. This was closely followed by an attack on the same target by Bostons of Nos.107 and 88 Squadrons escorted by Nos.309 and 131 Squadrons.

At 1220 hours evacuation from the main beachheads was still being delayed by the east and west headland batteries, and at 1255 hours, No.175 Squadron with No.245 Squadron (close support) were airborne to attack the western headland; No.253 Squadron was also airborne at the same time to attack the eastern headland with No.41 Squadron to attack as general cover. At the same time a report was received that the enemy were moving tanks along the Dieppe - Rouen road and No.130 Squadron made rendezvous with six Bostons to attack this objective. Bombs were dropped on the coast and the bombers were escorted safely back to base.

Ibid.

The scale of fighter cover provided continued to increase with squadrons from Northolt, Biggin Hill and Debden becoming airborne between 1249 and 1329 hours, by which time the final embarkation was taking place. At 1400 hours ten aircraft of No.174 Squadron escorted by No.87 Squadron carried out an attack on the western headland but without visible results, the twelve Hurricanes of No.87 Squadron attacking lorries and gunposts. This was followed by an attack on the eastern headland by Nos.3 and 43 Squadrons with No.412 Squadron as escort.

11G/S.500/98/
Ops, Encl.44A.

By 1410 hours the withdrawing forces were clear of the enemy coasts and in addition to fighter cover for the retiring convoy, smoke laying sorties were flown by five Bostons escorted by No.66 Squadron off Dieppe. Fighter cover from this time onwards was devoted almost entirely to patrol of the returning ships and the close support squadrons were no longer needed. The strength of the cover was maintained at five squadrons for the larger portion of the return passage. The Typhoon Wing assisted the Spitfires in the interception of enemy bombers approaching for an attack from the direction of Holland and also between 1700 and 1815 hours carried out an uneventful sweep of the coast between Boulogne and Gris Nez.

From 1545 hours onwards the weather deteriorated rapidly and the enemy took advantage of the increasing cloud cover to send out single bombers to attack the shipping as it neared the English coast. A few F.W.190's were also employed for the same purpose. Air operations closed with a patrol by No.133 Squadron from 2005 to 2045 hours which proved uneventful.

(iv) Enemy Operations

A.D.I.(K)
Report No.271/
1942.

From information obtained from prisoners of war it would seem that the enemy were not forewarned of the expedition to Dieppe, although the marked lack of indecision which characterised the German operations would seem to indicate that a plan of operations to meet such an emergency was in existence.

The estimated number of enemy bomber sorties during the operation was 125. All the serviceable aircraft of the long-range bomber units based in France and the Low Countries took part, with the exception of the F.W.200 unit based at Bordeaux. They were not actively engaged over the scene of the operation until 1000 hours but from then onwards an average of about twenty bombers made continued harassing attacks, chiefly against the shipping off Dieppe. Formations varied in size from three to twelve aircraft. They were not provided specifically with fighter escort but the enemy fighters in the area provided local protection as far as possible. This activity lasted until approximately 1500 hours,

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after which the enemy employed a total of thirty bomber aircraft operating singly at a rate of four aircraft per hour in attacks from cloud cover on the returning ships, the deterioration in the weather during the afternoon greatly assisting these operations.

Enemy fighters flew approximately 600 sorties during the day. They were drawn chiefly from I and II/J.G.2 and J.G.26 which occupied the sectors Abbeville, Beaumont le Roger and Courtrai. Apart from the fighter-bombers, the fighters concentrated their attention chiefly against our aircraft and did not pay much attention to the troops on land.

The four periods of most intensive activity were as follows:-

0830 - 0930 hours, when the Abbeville and St. Omer aircraft were operating up to forty aircraft.

0930 - 1130 hours, when strong cover was being provided for the bombers. At one time during this period, it was estimated that there were in the region of 100 fighters in the air.

1200 - 1300 hours, when cover up to fifty fighters was again provided for the bombers.

1415 - 1500 hours, when special attention was given to intercepting our own attacks.

By 1750 hours fighter activity had practically ceased, with the exception of a few fighter-bomber sorties against our shipping.

(v) Summary and Conclusions

11G/S.500/98/
Ops, Encl.29A.

A.H.B./IIH4/
1/2.

German
Documents
A.H.B.6.

During the course of the operation Royal Air Force and U.S.A.A.F. aircraft flew a total of 2,614 sorties.⁽¹⁾ They claimed to have destroyed 43 bombers and 49 fighters; probably destroyed 10 bombers and 29 fighters; and damaged 56 bombers and 84 fighters. This total enemy casualty list of 92 aircraft destroyed, 39 probably destroyed and 140 damaged was, however, a considerable exaggeration. German records give the figures of 25 bombers destroyed and 16 damaged; and 23 fighters destroyed and eight damaged. Once again, therefore, our claims were greatly overassessed.

A.H.B./IIH4/
1/2.

The total cost to the Royal Air Force was 106 aircraft, of which 88 were fighters, 10 Army Co-operation tactical reconnaissance aircraft and eight bomber and smoke laying aircraft. The number of pilots killed or missing numbered 71. Our losses were therefore more than three times as heavy as the enemy's.

Naval and military losses were equally and disproportionately heavy. The naval casualties were 550 officers and men killed or wounded. H.M.S. Berkeley was sunk and thirty-one landing

A.H.B./IIH4/
1/2.

(1) Comprising: Fighter Command 2,399 sorties
Army Co-op, Tac/R. 72 "
No.2 Group 62 "
Smoke laying a/c 50 "
Coastal Command 7 "
U.S.A.A.F. 24 "

(55690)154

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craft lost. The military casualties totalled 3,423 officers and men. Twenty-eight Churchill tanks and thirteen other vehicles were lost. Compared with these figures, enemy losses were light. Thirty-seven prisoners were brought back to England and it was estimated that casualties inflicted on the enemy during the fighting totalled about five hundred. A fair amount of damage was done to property at Dieppe and Pourville by the Army and by Naval bombardment and some small enemy vessels off Dieppe were sunk.

It may be seen at once from the above figures that the raid was far from being the success that had been anticipated. Indeed, the ground operation was largely a failure. There were several reasons for this.

Tactical surprise was achieved but it appears that the enemy were under a general stand-to order at the time. The actual landings were carried out as planned but thereafter progress was very slow owing to our forces not being able to silence the gun batteries, which overlooked the main beaches. Moreover, our failure to land tanks on the beaches as planned, made it impossible to reach the chief objectives, before it was necessary to retire to the beaches for re-embarkation. High level bombing of the target before the landings was not carried out, since it was thought that this would compromise any changes of a surprise attack and that damage caused by bombing would make the operation of tanks in the streets of Dieppe a difficult undertaking. In fact, the enemy anti-tank obstructions were as difficult to overcome as any debris from bombing raids might have proved.

From the air point of view, however, the operation was more successful. Our losses were certainly heavy, although they were in fact not proportionately heavier than those sustained during our general offensive operations over the previous few months. Throughout the day, however, the co-operation between the air, ground and naval forces was of an extremely high quality and at 0956 hours the Military and Naval Force Commanders signalled the Air Force Commander: 'Air co-operation faultless'.

Although the bombing of the gun positions overlooking Dieppe failed to put these out of action, the attacks by cannon Hurricanes against the defences along the main front of Dieppe were of the utmost value and would have proved of even greater use, had the landing forces been able to exploit them without delay. Similar attacks during the final stages of the withdrawal were also very successful.

The general air cover for the expedition worked well.⁽¹⁾ Only one of our ships was lost owing to enemy air action and this was due to an enemy aircraft jettisoning its bombs, when being attacked by one of our fighters. The communications system also proved successful and signals were promptly and clearly received at the Headquarters of No.11 Group. In addition, the Control organisation established in the Headquarters ships worked with great efficiency.

(1) This was acknowledged by the enemy. See A.H.B.6 Trans. No.VII/109, page 9, Section 4(b).

11G/S.500/98/
Ops, Encl.44A.

11G/S.500/98/
Ops, Encl.44A.

11G/S.500/98/1,
Encl.3A.

Ibid.

11G/S.500/98/1,
Encl.3A.

OOS(42)77(o),
27 Mar.1942.

Bv.Large-Scale
Landing Op.at
Dieppe. 2nd
App.28.8.42.
Luftflotte 3HQ.
A.H.B.6, Trans.
No.VII/109.

Ibid.

The experience at Dieppe nevertheless suggested various improvements, that could be made for future combined operations. For example, it was found that fighters in loose formation were much more easily able to protect an anchorage, than those operating in larger - i.e. in squadron - formations. It was also found that it was essential always to have fighters patrolling up sun of the convoy or anchorage. Operations by the smoke laying aircraft were very successful and more of such aircraft would have been most useful. Perhaps the least satisfactory part of the air operations was the amount of fire directed by friendly gun crews against their own aircraft. Indeed the general standard of aircraft recognition was found to be very poor, not only amongst gun crews but also Fighter Controllers.

There remains the important question: what effect did the day's operations have on the German Air Force. Was the object of the Chiefs of Staff's original directive in March - 'the diverting of the German Air Force from the Russian Front' - in any way achieved? The enemy was certainly forced to make use of all the operational units within immediate range but he was not compelled to bring in any units from outside France and the Low Countries, let alone from Russia. Do.217 losses were made good by the immediate despatch of twenty-seven aircraft from Luftflotte 3's aircraft forwarding centre. With regard to fighters, the situation was temporarily more serious. In order to replace lost F.W.190's, the last eighteen aircraft were released from the forwarding centre at Wolveghem. By the evening of 19 August, only 70, of approximately 230 fighter aircraft available in the morning, were still serviceable. But by the next morning, as a result of repairs carried out and replacements brought up during the night, the serviceability total had risen to 194 aircraft. The situation for the enemy was never therefore really critical, although the Luftflotte report ends: 'If the operation had been extended over several days, the operational strengths of fighter and bomber formations would have been reduced considerably, as there were no further Luftflotte reserves available.'

It would be impossible to say that such a complex and large scale operation as Jubilee was simply a failure. It is clear that the objects which were achieved were expensive both in men and material. Whether the experience that was gained at Dieppe could have been learnt from combined operations in the Mediterranean is perhaps doubtful and it seems probable that some sort of dress rehearsal for a full-scale cross-Channel invasion was essential. In this case, it is possible to justify our heavy losses.

From the point of view of Fighter Command, it might even be said Jubilee was a success. Although it was not faced by a numerically equal enemy fighter force, the Command had shown that it could provide effective daylight cover for naval and military forces over seventy miles away from the English coast. In the light of larger scale operations later in the war, this point may not appear of great importance. But in 1942 such a fact could not be taken for granted; nor could any invasion plans be prepared without such an assumption.

The Offensive Slackens: September - October 1942(i) Decrease in Number of Offensive Operations

German records show that throughout the summer and early autumn of 1942 the strength of the German Fighter Force in the West (i.e. France and the Low Countries) was steadily increased. The following totals refer to first line strengths on the 10th of each month:-

Enemy Documents
A.H.B.6.

| | <u>Strength</u> | <u>Serviceable</u> |
|-----------|-----------------|--------------------|
| June | 332 | 254 |
| July | 339 | 277 |
| August | 356 | 283 |
| September | 457 | 326 |

In particular, it will be noticed that the force was considerably reinforced at the end of August. This was probably an indirect result of the Dieppe Raid, which had shown the necessity of maintaining a relatively strong fighter force in the West. Apart from this, however, it cannot be claimed that the reinforcements were proof of the efficacy of our offensive. There is, at any rate, no evidence from German records on this point.

A.M. File
C.S. 2110,
Encl. 62A.

Meanwhile the aircraft position in Fighter Command continued to be satisfactory and on 30 September the strength of most units in aircraft was still above their Initial Establishment. However, this did not result in either the increase or maintenance of the number of Fighter Command's offensive operations and sorties. In fact, there was a sharp decrease between August and September. During August the number of offensive sorties undertaken was 4,188 (excluding those in connection with Operation Jubilee); during September this total was cut almost by half to 2,137; and in October it was 2,888.⁽¹⁾

The precise reasons for this sudden cut in the offensive are somewhat difficult to discover. There were no new instructions on offensive policy issued either to or by the Air Officer Commanding-in-Chief and there does not seem to have been any essential change in policy either at the Air Ministry or at Fighter Command. However, the unmistakeable note of caution in Air Marshal Douglas's letter to the Air Officer Commanding of No. 11 Group on 10 July⁽²⁾ cannot have been disregarded. Moreover, the continuing losses during July and August, including those sustained in the course of Operation Jubilee must have dictated a less bold offensive policy. The lack of Spitfire IX squadrons in the Command was also doubtless a subsidiary factor. The supply of these aircraft had improved during August and September but by the end of October there were still only eight out of a total Spitfire force of forty-nine squadrons so equipped.⁽³⁾

A.H.B./II/
73/1.

- (1) Sorties flown by U.S.A.A.F. fighter units included in these totals were: August 278; September 268 and October 270.
- (2) See above p.115.
- (3) Owing to preparations for Operation Torch there was also a general shortage of fighter aircraft at this time. The number of aircraft in squadrons was satisfactory but Fighter Command was rationed to 200 Spitfires a month in September. This meant reducing flying hours to avoid wastage.

A.H.B./II/73/1.

Quite apart from, and additional to, these distinct causes, was the fact that, largely owing to the weather, the scale of offensive operations was naturally decreased as the summer came to an end.

(ii) Operations

In spite of the decrease in the number of offensive sorties flown during September and October, the number of Circuses carried out each month did not vary greatly. In August there were ten; while during September there were also ten and in October eight. However, the number of sorties flown in connection with each Circus was less. The most frequently attacked target were the docks at Le Havre and various German fighter airfields in northern France.

F.C. Form 'Y',
Vols.11-12.

Our losses during the two months were forty-nine aircraft, for the claimed destruction of fourteen enemy aircraft. For once, however, German records give a higher loss than our claims - twenty-seven aircraft - so that some of our claims of 'probably destroyed' must be included in the total. Nevertheless, in proportion to the number of offensive sorties flown, our losses were no lighter than those incurred during July and August.

A.H.B./II/52/
12447 26 Sept.
1942.

One particularly unfortunate incident occurred during the Circus against Morlaix airfield on 26 September. This was in fact the first phases of Operation Crucible, although this latter operation was cancelled. The Circus was to consist of an attack on Morlaix airfield by twenty-four United States Army Air Force Fortresses, escorted by three Spitfire Squadrons - Nos. 64, 133 (Eagle) and 401 (R.C.A.F.) Squadrons. Owing to various mechanical and other defects, only fourteen Fortresses took off. The place of rendezvous was to be over Start Point and the E.T.A. over the target at 1645 hours. In fact, the fighters never contacted the bombers and at 1650 hours were plotted some thirty miles south of the target. They were therefore ordered to return and this order was acknowledged by the Wing Leader. At the same time, however, the Wing Leader reported seeing the Fortresses to the south of him and turned to investigate.

Ibid, 27 Sept.
1942.

The plots then faded until 1716 hours, when the fighters and bombers again appeared together on the plot at about the same place as they had disappeared. It was at this stage that the fighters began to peel off due to shortage of petrol.

Ibid.

What happened was that the Fortresses did not turn round until twenty minutes after they acknowledged their recall signal and thus went about a hundred miles south of Morlaix airfield. As a result of this, our fighters ran short of petrol and this led to the loss of one complete squadron - No.133 (Eagle). The other two squadrons also lost three aircraft, the total loss therefore being twelve aircraft missing and three crash landing in this country.

Ibid,
9 Oct. 1942.

The whole incident was investigated by Fighter Command and the American VIIIth Air Force, when the three chief causes of the disaster were said to be: the complicated orders issued by No.10 Group, whereby it was hoped to bring about a meeting between the Fortresses and their fighter escort in mid Channel; an erroneous wind vector used by the Fortress navigators⁽¹⁾; and

(1) This was, of course, a matter for the American authorities. It seems curious, however, that none of the Fortress navigators 'found' a wind of their own during the flight; or if they did, that they did not use it.

a failure to arrange for a joint briefing for the fighter and bomber leaders.

FC/S.23198
Tac.Mem.No.14,
Encl.75A.

11G/S.500/13
F.C.Op.Instr.
No.44/1942,
Encl.21A.

A.M.File
C.S.2351
F.C.Tac.Mem.
No.21,
Encl.54A.

In order to guard against a recurrence of such an incident, on 1 November No.11 Group issued a revised Tactical Memorandum on 'Offensive Operations by Fighters'. In this it was clearly stated that if owing to weather or other unforeseen circumstances operations did not go according to plan 'fighters should not go more than 5 minutes beyond their E.T.A. over target or patrol line'. Before this, on 1 October, a special Operational Instruction was issued by Fighter Command to the same effect.

On 27 September a revised memorandum on Rhubarbs was also issued. This again emphasised the importance of careful planning and suggested a suitable carrot: 'Go to your Intelligence Officer about 10.30.hrs. so that you are in line for the eleven o'clock coffee and biscuits which all I.O.'s invariably have....' It also stressed that the primary object of attack 'should be and always has been to destroy enemy aircraft in the air'.

(iii) The Channel Stop and Operations against Enemy Shipping

CC/S.15213,
Encls.142A
and 147A.

The control of the heterogeneous force for the destruction of enemy shipping in the Channel area appears to have got out of hand by the early autumn and on 19 October a meeting was arranged between the representatives of the Commander-in-Chief, Portsmouth, Fleet Air Arm, Fighter and Coastal Commands. The outcome of this was a temporary agreement that the Fleet Air Arm Albacores would only be used for attacks on light surface craft in mid Channel or near the English coast. Such attacks would be controlled by No.11 Group at the request of the Commander-in-Chief, Portsmouth. All other requests for attacks on important shipping units would be made to Coastal Command.

Ibid,
Encl.149A and
FC/S.20789,
Encl.134B.

The Air Officer Commanding-in-Chief Coastal Command was, however, strongly in favour of Coastal Command assuming complete responsibility for all shipping attacks and a further meeting was convened on 30 October. The Air Officer Commanding Fighter Command pointed out that anti-shipping operations in the Channel were related to Fighter Command's other night activities, that Coastal Command possessed no G.C.I. Station in the area and that the risk of Fighter Command intercepting their own aircraft would be very considerable in such a congested area, unless they were all under the same control. He submitted that the system then in use of Coastal Command using Fighter Command's various facilities on the whole worked well and should be allowed to continue. This is, in fact, what happened, although the discussion was prolonged and was not finally settled until January 1943.

F.C. Form 'Y',
Vol.10-11.

Enemy shipping movements in the Channel were few. On the night of 25/26 September four Hurricane-bombers of No.174 Squadron attacked a westbound coaster and claimed damage. Daylight opportunities were even more rare, although Spitfires of Nos.331 and 121 Squadrons attacked and damaged a small vessel off Ostend on 18 September. Altogether 175 sorties were flown during the month for the loss of two aircraft.

SECRET

130

During October targets were even more scarce. Both the moonlight sweeps by Hurricane-bombers of No.174 Squadron and the dawn sweeps by Whirlwind bombers of No.137 Squadron were uneventful. A total of 208 sorties were flown during the month for the loss of one aircraft.

Ibid.

Apart from these Channel Stop operations Fighter Command operated thirteen Roadstead and twenty-two Fighter Roadstead operations against shipping targets but on twenty-one of these occasions the target was not located.

Altogether therefore the period cannot be said to have been very successful, although the targets were not perhaps of great importance. For the most part they consisted of mine-sweepers, small flak ships and E-boats on passage.

(IV) Radar Control of Offensive Operations

In May the Air Officer Commanding-in-Chief had stressed the need for taking 'advantage of the opportunities in which our aircraft are in a superior tactical position to the enemy and.... for the Operations Control Staff to know with accuracy the dispositions of the opposing forces'. The close control of fighter aircraft over enemy occupied territory was not immediately envisaged but it was hoped to examine and develop the possibilities of doing so. Such an undertaking also corresponded with the Prime Minister's instruction in April that 'offensive radio equipment must take precedence over defensive equipment'.

A.H.B./IIC/24/
209.

During the spring Fighter Command's growing offensive - and its growing total of losses - had again emphasised this need for fighter control beyond the range of normal G.C.I. Cover.

The basic requirement was a radar station, which could give a position and height of aircraft at or above 10,000 feet at distances of at least ninety miles from the English coast. The tracking of six separate formations simultaneously was also required. To these ends a modified Type 8 G.C.I. set without height console was erected at Appledore in Kent by the Telecommunications Research Establishment.

A.M. File
S.5249,
Encl.5A.

By June the station was working. It gave a range of 115 miles and could detect a single aircraft anywhere between Le Havre and the Dutch Islands. At first, owing to lack of height information, Appledore was used simply for plotting to No.11 Group Operations Room by a new and rapid method, the movement of offensive sweeps. By the end of October, however, height finding equipment and an operations room had been provided at the station and a G.C.I. controller had arrived to take charge of fighter directing.

Appledore did not affect the conduct of operations during 1942 but the possibilities of such a range of cover were clearly very great. Moreover, by the end of the year most of the experimental work had been completed, and direct radar control of offensive operations could be carried out.

Operations: November - December 1942

During October the Prime Minister gave instructions that large scale air diversions should be undertaken during the opening period of Operation Torch, in order to contain the

FC/S.30742,
Encl.14A.

(55692)160

SECRET

Ibid,
Encl.25A.

German Air Forces which were not in the North African theatre. The Air Officer Commanding-in-Chief therefore issued instructions on 19 October to his groups to intensify their offensive operations during the month of November. If poor weather conditions made this impossible, the scale of Rhubarb operations was to be correspondingly increased. And this is what, in fact, happened.

F.C. Form 'Y',
Vol.12.

A.H.B./II/72/9,
Nov.Summ.

A.H.B./II/76/2
and FC/S.25904,
Encl.79A.

FC/S.25904,
Encl.73A.

Ibid,
Encl.74A.

A.M.File
CS.11377,
Encl.39A.

During the month only three Circuses were carried out, one against the locomotive works at Lille on 8 November and two against the Havre docks on 9 and 10 November. A total of eighty-seven Rhubarbs, however, was operated, chiefly against transportation targets. This was more than three times the number of Rhubarbs carried out in any one month since May, except August.⁽¹⁾ One hundred and twenty-five locomotives or trains were attacked during the month, as a result of which sixty-one were either destroyed, stopped or seriously damaged. This was in accordance with the Rhubarb target policy at the time, for at a meeting of the German Bombing Target Committee on 6 November, it was decided that the attack of locomotives should be treated on the highest priority. Later in the month - on 20 November - the same Committee agreed that the French alcohol distilleries and gasholders and gasplants in all the occupied countries were not to be attacked, since the destruction or damage to these targets was much more likely to interfere with the needs of the local civil populations than with those of the German occupying forces.

F.C. Form 'Y',
Vol.12.

Apart from these operations, Fighter Command also flew five Ramrods and twenty-eight Rodeos or other offensive sweeps during the two months. Our losses totalled twenty-six aircraft, for the claimed destruction of nine enemy aircraft.⁽²⁾ In spite of a moderately successful month, however, it may be noted that the number of offensive sorties carried out was actually slightly less than in either October or December.⁽³⁾ This was owing to the fact that compared to Circus operations, Rhubarbs were much more economical in respect of the number of aircraft sorties.

Ibid.

During December Fighter Command carried out four Circuses, forty-seven Rhubarbs and forty-five Rodeos or other offensive sweeps. As in November the chief targets

(1) The actual number carried out was as follows:-

| Month | No. of Rhubarbs |
|-----------|-----------------|
| May | 23 |
| June | 19 |
| July | 19 |
| August | 47 |
| September | 7 |
| October | 29 |

Enemy Documents
A.H.B.6.
F.C. Form 'Y',
Vol.12.

- (2) German records admit the loss of fourteen aircraft during November, so that some of our claims for aircraft 'probably destroyed' may be realised.
- (3) The totals are: Oct. 2,888 offensive sorties
Nov. 2,648 " "
Dec. 2,800 " "

were tugs, barges, locomotives and other transportation objectives. We lost twenty-two aircraft for the claimed destruction of twelve enemy aircraft and for once this latter total agrees with German records.

Ibid.

With regard to operations against shipping, the Channel area again remained quiet and there were no attacks of any importance carried out during the two months. The weather was poor during most of the period and so hindered air operations. Altogether 278 sorties were flown in connection with the Channel Stop for the loss of six aircraft. In addition to these operations, Fighter Command carried out twenty-two Roadsteads or Fighter Roadsteads but on fourteen of these occasions no shipping was seen.

In so far as operations were concerned the year thus ended quietly. Indeed in some ways the situation in December was similar to that in January. Although there were no standing instructions on the conservation of aircraft at the end of the year, it was imperative that aircraft should not be wasted. Rhubarb and other small scale operations were therefore carried out in preference to Circuses and multi-squadron sweeps. The pilot situation on the other hand was more than satisfactory and, by the end of December, Fighter Command was accumulating a considerable surplus.

A.M. File
CS.2110,
Encl.78A.

General Summary and Conclusions

In a draft narrative of this type, it would be impossible to answer dogmatically the many questions that arise in connection with the fighter offensive. Nor, perhaps, would it even be desirable to do so. Like his colleagues in other fields, the air historian is always tempted to look forward to a 'never-never land' in time, when all the relevant facts will be available for his study. And in military history this land is perhaps even more removed from practice, than in the political or literary spheres. What may be done, however, is to ask the relevant questions, to state the important themes.

With regard to the day offensive during 1942, these questions resolve themselves into two of great importance. First: was our offensive policy on the whole the result of an accurate diagnosis of the situation, so far as it could be understood at the time? And secondly: what were the effects of our policy on the German fighter force in the West?

F.C. Form 'Y',
Vol.9-12.

Enemy Documents
A.H.B.6.

The precise effects on the enemy fighter force are difficult to determine. The enemy lost 198 aircraft during the year in the course of opposing our offensive operations, including Operation Jubilee and this cannot be considered a high loss rate, even although the German fighter force was numerically much weaker than Fighter Command. Moreover, there is no evidence that the enemy was forced to move fighters from the Russian Front to the West. It is true, of course, that certain enemy units were reinforced during the summer from reserves within Germany. But it would be difficult to say that such reinforcements were the direct result of our offensive. They were more likely to be the enemy answer to a strong Fighter Command, rather than to the way in which the Command's squadrons were being operated. Nevertheless the enemy as much as the Allies, desperately required aircraft in the Mediterranean theatre (apart from Russia) and it is possible that enemy reinforcements for the Middle East suffered in consequence.

F.C. Form 'Y',
Vols. 9-12.

With regard to the offensive itself, it is quite clear that the aim of economically destroying enemy fighters was never realised. During only one month, March, were our losses lighter than those of the enemy. On the average during the year, we lost more than two and three quarter times the number of aircraft that the enemy did.⁽¹⁾ The actual total of Allied losses was 466 aircraft.

In respect of claims made for enemy aircraft destroyed an interesting point arises. Although these were exaggerated, so that we claimed on the average nearly double the number of enemy aircraft which were in fact destroyed - and this does not include claims for aircraft 'probably destroyed' - the larger the claims were, the less accurate they have proved to be. Thus, during April, we claimed sixty-seven aircraft destroyed, when the actual total was twenty-one. With smaller totals, however, our claims were frequently quite accurate. Nor is the reason for this difficult to guess. With large scale operations consisting of many squadrons engaged simultaneously, the chances of two claims being made for the destruction of one enemy aircraft, were naturally increased. Moreover, the difficulties for the Intelligence Officers in sorting out such claims were also correspondingly enlarged.

R.A.F. Narratives: 'Air Defence of Great Britain', Vols. II and IV.

The question of estimating the number of enemy aircraft, destroyed was and remains a complex one. Such inaccuracies as occurred during 1942 may be compared, for example, to the similar exaggerations which took place during the fighter offensive in 1941 and during the Battle of Britain. It may perhaps be noted, however, that on both these occasions there was no evidence of conscious exaggeration on the part of the pilots concerned. Indeed, it was frequently impossible for a pilot who was actively engaged at the time, to verify a claim which he was to present, in all good faith, to his Intelligence Officer. The problem, nevertheless remains important, since the study of claims represents one way of estimating the strength of an enemy force.

Order of Battle
F.C. O.R.B.
App. Dec.
A.H.B./IIM/
A2/3A.

Throughout 1942 Fighter Command did not possess in sufficient numbers an aircraft which had an equal performance to the F.W.190, with which at the end of the year the majority of German first-line Geschwader were equipped. In December, however, Fighter Command possessed ten Spitfire IX and eight Typhoon squadrons. Another improvement in our tactical strength which was taking place, was the increase in the number of long-range Spitfire VB or VC Squadrons. At the end of April only one squadron was operating but by December the number had risen to eleven.

F.C. Form 'Y',
Vols. 9-12.

Altogether during the year, aircraft of Fighter Command flew more than 40,000 sorties in the course of carrying out offensive operations.⁽²⁾ This represented approximately one third of the total daylight effort. Whether these aircraft could have been employed with more advantage in other theatres of operations is again a difficult problem to decide. It is clear that the Air Officer Commanding-in-Chief Fighter Command

A.H.B./II/
73/1.

- (1) This refers only to operational losses on both sides.
(2) Fighter Command escorted the following number of bomber sorties during the year:-
- | | | | |
|-----------------------|---------------|---------|-------------|
| R.A.F. Bomber Command | 1,474 sorties | Losses: | 20 aircraft |
| U.S.A.A.F. | 1,316 " | " | 25 " |
| Totals | 2,790 sorties | Losses: | 45 aircraft |

A.H.B./IIJ1/
183/271(D),
27 May 1942.

JR(42)517
and JIC(42)
62 (Final)

was quite within the limits of his directive - to protect the United Kingdom from air attack - in seeking to build up and maintain the strength of the Command. But it should also be remembered that in May, when the military situation in the Middle East was critical, the Western Desert Air Force possessed only two flights of Spitfires, while Fighter Command had fifty-nine squadrons. In view of the unlikelihood of strong air attacks being launched against the United Kingdom - or if they were, of adequate warning being received - it therefore appears that our fighter resources were not evenly balanced.⁽¹⁾

There remains one further point which should be mentioned. Until 1942 Fighter Command was primarily a defensive force. This role began to change with the beginning of offensive operations during 1941. In 1942, however, the Command flew more offensive sorties than either interception or shipping protection patrols. It was becoming in fact an offensive force and the experience which was gained in the conduct of offensive operations during the year cannot but have improved the efficiency of the Tactical Air Force, which was formed on 1 June 1943. In this way at least, therefore, the day offensive during 1942 was to exercise a beneficiary effect on the conduct of future fighter operations during the war.

-
- (1) There is no direct evidence that fighters were specifically kept in the United Kingdom for the purpose of building up a Tactical Air Force, although this responsibility must have influenced policy at the time. Moreover, it should be remembered that at the beginning of the year Operation Round Up, the liberation of North West Europe, was still being considered. This matter is discussed in greater detail in Chap.9.

CHAPTER 8

INTRUDER OPERATIONS BY NIGHTIntroduction(1)

FC/S.22088,
Encl. 12A.

Intruder operations by Fighter Command were begun by No. 23 Squadron in late 1940. In an instruction issued on 12 December 1940, it was stated that the aim of the operations was 'to augment the effort of No. 2 Group, by utilising Blenheim fighter aircraft to attack enemy bombers in the vicinity of their aerodromes, and to attack with machine-gun fire aircraft and personnel on the ground'. In April 1941 Havoc fighters were used to extend the range of operations, which continued throughout the year using these aircraft. Defiants and Hurricanes were also employed but, owing to limited endurance, could not remain long over their objectives.

Records of
6th Abteilung
(Q.M.G.)
A.H.B.6.

During the period between the close of the Battle of Britain and the end of 1941, intruder operations were carried out on 145 nights and 573 sorties were flown - 502 of them by the squadron regularly engaged on this task (No. 23). Sighting of aircraft, known or believed to be hostile, was reported on 60 nights and altogether the number reported as seen in the air or on the ground amounted to about 360. No. 23 Squadron claimed the destruction of fourteen and the 'irregular' squadrons of Hurricanes and Defiants of seven. German records show that the destruction of at least six and possibly as many as nineteen bombers can be attributed to the activities of intruder aircraft. Nearly 300 bombing attacks on airfields were also recorded. There is evidence that such operations frequently caused the enemy to divert his returning aircraft to airfields other than their bases and that his accident rate increased in consequence. No. 23 Squadron lost eight aircraft on operations, six of them during the first four months of the year. Other losses amounted to only two aircraft.

The rate of destruction of enemy aircraft was therefore high in comparison with that achieved in other fighter operations and in proportion to the number of sorties flown. It was also satisfactory in proportion to the number of our own aircraft lost.

Towards the end of the year the intruder effort steadily decreased and in November and December it averaged less than one sortie a night. This was owing to a parallel fall in the German night offensive against the United Kingdom, which provided fewer targets for intruder aircraft. The weather was also poor during these two months.

Throughout 1941 the planning and execution of intruder operations was carried out by the various groups. A more centralised arrangement was advocated on several occasions but at the end of the year, the problem remained unsolved.

(1) Unless otherwise indicated this summary is extracted from R.A.F. Narrative: 'Air Defence of Great Britain', Volume IV, Part 6. Offensive night operations against enemy shipping have already been described above in Chapters 6 and 7.

Operations: January-March 1942

At the beginning of January the intruder force consisted of two squadrons: No. 23 equipped with Havoc I's and Boston III's stationed at Ford and No. 3 with Hurricane IIC's at Hunsdon in the Tangmere and North Weald Sectors respectively. A total of only 115 sorties was carried out during the first three months of the year. But the effort was steadily increasing and more than half of these sorties, and 50 out of the 76 attacks, took place during March. Moreover, the results achieved between November 1941 and March 1942 lent weight to the Air Officer Commanding-in-Chief's belief that intruder operations were a most successful form of night defence.

| | Intruder | T.E. Fighter | S.E. Fighter ⁽¹⁾ |
|-----------------------|----------|--------------|-----------------------------|
| Sorties per combat | 7 | 72.6 | 251.1 |
| Sorties per e/a dest. | 70 | 150.6 | 1,632.5 |

N.A.D. (42) 2.
A.O.C.-in-C's.
Progress Report.

FC/S.22104/II,
Encl. 13A.

It is interesting to distinguish between the results of the Havoc I and Boston III's, and the long-range Hurricanes. The former carried out 126 sorties and had sixteen combats, claiming one enemy aircraft destroyed and four damaged. The latter only made fourteen sorties but had four combats, all of which brought a result - i.e. one enemy aircraft destroyed, two probably destroyed and one damaged. The Air Officer Commanding-in-Chief thought that the success of the Hurricanes was due primarily to the fact that they carried cannons, whereas both the Havoc I and Boston III's were still only armed with machine-guns.

N.A.D. (42) 2.

So long as enemy night activity was chiefly directed against shipping, it seemed that intruder operations were the most profitable form of night fighting and the Air Officer Commanding-in-Chief was therefore anxious to form a third intruder squadron, which he hoped to equip with Mosquitos. The range of these aircraft would bring the enemy O.T.U's. within striking distance and they also possessed a much heavier scale of armament, with four cannons, four machine-guns and four 250 lb. bombs.

During January intruder activity was almost entirely devoted to the bombing and patrolling of enemy airfields, the chief targets being the airfields at Lille, Laon and Dinard-Pleurduit. Typical of these operations was an attack on Dinard-Pleurduit airfield on 28/29 January. A Havoc of No. 23 Squadron took off from Tangmere at 2310 hours and crossed the French coast near St. Lo at a height of 3,000 feet. It then proceeded over St. Michael's Bay to just north of Dinard. The airfield was found without difficulty and one instantaneous and three delayed action 250 lb. bombs were dropped along the airfield perimeter. Light flak was experienced from the northern end of the airfield but the Havoc returned safely to its base at 0135 hours.

F.C. Form 'Y',
O.R.B., App.,
Jan.
A.H.B./IIM/A2/3A.

- (1) It should, however, be remembered that the purely defensive fighter aircraft was dependent for results on the scale of enemy activity, whereas the intruder could create its own scale of activity to a certain extent.

Ibid., Feb. and
IIG/S.500/70,
Encl. 37A.

During February and March continued attention was given to enemy airfields but attacks were also carried out on marshalling yards, oil refineries and transport targets. A successful attack, for example, was carried out by two Havocs of No. 23 Squadron on the marshalling yards south of Le Havre in connection with Operation Biting, the raid on Bruneval on 26/27 February. In fact, with the low scale of enemy night effort against the United Kingdom, the intruder force was turning to the offensive in a more general way and enemy bombers ceased to be chief targets. Operations were much more economical in aircraft than similar operations by day and during the three months, no intruder aircraft were lost, for the claimed total of three enemy aircraft destroyed and three damaged.

The Peak of the Offensive: April-July 1942

(i) Operations

F.C. Form 'Y',
Vols. 10-11.

N.A.D. (42) 4.

Between April and July the intruder effort was greatly increased. This was partly owing to the increased number of enemy night operations during the Baedeker raids in April and May, partly to the improved size and efficiency of the intruder force and partly to the weather. During June - the peak month - the force flew 336 sorties and carried out 169 attacks. For the loss of nine aircraft, we claimed to have destroyed fifteen enemy aircraft and damaged ten. Moreover, intruder operations still proved to be the most economical method of destroying enemy aircraft by night. Between 1 April and 15 June, intruder aircraft claimed to have destroyed 25 enemy aircraft in the course of flying 532 sorties, while a total of 2,561 A.I., Cat's Eye and Turbinlite sorties resulted in the claimed destruction of only 45. Intruder aircraft were therefore destroying approximately four times the number of enemy aircraft for an equivalent number of sorties.

Ibid.

The dual nature of intruder operations also became more apparent during the second half of the year. In addition to attacking enemy aircraft and airfields, marshalling yards were attacked on twenty-one occasions and locomotives and power stations on sixteen. The long-range Hurricanes of Nos. 1 and 3 Squadrons, which carried no bombs, executed seventy-five successful cannon attacks on locomotives during the period. The success of the Hurricanes on such operations seems to have been largely due to their good manoeuvrability but their activities were restricted to the nearer enemy bases by their limited fuel capacity and the difficulty of navigating accurately over long distances by night. For this type of attack, long-range Boston III's with cannon armament and Mosquitos were required.

FG/S.27142,
Min. 55.

In the middle of July, Group Captain B. E. Embry asked the Air Officer Commanding-in-Chief whether one flight of No. 151 (Mosquito) Squadron might be used for intruder duties; the other flight would remain for night A.I. tasks. There were, however, several practical difficulties. In order to ensure the security of the A.I. equipment, it would have been necessary to remove the wiring as well as the apparatus itself. This could have been effected in a few days but the aircraft could not have been re-wired quickly. Moreover, the high standard of training of Radio Observers (A.I. air-borne operators) was essential for an efficient A.I. force and this standard would clearly suffer, if part of the

Ibid.,
Encl. 70A.

squadron was to be employed on intruder work. Finally, it would have been necessary to increase the establishment of aircraft, in order to keep the squadron at operational strength for the two roles and further aircraft were not readily available. For these reasons, the Air Officer Commanding-in-Chief therefore turned down Group Captain Embry's proposal on 3 August.

The matter is interesting because it raised the various problems in connection with the operation of dual purpose squadrons. It showed that in practice these were difficult to solve, and the Air Officer Commanding-in-Chief's decision pointed once more to the fact that, in the middle of 1942, the threat of large scale enemy night attacks had still to be considered.

(ii) Progress in Re-equipment and Re-organisation

F.C., O.R.B.,
App., June.
A.H.B./IIM/A2/3A.

Ibid., July.

FO/S.27142,
Encl. 32A.

The supply of cannon-equipped Boston III's was considerably behind schedule. By 22 June, No. 418 Squadron had received only six and No. 23 Squadron only four aircraft. Nevertheless, by the end of the period the situation was much improved. During the first week in July, the veteran intruder Squadron - No. 23 - was re-equipped with Mosquitos; and by the end of the month a new Squadron had been formed and armed with Boston III's.⁽¹⁾ At the same time No. 11 Group asked that the Mosquitos should be fitted with Gee,⁽²⁾ since accurate navigation to enemy bases and the ability to stay in the vicinity of an airfield when located, was most important. Moreover, long-range intruder aircraft were now taking part in the Bomber Command offensive and during the attacks on Cologne and the Ruhr, intruder aircraft were operated against enemy airfields in the path of the main bomber streams. The importance of accurate navigation therefore affected our own bombers as well as the intruder aircraft themselves. The Air Ministry agreed to the proposal, although Fighter Command did not receive its first allotment of Gee sets until December.

N.A.D. (42) 4.

N.A.D. (42) 12.

Another improvement during the period was a re-organisation of the intruder control system. It will be remembered that this matter was discussed during 1941 but no conclusion was reached. In order to ensure that our aircraft were directed to the right enemy bases at the right time, the Air Officer Commanding-in-Chief gave instructions that a separate Intruder Operations Room was to be established at No. 11 Group. This organisation was destined to exist for only a short time but in the meanwhile it greatly improved the efficiency of the force. One of the chief advantages of the new system was that it provided a centre for the study and filtering of 'Y' Service and other relevant information. When the project was first put forward in March, the Air Officer Commanding of No. 11 Group considered that the Group Controllers and Duty Air Commodores were by no means overworked and could therefore direct intruder operations in addition to their other duties. The Air Officer Commanding-in-Chief, however, was concerned about the situation, if large scale enemy attacks were to develop in the future. The new Operations Room was therefore established on a trial basis and was working by the end of July.

N.A.D. (42) 4.

W.S.D. Outgoing
Flimsies No. 12,
12 and 26 March.

(1) No. 605 Squadron.
(2) A radar fixing device.

Decline of the Offensive: August-December 1942(i) Operations and Policy

F.C. Form 'Y',
Vols. 11-12.

FC/S.22104/11,
Encl. 61A and
N.A.D. (42) 7.

F.C. Form 'Y',
Vol. 12.

During the second half of the year the number of operations carried out steadily diminished.⁽¹⁾ This was owing to the small scale of enemy activity and to the weather. To give pilots experience, however, the long-range aircraft were sent deep into central France to operate against the enemy night training centres and during December intruder aircraft operated over Melun, Chateaudun and Orleans on more than one occasion.

Compared to the successes earlier in the year the results were disappointing. Between August and December, we claimed the destruction of only two enemy aircraft, although we claimed to have damaged fifty-four. Our own losses amounted to fourteen aircraft. The reasons for this are not clear, although it is apparent that poor weather hindered successful combats. Moreover, the number of attacks on transport and objectives other than enemy aircraft were proportionately increased.

Owing to the continued lack of suitable aircraft targets within the range of the majority of the intruder squadrons, the Air Officer Commanding-in-Chief gave instructions in December that offensive night patrols should be carried out whenever conditions were suitable. Operations were to consist of:-

N.A.D. (42) 12 and
FC/S.22104/11,
Encl. 73A.

- (i) Attacks on enemy night fighters, during large-scale operations by Bomber Command.
- (ii) Visits to enemy night flying areas with the object of interrupting training, and if possible destroying training aircraft.
- (iii) Cannon and machine-gun attacks on enemy transportation targets.
- (iv) In combination with one or more of the above, leaflet raids over populated areas of enemy occupied territory.⁽²⁾

N.A.D. (42) 12.

The Air Officer Commanding-in-Chief also decided that during periods of enemy inactivity the intruder force should carry out offensive patrols over enemy territory by day as well as night. Should the enemy recommence large-scale attacks on the United Kingdom, the force would revert to its original role.

F.C., O.R.B.
A.H.B./IIM/A2/3 and
W.S.D. Outgoing
Flimsies No. 17.

With regard to aircraft, the most important requirement was still Mosquitos. This type had proved its worth on operations but the number of aircraft available was extremely limited. On 12 September, the reserves behind

- (1) The sortie totals were:-

| July | August | September | October | November | December |
|------|--------|-----------|---------|----------|----------|
| 280 | 147 | 92 | 62 | 93 | 98 |

- (2) For this last task, called 'Nickelling', Boston III aircraft were to be used and special instructions were issued on 15 November.

F.C. Op. Instr.
No. 52/1942
A.H.B./IIM/A2/3A.

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FC/S.30682,
Encl. 8A.

BC/S.27600/2
Encls. 27A and
28A.

No. 23 Squadron - the squadron equipped with Mosquitos - amounted to only sixteen aircraft. As an interim measure, on 4 October, Coastal Command agreed to make some of its Beaufighters occasionally available for intruder work.⁽¹⁾ A similar request that the long-range Boston III's of No. 2 Group should be used for intruder operations was, however, turned down by the Air Officer Commanding-in-Chief Bomber Command on the grounds that these aircraft were already fully occupied in carrying out Circuses, attacks on shipping and other offensive tasks by day.

Ibid.,
Encl. 6B.

FC/S.31066,
Encl. 6A.

By the middle of September, the intruder force stood at three squadrons - Nos. 23 (Mosquito), 418 and 605 (Bostons). There were also the single-engined night fighters, which were ordered from time to time by Fighter Command. This force was stiffened at the beginning of December by the decision to employ the Typhoons of No. 609 Squadron for part-time intruder work. During the week of the full moon, two aircraft were to be at readiness at Manston for operations in the area Walcheren - Lille - Arras - Amiens. The chief task of these aircraft was to attack enemy aircraft and airfields but railways were given as alternative targets. If a train was damaged and halted, the pilots were to return and report the position to No. 137 Squadron. Subject to the Controller's approval, this squadron would then send a Whirlibomber to attack the stationary train with bombs.

N.A.D. (42) 12.

N.A.D. (43) 1.

See Part IV,
Chap. 16.

Thus by the end of the year the night offensive, although small in comparison with daylight operations, was becoming a carefully planned, economic way of using at least a part of the night-fighter force. During December Fighter Command received small allotments of Gee and Monica,⁽²⁾ and was looking forward to the arrival of the Mosquito VI, the first deliveries of which were expected in January 1943. Moreover, the hopes of extending and enlarging the intruder offensive were quickly realised in the New Year and on two occasions during February, intruder aircraft penetrated North Germany, some of them reaching as far as Oldenburg, Osnabruck and Dortmund.

(ii) Further Re-organisation of Control System

BC/S.27600/2,
Encl. 1A.

On 17 August a meeting was held at Fighter Command to reconsider the question of a central Intruder Operations Room. The centre then in existence at No. 11 Group suffered from several defects. Co-ordination between this Operations Room and No. 2 Group, Bomber Command, was satisfactory, because of the necessary liaison between these formations in connection with daylight Circuses. Co-operation, however, with other groups was liable to break down and in fact had done so on occasions. Moreover, this situation would worsen if, as seemed probable, both Coastal and Army Co-operation Commands began to carry out regular intruder work. In addition, No. 11 Group did not get a complete picture of all aircraft movements.

Ibid.,
Encl. 5A.

It was therefore agreed that a new central control for all intruder operations should be established at Headquarters,

FC/S.24470,
Encl. 67A.

- (1) Coastal Command had already given authority for some of their aircraft to operate near the bases of enemy mine-laying aircraft as early as 27 August 1941.
- (2) A backward looking A.I. device to give warning of approaching enemy aircraft from the rear.

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Ibid., Encl. 6B.
F.C. Op. Instr.
No. 38/1942. and
FC/S.29594, Min. 40.

F.C., O.R.B.,
App., Dec.
App. A.1.
A.H.B./IIM/A2/3A.

Fighter Command. It was also decided that Nos. 10, 11 and 12 Groups should provide a definite allotment of aircraft for intruder work as ordered by Fighter Command and that all such aircraft should be directly under the control of the Intruder Controller. Orders to this effect were issued to the groups on 13 September and the new Operations Room took over intruder control from No. 11 Group on 15 September.

There seems, however, to have been some doubt as to the exact responsibilities of the various controllers and commanders and on 3 December further detailed instructions on these points were issued.

Summary and Conclusions

F.C., O.R.S.
Report No. 429.

During the year intruder aircraft flew 1,613 sorties, of which 1,222 were against enemy airfields. Sixty-four sorties were devoted to the bombing of enemy airfields, 264 to attacks on other ground targets and 63 to leaflet dropping. Forty-eight enemy aircraft were claimed as destroyed, eight as probably destroyed and forty-five as damaged, for the loss of thirty-six of our own aircraft.⁽¹⁾ This was a much more satisfactory loss rate than that suffered by the day offensive force, although it is important to remember that in terms of sorties, the day offensive was more than twenty-five times the size of the offensive by night.

F.C., O.R.B.,
App., July
Orders of Battle,
9 and 16 July and
App. August.
A.H.B./IIM/A2/3A.

The aircraft available to Fighter Command for intruder operations were not numerous. The backbone of the force were Nos. 23 and 418 (R.C.A.F.) Squadrons. At the beginning of the year No. 23 Squadron was equipped with Havoc I's but was re-equipping with Boston III's; No. 418 Squadron was equipped with Boston III's. By 9 July, No. 23 Squadron had been re-equipped with Mosquitos and the Boston III's were used to form No. 605 Squadron. In addition, the Hurricane night squadrons in Nos. 10 and 11 Groups supplied up to a total of six aircraft a night and further aircraft were drawn from No. 2 Group (Bomber Command), Coastal and Army Co-operation Commands when available.

F.C., O.R.S.
Report No. 429.

Approximately 31 per cent of the enemy aircraft operating against the United Kingdom did so from airfields to which intruders were sent and 14 per cent of these were seen by our intruder aircraft. With regard to the number of combats, the following table shows an interesting comparison of the lethality (per centage of combats during which an enemy aircraft was destroyed or probably destroyed) of the various aircraft used for intruder operations:-

| <u>Aircraft</u> | <u>Armament</u> | <u>No. of Combats</u> | <u>Lethality (%)</u> |
|-------------------------|---------------------------|-----------------------|----------------------|
| Havoc I | 8 M.G.'s | 6 | 17 |
| Boston III. | 8 M.G.'s | 9 | - |
| Modified Boston III. | (4 Cannons) (4 M.G.'s) | 3 | 33 |
| Hurricane | 4 Cannons | 81 | 53 |
| Mosquito | (4 Cannons) (4 M.G.'s) | 11 | 55 |

Ibid.

(1) It is not possible to break down the losses of German aircraft due to intruder action from enemy documents. The figures of sorties, losses etc. in O.R.S. Report quoted (published in March 1943) vary only slightly from the totals presented by the A.O.C.-in-C. to the Night Air Defence Committee of the War Cabinet.

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It illustrates the poor results obtained by aircraft mounting only machine-guns, the continuing success of the Hurricane⁽¹⁾ and the potential value of the Mosquito.

The number of aircraft lost also shows an interesting comparison by types:-

| <u>Aircraft</u> | <u>Sorties</u> | <u>No. a/o Missing</u> | <u>Sorties per a/o Missing</u> |
|-----------------|----------------|------------------------|--------------------------------|
| Havoc I | 206 | 2 | 103 |
| Boston III | 636 | 19 | 33 |
| Hurricane | 581 | 12 | 47 |
| Mosquito | 153 | 3 | 51 |

The comparative immunity of the Havoc is perhaps explained by the relatively few sorties during which combats took place with this aircraft. The Hurricane, however, which was frequently engaged, has a noticeably high sortie/loss rate.

The character of offensive night operations changed during the year. Whereas initially the intruder force had been directed against the enemy bomber, it developed until it was generally disorganising enemy night flying facilities and attacking land targets deep in central France. One type of operation for which the force was employed - the destruction of enemy night fighters operating in the path of our bombers - was perhaps the most indicative of its future role.

The effects of intruder activity on the German Air Force are not precisely known but prisoner of war reports at the time showed that such activity caused the diversion of returning bombers either to waiting areas or alternative airfields, the adoption of special landing procedures and the use of illuminated decoys and dummy airfields. Enemy crews were therefore forced to operate with restricted facilities and at a higher than normal nervous tension. Again it is impossible to measure the effect of such tension but it seems likely that it impaired the efficiency of the enemy bomber force in some degree at least. It is probable, for example, that as a result of intruders, the enemy accident rate was increased.

A.D.I.(K.) Report
No. 328/1942.

(1) The Hurricane's efficiency declined towards the end of 1942, since the German bombers, such as the Do.217, were becoming too fast for it.

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CHAPTER 9

THE EFFECTS ON FIGHTER COMMAND OF
OVERSEAS DEMANDS FOR AIRCRAFT AND AIRCREW

Introduction

Although the threat to the safety of the British Isles had receded with the German invasion of Russia, there were no grounds for considering it as no longer possible in 1942. The only real guarantee that it would not succeed, if undertaken, was the maintenance in Great Britain of a fighter force of sufficient strength to counter any attacks of the G.A.F., should it be brought back to the West from the Russian front. To accomplish this successfully it was necessary to build up Fighter Command both in numbers and in quality. During 1942 numerical superiority was achieved but the technical superiority of German aircraft, especially of the F.W.190, indicated that the whole programme was far from completion. As the year progressed it was found that the strength of Fighter Command was sufficient to hold off the assault of the German bombers on vital points although a counter to the isolated type of low-level raiding was slow to develop. In this respect the year was very satisfactory but against this it was necessary to balance the calls for fighter aircraft and pilots from other theatres of operations that often went unanswered.

The entry of the United States into the war was very welcome when seen from a long term viewpoint but initially it was as much a handicap as an accession of strength. The supplies of war material that, until Pearl Harbour, had come to this country from United States factories, were now diverted to the building up of its own forces. Together with the diminution of supplies came the task of defending our possessions in the Far East against the Japanese. Although the Allies decided to fight no more than a holding campaign in the Far East until Germany had been disposed of, such a campaign could not be won without suitable supplies of aircraft and equipment which, until the United States production really came into operation, would have to come from British war production. More important in the immediate future was the situation in the Middle East where the shuttlecock war in the Western Desert was approaching the decisive stage. The initial successes achieved by our forces were swiftly followed by equally swift defeats and, by July 1942, the British forces were endeavouring to stabilise their positions at the El Alamein Line. Closely linked to this phase of the struggle was the defence of the Island of Malta against German air bombardment (for the enemy was endeavouring to remove this constriction point on his supply lines) and which in the event was to prove of paramount importance to the outcome of the struggle in the Western Desert and provided the first sign that the tide had turned in favour of the Allies. Had the result of the desert campaign been reversed there can be little doubt but that the outcome of the war could have been substantially different or at least been considerably prolonged.

Once again, the need was for fighter aircraft, not only in numbers but in performance, to combat with the aircraft flown in the campaign by the G.A.F. Such demands could only be met from the common pool from which Fighter Command itself was depending for its strength. The problem was whether to

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supply the Middle East and the other theatres of operations with aircraft at the expense of the expansion of Fighter Command or to relegate these other theatres to a minor category and concentrate solely upon the force in Europe until the day should come when the coup de grace should be administered to Germany in Europe; or, thirdly, whether a compromise between the two should be undertaken, namely to supply the Middle East and the other theatres to the utmost without allowing this supply to impair the build-up of the fighter forces in Britain. The first was impossible from the strategical long-term conception of how the war was to be won; the second was equally impossible without sacrificing the actualities of the situation to the hypothesis of future victory; the third alternative was thus the only one that avoided the dangers of the first two courses, to supply the active theatres to the limit of Fighter Command's resources without compromising Fighter Command's position. The fulfilment of this policy became a perpetual tug-of-war between Fighter Command and the overseas theatres. The difficulty of the situation was recognised on all sides but where the dividing line should fall between the needs of the home forces for the implementation of a long term policy of the needs of commands engaged in actual conflict with the enemy became a thorny problem.

Requirements for Aircraft from Fighter Command in 1942

Although on 4 August 1941 the Air Officer Commanding-in-Chief Middle East, Sir Arthur Tedder, assured the Air Staff at a conference in London that he was satisfied with the flow of aircraft to the Middle East and estimated that he would have made up his deficiencies in pilots within the following two months, by October the planning of a new offensive in the Western Desert (Crusader) produced an imperative demand for further re-inforcements. Investigations during that month into the state of squadrons in the Desert Air Force revealed a serious shortage both in aircrew and aircraft. Meanwhile, on 5 October, the Chief of Air Staff had informed the Commander-in-Chief Fighter Command, Air Marshal Douglas, that he had no alternative but to readjust the balance in favour of the Middle East, in accordance with strategic needs, even though demands from Russia on the Middle East were likely to bring Fighter Command down to a dangerously low level. To offset this danger it was necessary for Fighter Command to save as much as possible in the way of aircraft wastage and to reduce the average requirements of each squadron for replacements from four to three aircraft per month. The flow of aircraft from Great Britain to the Middle East from the week ending 3 October to 2 January 1942 included no Spitfires; 257 Hurricanes were sent to the Middle East via Takoradi or by direct convoy and 46 Beaufighters flew to Malta from Great Britain. At the beginning of 1942 Fighter Command had in the first line a total of 68 day-fighter squadrons of which 51 were Spitfire squadrons, including 43 Spitfire VB squadrons, and there were 29 night fighter squadrons including Turbinlites and Intruders operational.

At a meeting held by the Vice Chief of Air Staff on 6 January 1942, the main lines along which the resources of Fighter Command should be employed in 1942 were laid down. With regard to the Far East it was decided to signal the Chief of Air Staff then in Washington to ascertain how many of the fighter squadrons considered necessary for the defence of Burma and Singapore could be provided by the U.S.A. The provision of the necessary squadrons would greatly reduce the

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A.H.B./ID/5/5(B).

A.M. File
C.S. 2110/Pt. II,
Encl. 1A.

A.H.B./ID/676(A).

A.H.B./IHH/120/C.

otherwise difficult problem of maintaining 14 fighter squadrons in this theatre. This, however, was a matter to be solved in conjunction with the Americans and would largely depend upon the forces which our Allies could muster.

The more immediate decisions that were taken were as follows:-

- (a) The flow of tropicalised Spitfires to the Middle East was to be increased as soon as possible from 20 to 70 per month.
- (b) Steps were to be taken immediately to explore the possibilities of sending Spitfires via Takoradi.
- (c) The flow of Hurricanes to the Far East was to be correspondingly increased from 50 to 100 per month as supplies of this type were released from the Middle East by the substitution of Spitfires for the Hurricane squadrons there.
- (d) This would eventually permit the re-equipment of squadrons in India with Hurricanes, some of which might have to be transferred to Burma to meet the deficiency of two squadrons in the target of six squadrons set by the British Chiefs of Staff.
- (e) These decisions would result in a mixed fighter pattern which would possibly reduce flexibility in the Middle East but a certain number of Hurricane squadrons in the Middle East would be retained and which would be interchangeable with those in India, Burma and the Far East. In addition, it might be possible at a later date to form Kittyhawk squadrons in India and Burma which could be reinforced from those in the Middle East if necessary.

The needs of Army Co-operation Command would have to be met by the use of Mustangs for re-equipment, whilst the formation of additional squadrons in Fighter Command would proceed as follows:

- (a) Four Hurricane squadrons were to be held to meet overseas requirements of which two Hurricane bomber squadrons were to be held available for this purpose. No. 79 Squadron was to be re-equipped at once with Hurricanes from the small resources throughout the Command. One more Hurricane squadron would be formed in February from whatever resources were still available.
- (b) One Norwegian squadron was to be formed at once.
- (c) Replacements to meet the demands from these new squadrons to offset wastage would have to be balanced against the reserve of 50 per cent of Initial Establishment laid down by the Chief of Air Staff.

At the same time the policy would be continued to maintain the strength of Fighter Command at a level of 75 day squadrons including a minimum of 10 Hurricane squadrons and Turbinlite satellites despite the demands from overseas. As for the supplies to Russia it was decided that in view of the strong political repercussions that would occur if supplies were reduced, to continue with the task of supplying the Russians

with aircraft, but should the needs of Fighter Command reach the stage that the threat from the enemy was proving too much for the squadrons at the disposal of the Commander-in-Chief, then there would be no alternative but to reduce the amount of supplies being sent to the Soviet Union.

(i) The Call on Hurricanes

The year had hardly started when Air Marshal Douglas began his campaign to save Fighter Command from becoming the ever open reservoir upon which any and every theatre of war could draw with impunity. On the same day as the above meeting he expressed to the Air Staff his concern at the drain on his Hurricane squadrons. No. 79 Squadron was earmarked for overseas service and its machines were thus thrown up for disposal. He informed the Air Ministry that he wished to form another Hurricane squadron with these aircraft in order to ensure against the loss of yet another Hurricane squadron at some future date. The Air Staff did not view his proposal with great enthusiasm and informed the Commander-in-Chief that two more Hurricane squadrons would be required for service abroad.⁽¹⁾ Air Marshal Douglas immediately put forward another proposal that he should form three new squadrons from the aircraft thrown up by the squadrons proceeding overseas. This would have brought the number of Hurricane squadrons to one in excess of the stipulated number of 12 squadrons, one of which he would convert to Spitfires.⁽²⁾ The emphasis that Air Marshal Douglas placed on the retention of the Hurricane squadrons was due to the fact that the Hurricane, although practically obsolete from the fighter point of view, was engaged upon three important roles at this time. Two squadrons converted to fighter bombers were engaged upon the task of attacking German vessels in the Straits of Dover⁽³⁾ and contributed towards the policy of denying to the enemy the use of these waters. The other ten squadrons were engaged upon two particular tasks; they operated as satellites to the Turbinlite Havocs that formed part of the night defence system⁽⁴⁾ and were also training with the Army in the close support role designed to take a leading part in the repelling of an invasion force and ultimately in the return to the offensive in land operations. Later in the year a Hurricane squadron was used in an Intruder role.⁽⁵⁾

The need for Hurricane bombers brought fresh requests from Fighter Command to the Air Ministry. With the intensification of Circus operations, these aircraft were required to supplement the effort of No. 2 Group which was engaged when possible in providing the sting to the offensive operations. Wastage meant either a reduction in the scale of operations or an increase in the supply of aircraft. By August the Air Staff decided that every available Hurricane would have to be sent overseas but the question of the supply of Hurricanes to overseas theatres was ceasing to be such a vexing problem because the arrival of the Typhoon and the re-equipment of the Hurricane squadrons with this aircraft relieved the pressure on the demands for Hurricanes.⁽⁶⁾

- (1) Nos. 607 (Hurricane bomber) and 615 Squadrons.
- (2) The Canadians were pressing for the conversion of No. 402 Squadron from Hurricanes to Spitfires and Air Marshal Douglas was anxious to accede to this request.
- (3) Known as Channel Stop - see Chaps. 6 and 7.
- (4) See above, Chap. 4, page 44 et seq.
- (5) See Chap. 8, page 135 et seq.
- (6) By December the only independent squadrons left were Nos. 3 and 184 in addition to the Channel Stop squadrons, Nos. 174 and 175.

FC/S.21572,
6 Jan. 1942.

Ibid.,
20 Feb. 1942.

W. S. D.
Outgoing
Flimsies
Fold. No. 14.

Ibid.,
Fold. No. 16.

(ii) The Call for Beaufighters

The demands made upon Fighter Command for Beaufighter aircraft presented Air Marshal Douglas with the second of the supply problems. These squadrons constituted the spearhead of the night defence force. In the case of the night fighter pilots required the added difficulty arose that the night fighter pilot was a specialist, highly trained after a long course and was very difficult to replace, unlike the supply of the normal pilots of which there was an abundance. By 6 March he learned that eight twin-engine squadrons were expected to come into operation in the Middle East during the year and he calculated that Fighter Command would have to supply in the region of 140 pilots plus wastage to fill them, the wastage amounting to approximately 106 pilots, assuming that one new squadron was formed in each month from May to October. As night-fighter squadrons on the average possessed 24 pilots, his estimate was that Fighter Command would have to supply an average of 28 crews a month. This was a great increase on the original figure of eight pilots per month set by the Air Ministry in January for the months up to April. The main problem was how to find this number of pilots.⁽¹⁾ The Air Staff suggested that the training of pilots might be accelerated by increasing the strength of the O.T.U.s. in Beaufighter aircraft. Air Marshal Douglas refused to entertain this idea until the needs of front line squadrons had been met. As a temporary measure the Command was supplied with some Bisley training aircraft. The pilots had to be found, however, and they had to have experience in the handling of Beaufighter aircraft which precluded the use of pilots straight from the O.T.U.s. Air Marshal Douglas finally agreed to provide them from his own squadrons so long as he was allowed to proceed with the re-equipment of his Defiant squadrons either with Mosquitos or Beaufighters. By the end of April the re-equipment of the Defiant squadrons was under way and by the beginning of June all Defiants had been withdrawn from the front line. At the same time, Air Marshal Douglas pressed on with the re-equipment of his Beaufighter squadrons with later marks with the result that, by the end of the year, the Mosquito and the Beaufighter Mark VI formed the core of the night-fighter force.

FC/S.27467,
6 Mar. 1942.

(iii) The Call for Spitfires

In comparison with the minor irritation caused by the problems of Hurricane and Beaufighter supplies, the demands upon the Command for the supply of Spitfires assumed the proportions of a major conflict. The Spitfire was the cream of the fighter force and to have it skimmed off to supply the Middle East and Malta was extremely distasteful to the Commander-in-Chief who was not averse to informing the Air Ministry of the gravity of the course of action that they were contemplating. In January 1942, the monthly production of Spitfires was in the vicinity of 250 to 270 machines. From this number the withdrawal of 20 per month for the Middle East was not a great burden but when the Air Ministry decided to put up the monthly demands to 70 it evoked an

(1) The number of Beaufighter pilots in Fighter Command at this time was 181 and to take away for overseas service 42 per month seemed suicidal to the Commander-in-Chief (W.S.D. Outgoing Flimsies Fold. No. 11).

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W.S.D. S.53,
Encl. 8A.

immediate protest from Air Marshal Douglas. He gave it as his opinion on 7 January that 50 Spitfires to be sent overseas per month was quite sufficient and that to send 70 per month would place Fighter Command in the awkward position of not being able to meet its own requirements as well as those of the Navy.

Meanwhile, the position in the Middle East was becoming increasingly critical. By late January the Germans began rapidly to reverse the favourable situation created by the British Army in the Western Desert and in the following two months the air offensive against Malta reached its peak. The position was aggravated by the fact that the fighter strength in the Middle East was depleted because of the necessity to send reinforcements to the Far East where the Japanese were rapidly gaining ground on all fronts. Complaints from Air Vice-Marshal Lloyd, the Air Officer Commanding Malta, and Sir Arthur Tedder at Cairo about the inadequate numbers of modern fighters began to arrive at the Air Ministry. On 4 March operations in the Western Desert, it was stated, were governed firstly by the greatly reduced operational strength of fighter squadrons at the front and, secondly, by the technical superiority of the Me.109F out of all proportion to its numbers. Two weeks later, Air Vice-Marshal Lloyd was asking for Spitfires, declaring that his 'attenuated fighter force' while fighting gallantly could not resist for much longer. On 24 March, Air Marshal Tedder sent a signal to the Chief of Air Staff requesting that Spitfires should be sent out to Malta. The Chief of Air Staff replied by proposing that a larger number could be sent by flying the aircraft from carriers than by despatching them via Takoradi, assuming that by April, 32 Spitfires could be flown in while little more than six would be expected by way of Takoradi.⁽¹⁾

Meanwhile, six squadrons of Spitfires were assigned for overseas to leave before the middle of April, and Fighter Command was confronted with the task of building up the Command to the 75 squadrons stipulated as the minimum for the defence of Great Britain. On 9 April, Air Marshal Douglas returned to the attack, pointing out to the Air Ministry that in view of the expected long range offensive operations in co-operation with Bomber Command, Fighter Command had practically none of the long range Spitfire VC's with which to carry out their part of the operations. Only 13 aircraft had been received towards the two squadrons authorised for this purpose as far back as February, whereas it had been hoped that five squadrons of this type would be operating by the spring. It had been brought to his notice that the production of these aircraft was being diverted overseas and he asked that either production should

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- (1) For fuller treatment of the supplies of aircraft to Malta see R.A.F. Narrative: 'The Middle East Campaigns', Vol. 11. The first batch of Spitfires did not arrive in Malta until 7 March (but by 15 April operations had been so intensive that there were only three Spitfires serviceable but on 9 May 60 Spitfires were flown in from aircraft carriers) and by 27 May there was no more than half a Spitfire squadron in the Western Desert (A.H.B./ILJ5/101/4B, Encl. 107A, and A.H.B./ILJ1/183/271(D), Signal Tedder to C.A.S., 17 May 1942). A very thin trickle of Spitfires (six for June) began to arrive in the Middle East at the end of May, via Takoradi.

A.M. File
C.S. 2110/Pt. II,
Encl. 31A.

F.C., O.R.B.
Entry,
9 April 1942.

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be speeded up or that the supplies being sent overseas should be reduced. (By July, however, the question had become less acute as the operations with the long range fighter escort projected by Bomber Command were abandoned.) Little more than a week elapsed before Air Marshal Douglas was writing to the Vice Chief of Air Staff, Air Marshal Freeman, complaining that it would be impossible to keep up the offensive if his strength in aircraft was constantly being whittled away. Either he must be allowed to retain the aircraft necessary to maintain the fighter offensive or he must be allowed to follow a policy of conservation if the demands from the Middle East continued to be met. He roundly accused the Vice Chief of Air Staff of yielding to the piece-meal demands of the Middle East and India instead of making decisions along the lines of a broad policy for the allotment of aircraft between the various theatres and sticking to it.

W.S.D.
Outgoing
Flimsies
Fold. No. 13,
19 April 1942.

Disquiet about the situation continued to be felt throughout April and May. The superiority of the F.W.190 created a technical problem which called for the employment of a covering layer of high performance fighters to give protection to the Spitfire VB squadrons when they operated over France and although it was felt that the Ministry of Aircraft Production had fallen behind in the struggle for technical superiority, the efforts of the Air Staff to get better types of Spitfires and Typhoons into service augured well for the eventual outcome of this struggle.

FC/S.22754,
9 April 1942.

The question of the production of the right type of aircraft was raised again on 13 June, when it came to the notice of the Commander-in-Chief, Fighter Command, that the Supermarine Company was giving priority to the manufacture of the Spitfire VII (with pressurised cabin) over the manufacture of the Spitfire VIII. In consequence the Spitfire VII would come out in small numbers during the autumn while the Spitfire VIII would not be off the production lines by the end of the year. Apart from the uselessness of bothering at this time with the bombing potentialities of the high altitude raider, Air Marshal Douglas pointed out to the Air Staff that the morale of his fighter pilots would decline if they were to continue to fight against an enemy equipped with a superior aircraft. Hard on the heels of this piece of information from the Supermarine Company came the further intelligence that it was devoting a large portion of its production of Spitfire spares for a 'pack up' to overseas theatres. The inevitable result would be that there would be a continuation of the shortage of spare parts in Fighter Command. These two instances, while not exacerbating the situation between Fighter Command and the Middle East, show that on occasion the harmony of the various fighting arms was conspicuous by its absence.

W.S.D.
Outgoing
Flimsies
Fold. No. 15,
13 June 1942.

W.S.D. S.80,
12 June 1942.

A firm declaration of intention was communicated to Air Marshal Douglas by the Assistant Chief of Air Staff on 3 August 1942. He stated that the Middle East commitments could not for the present be modified. Malta had to be maintained and with the reduction in the Kittyhawk flow shortly to be expected it was essential to keep Air Marshal Tedder supplied with Spitfires. He hoped that the American commitments (40 per month) would die out before November. Any shortage in the supply of aircraft would have to be borne by Fighter Command. The Chief of Air Staff's decision was that from August Fighter Command would have to accept a ration of

A.M. File
C.S. 2110/Pt. II,
Encl. 48A.

SECRET

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225 Spitfires per month.(1) As a further measure to husband the Spitfire resources the five squadrons which were due to form for the Army Support Group before November should not be created de novo but should be met by the transfer of five Spitfire squadrons from Fighter Command which would be re-equipped with Typhoons, at the rate of one in August, one in September, two in October and one in November.

In the seven months since January, 1,565 Spitfires had been drawn, an average of 238 per month, a number which was sufficient to support all the Spitfire squadrons in the Command. The Air Ministry policy at this period was to build up a reserve of fighter aircraft for landing operations on the Continent which might be undertaken in the future (Round Up) although this meant the withholding of the Spitfire IX's for the moment. Air Marshal Douglas was of the opinion that if operations did not increase to any degree he would be able to maintain his 59 Spitfire squadrons with the ration of 225 aircraft without difficulty. Moreover he felt that there was no necessity for the re-equipment of five of these squadrons with Typhoons for transfer to the Army Air Support Group. He suggested that instead of the proposed re-equipment five new squadrons should be formed with Typhoons for this purpose. On the question of the retention of Spitfire IX's for building up a possible invasion force Air Marshal Douglas once more took issue with the Air Staff. He stated that it was vitally important to get as many squadrons as possible re-equipped with this machine so as to improve efficiency in operations and to give a much needed fillip to the pilots of No. 11 Group. He asserted that in the long run the result would be fewer casualties and a lower expenditure of Spitfires. The Spitfire IX should not be put into the front line until the winter months when the slackening off in activity would enable the required reserve to be built up.

Only one week elapsed before Air Marshal Douglas was informed that the number of squadrons required for the North Africa landings (Torch) would be 19 and they were to be sent abroad by November. At the same time he learned that his three Eagle squadrons manned by American volunteers were to be transferred to the U.S.A.A.F.(2) Moreover, it seemed that his strength would be further depleted by the formation of an Army Air Support Group within the Army Co-operation Command to which he was requested to transfer his two Whirlwind bomber squadrons. As the new Group was to possess ten squadrons of fighters it meant that the Command's sources of supply would be taxed to the utmost. He did not object to the forming of these new squadrons providing that they remained in Fighter Command. It seemed unlikely that Continental operations would be taking place in the near future and it seemed to be the best policy to avoid a situation where these squadrons would suffer from lack of action by giving them in Fighter Command intensive training in the Army air support role and, in addition, a modicum of training in fighter duties which would fit them to reinforce the orthodox fighter squadrons should an emergency arise. If this plan was unacceptable to the Air Staff he requested that he should be allowed to keep his two

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- (1) The front line strength of Fighter Command in the last week of August was 64 Spitfire squadrons, including 56 Spitfire VB and VC, 6 Typhoon and 10 Hurricane squadrons.
(2) Nos. 71, 121 and 133 Squadrons.

SECRET

Fighter Cmd.
Trg. Staff
Inst. No.
35742,
Dec. 1942.

FC/S.26673,
22 Aug. 1942.

Ibid.,
2 Sept. 1942.

W.S.D.
Outgoing
Flimsies Fold.
No. 17,
3 Sept. 1942.

Whirlwind squadrons and that fresh ones should be formed to fulfil the demands of the air support role. His suggestions were adopted and the Army Co-operation squadrons were set to learn fighter tactics while certain fighter squadrons were to train in the work of close support.

The tension between Air Marshal Douglas and his superiors increased at the end of August over the reinforcement of the Middle East Air Force with Spitfire IX's. As already seen he was anxious to get as many as possible of these aircraft into No. 11 Group whereas the Middle East was getting the tropicalised Spitfire VIII which seemed to him a much more suitable aircraft than the untropicalised Spitfire IX. The Vice Chief of Air Staff replied on 2 September with some heat, pointing out that Fighter Command should not insist on having all the best performance aircraft when 'the principal burden is being carried by another Command'. The Commander-in-Chief replied in the same vein on the following day, recalling that the Vice Chief of Air Staff had said on another occasion that 'Fighter Command is not fighting whereas the Middle East Command is' and contended that Fighter Command was up against the pick of the German fighter force both in regard to aircraft and pilots. In no other theatre were there any F.W.190's to be fought. While not insisting on Fighter Command having the sole right to the production of the best aircraft he considered that at least his Command should have the first call upon them and he supported his claim with the following examples:-

- (a) the casualties that Fighter Command inflicted upon the enemy month by month;
- (b) the losses that Fighter Command suffered daily in pilots;
- (c) the landing at Dieppe during which Fighter Command acquitted itself with distinction.

He concluded: 'As I have said before, I think you take Fighter Command too much for granted.'

These exchanges were symptomatic of the larger issue at stake and the pull between the long term and the short term plans of how a war would be won. Air Marshal Douglas did not maintain that the ultimate return to the Continent should be the reason for the total neglect of the campaigns in the Middle East, nor did the Air Staff consider that the war could be won by concentrating entirely on the Middle East theatre. Both realised that the Middle East campaign had to be supported and at the same time that the build up for Continental operations had to be maintained, but where the division between the immediate needs of the Middle East and the ultimate needs of Fighter Command as part of the liberating forces lay occasioned the friction that emerged from the correspondence between the Commander-in-Chief Fighter Command and the Air Staff.

In September the issue of Spitfire V's to Fighter Command was restricted to 200 aircraft in September, 180 in October, 160 in November and 160 in December. This proved in the event, because of the reduction in the scale of air operations with the onset of the winter months, sufficient for the needs of Fighter Command, especially when it was found that the Americans were not drawing from the ration of 40 aircraft allocated to them. The year closed with the Air Staff

A.M. File
C.S. 2110/
Pt. II,
Encl. 57A,
5 Sept. 1942.

W.S.D./S.19,
Encl. 27A,
2 Nov. 1942.

concentrating on the task of winning the battles in the Mediterranean area and the diversion of almost the whole of the Spitfire production to the Middle East resulted in Fighter Command being unable to maintain the Spitfire IX squadrons with these aircraft. (1) There was no alternative but to replace Spitfire IX's with Spitfire V's when replacements were necessary but the Commander-in-Chief Fighter Command impressed upon the Air Officer Commanding No. 11 Group that this state of affairs would only be of a temporary nature and that the squadrons would be re-equipped with the Spitfire IX in the spring of 1943.

W.S.D.
Outgoing Flimsies
Fold, No. 18,
25 Nov. 1942.

The gravity of the problem decreased somewhat after the advance from El Alamein and the successful landing in North Africa but before leaving Fighter Command to take up his appointment as Air Officer Commanding-in-Chief R.A.F. Middle East, Air Marshal Douglas put before the Assistant Chief of Air Staff his views on what would be needed to make Fighter Command a well balanced operational force in 1943. 'I have little doubt that the Spitfire V will be found quite inadequate as regards performance both at home and overseas by the spring of next year. I suggest that every effort should be made to eliminate the Spitfire V from the production line by April 1943 and that the whole of the Spitfire production should then be devoted to Spitfires VII, VIII and IX, particularly the latter. I consider that the minimum requirements for Fighter Command are that all squadrons in No. 11 Group and in the Middle Wallop sector of No. 10 Group should be equipped with the Spitfire IX before 1 April 1943, i.e. a total of 25 Spitfire IX squadrons'.

Fighter Cmd. O.R.B.,
26 Nov. 1942.
A.H.B./IIM/A2/3.

His successor, Air Marshal Sir Trafford Leigh-Mallory found himself much more in sympathy with the Air Staff's point of view and on 6 December agreed to the transfer of one of his best intruder squadrons (No. 23 Squadron) to Malta with the provision that it should not be struck off the strength of Fighter Command. (2)

A.H.B./IIM/24/187.

Summary

It has been seen that supplies to the Middle East took first priority but those in command in that theatre of operations could have been pardoned if they had pointed out that the crucial period had been during the time before the break through at El Alamein and that the campaign could have been lost by following a policy of too little and too late. As the victory was won by the Allied forces the pros and cons of the situation have become largely academic but in fairness to Air Marshal Douglas the point must be made that his conception of how the war would be won in the European field was proved to be accurate and that the coup de grace would have to be administered from this country. To accomplish this it was necessary to have complete air superiority over western Europe and as far as could be seen at the time this was actually in process of being achieved, while at the same time the production of war material was able to go forward without

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- (1) From June to December 1942, 238 Spitfires and 555 Hurricanes were received in Egypt by the R.A.F. through Takoradi and 181 Spitfires were despatched by sea from the U.K. of which 157 went to Malta (A.H.B./ID3/676(c)).
 - (2) This squadron returned to Great Britain on the advent of Operation Overlord (See this Narrative Part IV, Chap. 16, Page 316).

interruption from enemy air attack. There can be little doubt of the desire of the Commander-in-Chief Fighter Command to assist the Middle East force as far as possible with aircraft and pilots but until the mounting of Operation Torch and the relegation of the return to the Continent to the second category for the time being, he was faced with the possibility of having to provide air cover for large scale Continental operations which, if undertaken, would have required the maximum force at his disposal and the best of his aircraft to counter the superiority that the German aircraft possessed in the technical sphere. The inability of the Chiefs of Staff to state the precise time when it was expected to make the bid for victory across the Channel left Air Marshal Douglas on the horns of a dilemma, confronted with demands for aircraft from all sides which he could not meet without seriously undermining the strength of his own command. The tendency to regard Fighter Command as a maid-of-all-work and as an inexhaustible reservoir of pilots and aircraft was strong and it is only possible now with post-war wisdom to see that the Middle East battles could have been lost for the lack of modern aircraft and first-rate pilots; at the same time the possessive attitude of Fighter Command is understandable when viewed against the constant shifting of policy and the need to meet each situation as it arose on the part of the Air Staff.

The Demand for Fighter Pilots

The shortage of aircrew resembled in many ways the deficiencies in aircraft. On 20 October 1941 the Vice Chief of Air Staff reported to the Chief of Air Staff that the R.A.F. in the Middle East was 150 pilots below establishment. A week later Air Marshal Tedder asked that 30 experienced pilots be sent out immediately to stiffen the Air Force in the Western Desert. These demands were impelled by preparations for the new offensive in the desert - Operation Crusader. From then onwards requests for aircrew came frequently. Constant calls from overseas seemed to be unreasonable to the Commander-in-Chief Fighter Command and drew protests from him. It was not so much a question of quantity, however, but of quality. At the beginning of 1942 the pilot position in Fighter Command from the quantitative point of view was quite satisfactory, indeed a plethora of pilots seemed likely to become an embarrassment. Fighter Command was overstocked with pilots who were coming straight from O.T.U.s. in such numbers that the Commander-in-Chief was forced to suggest to the Air Staff that a large portion of them would have to be posted overseas. The day squadrons averaged 28 pilots each, a figure that could not greatly be exceeded without cutting down on the amount of flying that each man undertook and without which efficiency would be impaired. The maximum that a squadron could absorb without losing its efficiency was 30 pilots. The real shortage was of experienced pilots and it was over this question that the Commander-in-Chief was particularly susceptible. He stated in January that the overseas theatres would have to take pilots straight from the O.T.U.s. as it was impossible to transfer from the Command any more of his experienced personnel. The point of view put forward by the overseas theatres was that their losses in battle had to be replaced quickly by men who could go straight on to operational flying and that they had no time to spare for training and nursing green pilots.

On 26 January Air Marshal Douglas wrote to the Air Member for Personnel, Air Marshal Babington, complaining that he was sending specialists to the Middle East for a temporary period

A.H.B./ID/5/5(B).

W.S.D.
Outgoing Flimsies
Fold. Nos. 11, 18,
21, Jan. 1942.

Ibid.,
26 Jan. 1942.

Ibid.,
Fold. No. 12,
23 Mar. 1942.

and that they were not being returned to him, the result being that he was loth to send his experts out to the Middle East because it meant that they were virtually lost to the command. Watching the exodus of his seasoned pilots abroad the Commander-in-Chief Fighter Command became anxious. In March he sent a personal signal to the Air Officer Commanding-in-Chief Middle East saying: 'We are sending you 200 fighter pilots a month during March and April. While I am most anxious to help you in every possible way, I should like assurance that these large numbers are really required in your command since I hear rumours of fighter pilots kicking their heels for months at a time with no aircraft to fly.' Air Marshal Tedder's rejoinder was prompt and emphatic; that thanks to pilots sent to him by Fighter Command he had been able to maintain a reserve of pilots that had proved invaluable to him.

A.H.B./ID8/400A
(Pt. I).

With the air struggle over Malta reaching a critical phase, the Chief of Air Staff wrote to Air Marshal Douglas on 29 March that as new pilots were thrown straight into action on arrival in Malta, it was imperative that they should be experienced to make up for the disadvantage of not having previously worked together as a team. But with the opening of the large scale fighter offensive across the Channel in March the need for experienced pilots in the Command was underlined and the demands from overseas theatres became the more unwelcome. To make up for the superiority of the F.W.190 it was essential that only the best pilots should be employed to match skill against technical superiority. With the possibility of large-scale operations being carried on throughout the summer the drain on his experienced pilots became the second of Air Marshal Douglas's major problems. On 2 April he pointed out to the Air Staff that in March nearly 300 operational pilots had been sent overseas and approximately 180 non-operational pilots. The output of the O.T.U.s. was in the region of 270 pilots per month thus causing considerable expenditure of Fighter Command reserves. He requested that this demand should be reduced in order that some reserves might be built up.

F.C., O.R.B.,
2 April 1942.
A.H.B./IIM/A2/3.

W.S.D./S.72,
6 May 1942.

Ibid.,
12 May 1942.

Ibid.,
14 May 1942.

On 6 May it was brought to the notice of Air Marshal Douglas by a member of Fighter Command Operational Research Section that Malta was stocked up with pilots who were without aircraft to fly. It was estimated that there were 150 Spitfire pilots at Malta to a wasting strength of 60 aircraft. Air Marshal Douglas immediately put in a request to the Chief of Air Staff that 75 of these pilots should be flown back to Great Britain. Within a week the information was forthcoming that all but 86 of these pilots had been sent on to the Middle East. The possibility of getting them back to Fighter Command was thus very faint. But in view of these transfers the quota for the Middle East was reduced for the time being from 100 to 50 per month. In addition, Fighter Command requested the Air Ministry that instructions should be issued that in future all surplus pilots in Malta were to be returned to Great Britain and not sent on to the Middle East. Unless this was done it seemed that experienced Spitfire pilots would continue to be despatched indefinitely from Malta to the Middle East. As it was the Middle East was receiving 55 experienced pilots each month from Fighter Command and 45 pilots from the O.T.U.s. Formerly the Middle East received 90 per cent of pilots from the O.T.U.s. and 10 per cent of experienced personnel. The Chief of Air Staff replied on 19 May that he had instructed the Air Officer Commanding Malta to return all pilots surplus to requirements and that they were

to be returned in the Hudsons then operating on a shuttle service between Malta and Gibraltar. A further signal was sent on 24 May pointing out that Malta had nearly 200 Spitfire pilots and that they must return surplus aircrew. The Chief of Air Staff further instructed that reinforcements from Fighter Command to the Middle East via Takoradi must take into account pilots from Fighter Command flown into Malta in carrier operations.

Meanwhile, Air Marshal Douglas on 21 May protested that in the previous twelve months 2,000 fighter pilots had been sent to the Middle East and Malta including the pilots of 17 complete squadrons which had gone to the Middle East. This represented nearly 100 per cent of Fighter Command's operational strength. The Air Member for Personnel pointed out, however, that many of this number were sent to the Far East and India while some 500 were sent direct from Fighter O.T.Us. and could not be regarded as an actual drain on Fighter Command squadrons. According to the latest information from the Middle East the pilot situation on 15 May was as follows:-

| | |
|---------------|--------------------------------------------------------|
| Establishment | 903 (including 94 pilots for squadrons not yet formed) |
| Strength | 1,048 |
| Surplus | 145 |
| En route | 250 |

There was, therefore, a surplus of 395 assuming the safe arrival of those en route, and Air Marshal Babington did not consider that the pilot situation in the Middle East was so serious in view of the fact that Fighter Command had a surplus of approximately 400 pilots. By then the Air Officer Commanding-in-Chief Middle East had stated that no fighter pilots would be required in June and the position would be reviewed in the following month.

Complaints from the Middle East on Quality of Reinforcements from Fighter Command

Co-incidental with the question of the supply of pilots to overseas theatres was the problem of the quality of the pilots being sent. As early as 14 February 1942 Fighter Command had received complaints that the pilots sent overseas had not been of the best quality and undoubtedly there was good cause for complaint. In this respect the Commander-in-Chief Fighter Command was up against the personal element which, although in theory should not have been allowed to operate, in fact, could not be eradicated. Squadron Commanders were naturally loth to lose the best men in their units and the numbers involved were too great for the Commander-in-Chief personally to examine all names that were submitted for overseas posting. The result was that inevitably with the sprinkling of first-class men there was a large proportion of second-raters. Indeed, the suggestion was made from the Middle East that Fighter Command had taken the opportunity to discard all the misfits that were not wanted in the Command. In a letter to his Group Commanders on 19 February Air Marshal Douglas impressed upon them the necessity of examining all pilots that were down for overseas posting and ensuring that the Middle East allegations that they were receiving the throw-outs of the Command did not indeed take place. At the same time Air Marshal Douglas did

W.S.D.
Outgoing Flimsies
Fold. No. 14,
21 May 1942.

A.H.B./1D/5/5(C).

W.S.D./S.87,
Encl. 1A.

Ibid.,
Encl. 2A.

Ibid.,
Encl. 3A.

not allow the Middle East charge to go unchallenged and made a counter-charge implying that the overseas theatres did not make the best of some very good material that had been sent out to them and stressed the point that the demands from all sides for first-class fighter pilots was such as to defy satisfaction. He asked that it should be impressed upon the Middle East that they would have to fight their battles with the average type of pilot that was supplied to Fighter Command and that a supply of super men could not be expected. This temporary straining of inter-Command relationships was smoothed over for a while by the blame being attached to the methods by which the pilots had been transferred to the Near and Far East.

Ibid.,
Encl. 5A.

Ibid.,
Encl. 7B.

Peace was restored but temporarily, however. On 25 April Air Marshal Tedder sent a signal to the Chief of Air Staff complaining that the quality of the recent Spitfire pilots was very low. In No. 601 Squadron, which had recently arrived, seven out of the twenty-three pilots had had no operational experience at all and a further four had had less than 25 hours experience on Spitfires. In No. 603 Squadron, twelve out of the twenty-three pilots had never fired their guns. The Vice Chief of Air Staff took up the matter with the Commander-in-Chief Fighter Command pointing out that the squadrons that had been sent to the Middle East were not all that could have been desired. No. 601 Squadron had not been operational since October 1941 and did not equip with Spitfires until March 1942; this left the Squadron Commander with very little time to give his pilots operational experience on this type of aircraft. No. 603 Squadron had been out of the line since December 1941 and had subsequently been milked of its best pilots with the result that when it was called upon for overseas service it had only five pilots with operational experience. Air Marshal Douglas replied that he was in no way surprised at the limitations of the pilots sent overseas as they merely reflected the state to which Fighter Command had fallen due to the expenditure of its experienced personnel. The remedy was to impress upon the Middle East that the tour expired personnel which they seemed unwilling to repatriate should be sent back to improve the standard of training and operational skill in the squadrons.⁽¹⁾ Notwithstanding the spirited nature of his replies Air Marshal Douglas took a personal interest in the pilots sent out after this and did his best to comply with the demands from the Middle East and the instructions of the Air Staff.

Ibid.,
Encl. 7A.

Ibid.,
Encl. 8A.

The controversy did not end there and the next incident was a complaint from Malta on 26 May of the quality of pilots that were being sent to them, stressing the point that the air battles were such that they had no time to devote to the

Ibid.,
Encl. 9B.

(1) The A.O.C.-in-C. Middle East took the view that pilots in Malta should complete an operational tour and not expect to be sent back after a brief tour of duty there, which cut right across Fighter Command's views. During the hard air fighting over Malta at this time, the operational tour in Malta was restricted to a period ranging between three and six months according to the intensity of the battle and on the strength of this the A.O.C.-in-C. Fighter Command was promised that pilots should be returned to him, it being presumed that most of them had already almost completed their operational tour in Fighter Command. This order was, however, rescinded on 24 August 1942. (A.H.B./IDH/400(A)).

A.H.B./1115/101/4(C)
Pt. II,
Encl. 100A.

training of pilots and that trained and experienced pilots were essential. Air Marshal Douglas retorted that it was 'uneconomical to keep on piling experienced operational pilots into Malta over and above the number required to operate the available aircraft, particularly in view of the shortage of experienced pilots in this Command at the present time owing to the constant drain of these pilots during the past year to the Middle East and Malta.' On 24 July, upon further complaints from the Air Officer Commanding Malta about the standard of training, instructions were issued by the Air Staff concerning the future contingents of Spitfire pilots to Malta. They should be capable of flying off an aircraft carrier and completing the subsequent flight; further, that because of the difficulties in carrying out training at Malta and the shortage of petrol, fifty per cent of pilots should have had operational flying experience in front line squadrons; their number was also to include six flight commanders or capable formation leaders. Later, two experienced wing commanders were sent out on request. At the same time Air Vice-Marshal Park, the new Air Officer Commanding Malta was informed demi-officially that he could not expect to go on receiving first-class pilots, and he was urged to do everything possible to prevent the situation, which by then had become much more favourable, from deteriorating again. The Air Staff was worried at the amount of discord that had already been created between home and overseas commands.

W.S.D./S.87,
Encl. 13A.

Ibid.,
Encls. 14A-15A.

Nevertheless, complaints were still received at home. On 12 August the Secretary of State for Air himself intervened personally, after a letter received from Lord Cranborne, Secretary of State for the Colonies, who had just arrived back from a visit to Malta, and informed Fighter Command that although he was quite aware of the strain which the supply of experienced pilots was putting upon the Command, there could be no equivocation in this respect and that at all costs Malta must be reinforced with fully qualified aircrew. The Commander-in-Chief Fighter Command had a riposte ready with a special signal, which he had received from Malta, via the Chief of Air Staff, on 13 August thanking him for 'the twelve promising young formation leaders, who were in time for a grand party.'

A.M. File
C.S. 14187.

At the same time further representations by the Commander-in-Chief Bomber Command were made about the same topic. Action was imperative if the situation was to be resolved harmoniously and with fairness to all concerned. Small concessions had so far failed to bring about any decisive settlement. The Air Staff therefore chose Group Captain Pearce, Deputy Director of Postings, to go to the Middle East and to investigate thoroughly on the spot the position both in regard to aircraft and pilots. At this juncture Rommel's forward columns had thrust towards Alam el Halfa where a significant engagement in which the R.A.F. played an important part was fought, and shortly afterwards the preparations for the battle of El Alamein got under way. It was therefore probably a relief to all sides when Group Captain Pearce reported to the Air Staff that there was no evidence to show that the Middle East Command had sought or retained more aircraft or pilots than were needed for the vital part it had to play in the great land engagements it was called upon to support.

SECRET

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A.H.B./IIG/101/4(C),
Encl. 103A.

A.D.I.(K.) Rapt.
No. 375/1945,
Para. 235.

As far as Malta was concerned, by the end of August the situation was far more favourable, local air superiority had been regained and even small offensive operations were being carried out (the enemy, too, had been experiencing a lack of fighter reinforcements).

Summary

The pros and cons of the question are weighty on both sides and the difficulties of Fighter Command were almost identical in this respect with those encountered over the supply of aircraft to the overseas theatres. The shortage was not of pilots but of pilots that could take part without training in the battles that were in process of being fought. If Fighter Command had agreed to strip itself of all the operational pilots that it possessed there could have been little chance of maintaining the offensive over Western Europe and no chance at all of providing the covering for a continental operation with pilots straight from the O.T.U.s. who would be up against an enemy superior in the technical field and probably with more operational experience. As with the supply of aircraft it was a struggle between an immediate engagement and an ultimate aim but complicated with the additional factor of human nature which saw in the Middle East an excellent dumping ground for the undesirables and the square pegs.

Criticism of parochialism and petty power politics comes easy but the real disagreement was over differing conceptions of how the enemy would ultimately be overcome; whether a thousand sorties flown immediately in the Middle East were more valuable than one hundred thousand in the future over north-west Europe. The balance between the two had to be struck and by good fortune this balance was found within the powers of the various Commands. The machinery creaked a little at the necessity to straddle the requirements of several theatres of war but was of sufficiently good quality to stand the strain.

Demands from Russia

While in no way approaching the Middle East and the Far East the question of supplies to Russia gave Fighter Command food for thought. Not unnaturally the calls from British Forces received attention before those of the hard-pressed Soviet Union yet at the same time with the restriction, temporarily, of supplies from the United States of America it was expedient from the political as well as from the military angle to aid the Russians to the greatest possible extent. This was by no means an easy matter as the demands from the Russians were frequently out of all proportion to reality and, although the situation was handled with the utmost delicacy, at times there appeared a strong undercurrent of hostility which was reflected in the correspondence between the Home Government and those engaged in negotiations with the Russian authorities.(1)

The first contact of British personnel with the Russians took place in 1941 when No. 151 Wing was sent to Russia to supervise the erection of Hurricane aircraft and the training

(1) For a well written and informative account of the co-operation between the Western powers and the Soviet Union, see 'Anglo-Soviet Air Co-operation in the Second World War' (A.H.B./IIG/1/72).

of the Russian pilots who would be flying them. By the time that the unit withdrew in November 1941, after a stay of about three months, relations with the Russians were extremely cordial and it seemed that there was a good possibility that these relations would be the prelude to close co-operation between the two countries. The subsequent effort made by this country and America is not within the limits of the present volume but is worthy of a brief outline in so far as the demands for supplies of aircraft affected the strength of Fighter Command. In comparison with the inter-Command squabbles which characterised the question of supplies to the Middle East and Malta the problems attendant upon the supply of aircraft to Russia were dealt with on a much higher plane, the result being that the demands were put to Fighter Command and the Supply Ministries without the opportunity being provided to question the wisdom of the course of action being adopted.

(i) Supply of Hurricanes and Spitfires to Russia:
October 1941-June 1942

The protocol finally signed on 1 October 1941 included an agreement to supply the Russians with 400 aircraft per month from 1 October 1941 to 30 June 1942. The total was to be made up of 200 fighters monthly from Great Britain and 100 fighters and 100 bombers from the United States. One safeguard included in the protocol was that if the war situation should alter the necessary adjustments could be made. The Russians were informed that in the earlier months the supply would consist almost entirely of Hurricanes with a few Spitfires which would increase possibly to 100 per month by March 1942. As far as the R.A.F. was concerned this commitment amounted to supplying 200 fighters per month together with ammunition, spares and equipment. The majority would be Hurricanes at first but would include 20 Spitfires each month as soon as possible building up to a target of 100 per month. The technical personnel to assist in the erection and maintenance of the aircraft would be supplied by the Royal Air Force. This was the part that was successfully dealt with by No. 151 Wing in Russia and with the withdrawal of this unit it seemed likely that a similar type of co-operation would take place in 1942. One further operation in the sphere of co-operation took place in 1942 (Operation Swallow) but it was obvious that the policy of the Russians to keep the Allies at more than arm's length was to be applied vigorously. The Mission in Moscow was given the minimum of facilities and it was soon obvious that the Russians wanted the Allied help to be limited to supplies of aircraft and to a Second Front in Western Europe, their panacea for all the ills of the war and the only way in which the Western powers could give the right amount of assistance to the Soviet Union. Throughout April and May the burden of supplying the Russians with the promised aircraft fell largely upon Great Britain. The commitment for April was 192 Hurricane Mark IIA or IIB and 8 Airacobras and for May 200 Airacobras or Hurricane IIA's or IIB's. As only about 25 to 30 Airacobras seemed likely to be available the number would then be made up with Hurricanes.

(ii) Proposal to Form Air Force in Southern Russia

Notwithstanding the frigid amity that existed, the Prime Minister, in March 1942, put forward the proposal to aid the Russian effort by the establishment of an Air Force in the south of Russia which, in co-operation with the

A.H.B./ID/12/309,
10 Oct. 1941.

A.H.B./ID/12/309,
17 Mar. 1942.

Americans, would strengthen the Russian air power generally, guard the oil reserves of Persia, establish the feeling of mutual effort in a common struggle as well as getting to grips with the G.A.F. in this area. The force envisaged was eight short range fighter squadrons, one long range fighter squadron, three light bomber squadrons, two medium bomber squadrons, one U.S. heavy bombardment group and, possibly later, one general reconnaissance squadron. The Chief of Air Staff was much in favour of this proposal and in a letter to the Prime Minister expressed his views on the subject. If this force should be sent he wanted it to be a highly trained and efficient force and not the scrapings of the Middle East. He proposed to take the personnel of six Spitfire squadrons from Fighter Command (160 flying personnel and 700 ground staff) and ship them to Basra. He was reluctant to equip them with Spitfires as Fighter Command itself was living on its Spitfire spares and it was thought unlikely that the Spitfire would stand up to the conditions that would be encountered in Russia. (Subsequent information received from the British erection unit in Russia would seem to indicate that the hazards to the comparatively fragile construction of Spitfires were the weather and the natural conditions together with the Russians' unique methods of 'ham fisted' maintenance). The Chief of Air Staff proposed to equip the force with either Kittyhawks or Hurricanes supplied by the Middle East, to be compensated by the establishment of additional Spitfires to the Middle East in April and May. He was afraid, however, that any reduction in the strength of the Middle East would be viewed with extreme disfavour by the Chiefs of Staff. At first the suggestion that the Allies should maintain an Air Force in south Russia had been received by Marshal Stalin with pleasure as, at this time, there seemed a very distinct possibility that the Germans would break through on the southern front, but this initial enthusiasm soon cooled and the Mission in Moscow signalled the Air Ministry that supplies of aircraft should be restricted to the July, August and September deliveries. Later it was found that the Russians were eager to avoid any discussion of the topic and endeavoured to change the agreement to one for the supply of aircraft alone.

A.H.B./IIH/2.

Ibid.,
19 Mar. 1942.

(iii) Transfer of Free French Squadron to Russia

The friction that existed between the Allied representatives and the Russian authorities in no way diminished with the progress of the year. The Russians were pressing for a large increase in the amount of spares and were unwilling or unable to understand that the British Forces were themselves hard pressed for the same spares. They were most profligate in the use of spare parts and refused to present wastage figures and would not allow the Mission to visit operational and maintenance establishments.

The problem of the relationship with the Russians was brought nearer home to Fighter Command at the beginning of May 1942 when the question of a French request to transfer a Free French squadron to Russia arose. The Chief of Air Staff endeavoured to side-track the request as Air Marshal Douglas was so short of experienced personnel and the French pilots were among the best of his crews and he felt that they would be better employed in the fighter offensive over Europe than flying with the Russians. The Chief of Air Staff put the matter before the Secretary of State for Air but the request for the transfer had been in for a considerable time and there was little desire to antagonise the Free French at this time.

A.H.B./IIH/165/4,
5 May 1942.

A compromise was reached by which the French reduced the number of pilots that would be required for the establishment of the unit.

(iv) Despatch of Spitfires to Russia via Basra

A.H.B./ID/12/309,
15 Sept. 1942.

Ibid.,
17 Oct. 1942.

By September the Russians were beginning to complain that the Hurricane was out of date and the Mission in Moscow was expecting that there would soon be demands for a more modern fighter. In October the Director-General of Organisation decided that 150 non-tropicalised Spitfires were to be sent to Russia by way of Basra where they would be erected and then Russian pilots would fly them to Russia. By 3 November, 49 of these aircraft had been despatched and it was intended that the remainder would be under way by the end of the month.

On 11 October, M. Maisky, Russian Ambassador in London, had raised the question whether the Air Ministry was prepared to make any Hurricanes available for despatch via the Persian Gulf and whether it would be possible to fly Hurricanes from the Shetlands to landing grounds in the north of Russia. At the twenty-first meeting of the Allied Supplies Executive, the Under Secretary of State for Air, Captain Balfour, explained that the unfulfilled commitment of Great Britain up to the end of December would amount to 949 machines including the 400 due for November and December. Of these, 429 Airacobras were due to be delivered direct from the United States, leaving a balance of 520 for which Great Britain was responsible. The Air Ministry was prepared to make 250 Hurricanes available for despatch via Basra if the necessary shipping could be found by the Ministry of War Transport. To fly the aircraft across Africa was impossible without blocking the supply route to the Middle East. The Ministry of War Transport stated that the shipping for the transport of the aircraft to the Persian Gulf was just not available but expressed the hope that ultimately the supply of aircraft would reach Russia by Alaska.

Ibid.,
3 Nov. 1942.

To forestall possible complaints from the Middle East the Chief of Air Staff sent a pressing telegram to Air Marshal Tedder explaining that the Government had agreed to the despatch of 150 Spitfires via the Persian Gulf to Russia when the relationship between the two countries had become strained and intimated that they had been sent rather as a sop to the Russians. He asked for the co-operation of the Middle East to see that they were despatched to the Russians as soon as possible. They were not tropicalised Spitfires and would not affect therefore the supplies of Spitfires that he himself required.

Ibid.,
18 Nov. 1942.

Summary

By the end of the year there seemed to be little fervour remaining for co-operation with the Russians. Supplies of aircraft continued to be sent, although with the increase in the production of the American factories, the strain on the supply of aircraft from Great Britain became progressively less. At no time during the following years did it seem likely that any measure of true co-operation between Russia and the Western powers would be achieved, the Russians maintaining a constant frigidity which was to degenerate in the post-war era into the period of the 'cold war'.

The effect upon Fighter Command of the demands for the supply of aircraft to Russia is not as obvious as the demands received from the Middle East but undoubtedly the task of Fighter Command would have been made much easier had not the source of supply been already tapped. At the same time, the demand for fighter aircraft for the role of protecting the northern convoys which were delivering the weapons of war to Russia at heavy cost was also a further drain upon the supplies of fighters.⁽¹⁾ The result was that although the supply of aircraft for Russia was dealt with at the political level rather than at the Command level it undoubtedly tended to aggravate the struggle between Fighter Command and the overseas commands.

Effect of a High Accident Rate on Fighter Command

A growing accident rate in the Command added to the embarrassment it was suffering through the shortages of aircraft and pilots. The main causes of accidents were a low standard of training among the pilots coming into the Command, a poor standard of flying discipline among them, and a lack of experienced squadron and flight commanders who could exercise strict authority and see that flying discipline was at all times insisted upon. This state of affairs had caused the Prime Minister concern and had long been the subject of study and discussion between the Commander-in-Chief and the Chief of Air Staff. Slowly, step by step, various measures were adopted which in the end succeeded in reducing the accident rate to more acceptable proportions.

In the first place, Advanced Flying Units were set up to enable pilots to acquire a profounder technical knowledge of their business than hitherto, and the amount of flying carried out at the Flying Training Schools was increased. These were steps in the right direction but there was still room for improvement at the Fighter Operational Training Units. Here the difficulty arose in a shortage of suitable instructors. The majority of instructors at the Operational Training Units were pilots with experience in operational flying, but more instructors were required with experience of the Central Flying School methods who could eradicate the faults the pupils developed when they converted to Service type machines. Between October 1941 and January 1942 alone, Fighter Command lost 148 experienced operational pilots to Flying Training Command, receiving about a dozen instructors in exchange, and though the Air Member for Training had agreed that at least half the ex-operational instructors should undergo training at the Central Flying School, only 13 had in fact been trained so far, against the 22 a month who were necessary to meet requirements.

Casualties had to be taken into account, while a large number of fully fledged section, flight and squadron commanders had gone overseas, and as this process was bound to continue for some time, it was not easy to find a means of filling the gaps and acquiring fresh instructors. 'I am not sure if we have not reached the bottom of the well' wrote the Commander-in-Chief, Fighter Command, to the Chief of Air Staff,

(1) These fighters were to be released from merchant ships. For a full account of the P.Q. convoys and the supply of war material to Russia, see R.A.F. Narrative: 'The R.A.F. in Maritime War', Vol. 3.

W.S.D./S.59,
30 Jan. 1942.

Ibid.

indicating at the same time that he was busy striving to devise means for reducing the wastage of aircraft and pilots through bad flying accidents.

W.S.D.
Outgoing
Flimsies
Fold. No. 11,
24 Feb. 1942.

In February he addressed a memorandum to his Group Commanders quoting statistics which showed that little or no improvement in the accident rate had taken place. The point was that all should concentrate upon the reduction of 'avoidable' accidents, such as occurred through faulty cockpit drill or through errors committed while taxiing. He emphasised that our commitments for supplying the Middle East, the Far East and Russia, in addition to the need for maintaining an adequate force for the defence of this country made it imperative that unnecessary aircraft wastage should be prevented at all costs. He instructed that there should be a thorough investigation into all accidents so as to determine their cause, and that particular attention should be devoted to an improvement in flying discipline and in the flying control system at each station.

W.S.D./S.59,
5 March 1942.

No miracles could be expected and the high rate of accidents persisted in defiance of all attempts to cut them down. A few weeks later, the Chief of the Air Staff sent for the Commander-in-Chief. Once more it was to discuss the accident rate in Fighter Command and to intensify still further the efforts to check it. The fact was that the Prime Minister remained perturbed by the statistics he had scrutinised and had requested the Chief of the Air Staff to make even more profound investigations into their causes.

Ibid.

The Commander-in-Chief summarised his reasons for the large number of accidents and at the same time conducted a lively defence on behalf of his fighter pilots. He opposed any restriction of flying hours. 'I have' he said, 'some 4,000 pilots flying some 2,500 aircraft. The great majority of them are high-spirited young men who are quite inexperienced as aviators. (As you know, a large proportion of my experienced pilots have been sent overseas or have left the Command for other reasons, for instance joining Flying Training Command.) These young men can only become experienced operational pilots by flying. It is, in my opinion, of the utmost importance that Fighter Command should press on intensively with training in the air, so as to extend their experience and enhance the standard of skill of fighter pilots individually and of fighter squadrons as units'.

There was no doubt in Air Marshal Douglas's mind that disproportionate casualties would be suffered by his command in operations against the enemy if more training was not done. He felt also that the Command would soon become incapable of supplying pilots to the overseas theatres of war. Moreover, he foresaw a grievous setback to morale if pilots had to sit about on airfields with nothing to do. He was convinced that all this would lead to an increase in accidents rather than to a decrease.

What were the other reasons for accidents? They were as follows:-

- (i) the light construction of fighter aircraft;
- (ii) an increasing amount of night flying by day fighters;

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(iii) the need for operating in winter conditions when airfield surfaces were frequently treacherous and badly affected;

(iv) the smallness of airfields. In February, 360 accidents (4.1 per cent), 147 occurred on landing, and a further 18 on taking off. 'The biggest single step which the Prime Minister could take to reduce our accident rate' said the Commander-in-Chief, 'would be to tell the departments concerned to allot to the Air Ministry a larger supply of materials and a much larger amount of labour, sufficient in fact to enable us to extend our runways up to 2,000 yards (where this is possible) within the next three months, or at the very latest before the next winter sets in.'

(v) the difficulties of filling gaps with men of adequate experience which were created by the despatch of squadron and flight commanders overseas. This process had to continue. There was no remedy for it and it had to be accepted.

'You cannot make an omelette without breaking eggs, and you cannot make a Fighter Command without breaking some aircraft' concluded the Commander-in-Chief, 'but I do hope that neither the Prime Minister nor yourself think that we take all this quite light-heartedly, and are doing nothing to make things better.'

C.-in-C. F.C.
Outgoing
Flimsies
Fold. No. 13,
14 April 1942.

Up to April an analysis of accidents for six months revealed that of a total of 344 mishaps, the majority were related to airfield conditions. This is clearly shown in the table given below:

136 or 39.5 per cent were taxiing accidents, indicating the necessity for wider perimeter tracks.

41 or 11.9 per cent were due to aircraft swinging off runways on landing.

85 or 24.2 per cent were due to aircraft overshooting.

29 or 8.4 per cent were due to undershooting.

43 or 12.5 per cent were due to bad surfaces.

The case for the improvement in airfields had been made, and everywhere work was put in hand to effect alterations. By November this weakness had largely been eradicated. Together with measures to improve and tidy up the flying control system and to improve the standards of radar and maintenance, both on stations and at radar units, the achievement of better conditions at airfields gradually helped Fighter Command to master the high incidence of accidents. At this stage the Commander-in-Chief Fighter Command was able to write to the Chief of Air Staff with a certain satisfaction. Of the October ration of Spitfires, 180 aircraft in all, only 126 had been drawn. This he attributed largely to the greatly reduced rate of accidents that had enabled this economy to be made.

W.S.D./S.19.

Conclusion

See pp. 113-114

To what extent was Fighter Command affected by the drawing off of pilots and aircraft to other theatres of war? It has been shown in an earlier chapter that a fighter offensive which

began in March 1942 had to be soft-pedalled by June because Fighter Command was not capable of meeting the enemy on terms which would ensure that his losses would be greater than those of Fighter Command. Later in the year R.A.F. intelligence believed that German fighter reserves were low due to losses inflicted on the western front⁽¹⁾ but Fighter Command's recent losses and its own weakness in reserves and the quality of aircraft imposed a cautious policy. The situation was aggravated by a high rate of accidents bringing about additional losses in aircraft and pilots at a time when they could ill be sustained.

Secondly, how far was Fighter Command justified in attempting to retain fighter aircraft and experienced aircrew? As shown already the Spitfires and Typhoons of that time were inferior to the principal enemy fighter in the west - the F.W.190. It was implicit that in order to maintain an aggressive spirit in the Command the latest types of fighter aircraft must be available together with a core of experienced formation leaders (Fighter Command was the operational training ground for fighter pilots before they went overseas). Looking at the problem from the point of view of strategy there was the possibility of Sledgehammer (limited landings on the continent) to be followed by Round Up (a major assault across the Channel), the cover of which would be the chief responsibility of Fighter Command: that eventuality existed until the genesis of Operation Torch when cross-channel operations were no longer likely to be carried out in the immediate future. Finally, taking into account the chances of reinforcement from the eastern front, it could well be argued that hostile air attack on a fairly large scale was always a possibility especially in the shape of reprisals brought on by the increased weight of attack by R.A.F. Bomber Command. In the same context all possibility of invasion could not yet be discounted. The comparative immunity of Great Britain from air attack was perhaps taken too much for granted.

The case for the R.A.F. in the Middle East was that it lacked adequate numbers of modern fighters at a time when the situation in the Western Desert was critical and when the fate of Malta lay in the balance. The demands for aircraft or pilots may on occasion have been hasty or over-emphatic but undoubtedly the proportion of Spitfires in the Middle East compared with the number contained in the first line strength of Fighter Command in early 1942 swung too far in favour of the latter. A lesson might have been learned from the Germans who moved their air formations about freely and without hesitation. There was undoubtedly much force in the R.A.F. Middle East's complaints about the quality of pilots; the air battles of 1942, as far as the R.A.F. was concerned, were (with the exception of the Dieppe Raid) fought in the Middle East and there were no opportunities for training inexperienced aircrew in that theatre.

Sympathy for the Fighter Command point of view diminishes when, looking at the situation retrospectively, it is realised how much the effects of the fighter offensive over France and the Low Countries were exaggerated at the time. During 1942

(1) Unfortunately, no German records are to hand which could throw light on this subject; only figures of front line strength are available.

Fighter Command lost more than two and three quarter times the number of aircraft lost by the enemy. In all the G.A.F. lost some 200 operational fighter aircraft in 1942 - a modest total which hardly justified the retention of nearly 60 operational Spitfire squadrons in Great Britain up to October 1942. It may be said in mitigation that Fighter Command could not be expected to know accurately the number of casualties inflicted, but, on the other hand, its knowledge of German air strength in the west was usually fairly close to the mark and it should have concluded that there was small likelihood of a major air attack on Great Britain being launched without due warning.

Inevitably blame tends to be directed at a level higher than Command headquarters. An Air Officer Commanding-in-Chief is justified in retaining adequate reserves to cover all eventualities and the 'human element' which desires to retain the pick of aircraft and aircrew cannot be ignored. It was for the Chiefs of Staff to define strategy, the air implications and apportioning of air forces being worked out by the Chief of Air Staff and his advisers. But the indecision found here reflected the guiding strategy of the war at that time. For the first seven months of 1942 was a period of indecision and of conflict of opinion between the Allies; there was the Russians' insistence on a second front; the Americans' unwillingness to participate in a Mediterranean campaign and the British reluctance to risk a major cross channel assault; these factors clashed until the decision was made at the end of July to launch an offensive in North Africa. Thus it was natural for the air commanders in Great Britain and in Malta and the Middle East, each to demand first priority, thereby engendering bad feeling between commands. But without a firm policy from above assigning the correct proportion of strength for each theatre, this was unavoidable. At the same time the success of Japanese arms in Malaya and Burma caused valuable reserves in the Middle East to be withdrawn.

Early in 1943 the situation in the Middle East, with the German reverses in the Western Desert leading to the evacuation of the enemy from North Africa, was greatly eased. After the Casablanca Conference, the forces for the re-entry to the Continent took shape; for the R.A.F. this led to the formation of a Tactical Air Force in Great Britain. Eleven long-ranged Spitfire V and ten Spitfire IX squadrons were available as a spearhead to the daylight fighter offensive in 1943, inadequate in range though they were, but capable of dealing with a declining G.A.F. The combined bomber offensive was growing in strength. Numerous modern fighter aircraft were arriving in the Middle East by normal channels. Altogether there was very much less justification for the withdrawal of air forces from Great Britain to overseas Commands.

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PART III

THE AIR DEFENCE OF THE UNITED KINGDOM

JANUARY 1943 TO JUNE 1944

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CHAPTER 10INTRODUCTORY

A.H.B./ID3/
1540C.

The British and the American Chiefs of Staff were unable to agree upon a common policy in the preliminary discussions over grand strategy for 1943. The Americans were, in the first place, divided among themselves over the priority of the Pacific and European theatres of war. There was a strong faction which wanted to concentrate on finishing the war in the Pacific before dealing with the task of liberating German occupied Europe. The Americans, secondly, believed that, as far as Germany was concerned, all their resources in that theatre should be put into an attack across the Channel. The great movement of troops, aircraft and other military equipment across the Atlantic (Bolero) to Great Britain was getting under way and they did not relish the idea of American troops being held idle in the United Kingdom. The Mediterranean front would become a secondary issue apart from developing north Africa as a base for heavy bombers to attack the Rumanian oilfields and other targets in southern Europe.

The British Chiefs of Staff, on the other hand, were eager to exploit Operation Torch, and when the enemy had been driven out of north Africa they wanted landings to be made on Sicily, Sardinia and eventually an invasion of Italy which would knock that country out of the war and open up the Mediterranean to Allied shipping. At the same time in the European theatre Bolero would continue as far as was consistent with operations in the Mediterranean and every advantage would be taken of a weakening in enemy resistance by landings on the continent and probing raids. The main offensive in the west, they visualised, for the time being would take the form of a combined bomber offensive which would culminate in a great bomber force of 4,000 to 6,000 heavy bombers to be ready by the summer of 1944. In short, in the west a policy of attrition was to be pursued.

Operations in Burma and the Pacific were to take second place to operations in Europe. They believed that Germany would become unbeatable if she was allowed breathing space to recuperate, whereas it would be possible to remain on the defensive in the Far East and to hold Japan without her becoming much stronger. The maximum amount of help was to be afforded to Russia by concentrating on the war against Germany for Russia was a more valuable ally than China. The bulk of the British forces were already deployed against Germany; there was insufficient shipping to take troops to the Far East and, moreover, the British war economy was then stretched to its utmost.

The Prime Minister was nevertheless anxious that the maximum number of troops should be deployed against Germany in the west in the summer of 1943. He had also promised Marshal Stalin that a landing would be made on the continent that year. The British Chiefs of Staff had to convince him that, even if operations in the Mediterranean were successfully concluded by mid-summer of 1943, there would be insufficient troops and landing craft to launch an effective attack across the Channel in August or September. Preparations for such an offensive would mean a relaxation of pressure on Germany which was exactly what she needed. The German garrison in France had been increased to some 40 divisions

and there would be only some 25 British and American divisions available to oppose them. It was better for the time being to rely on the strategic bomber offensive and the economic blockade in the west.

At the momentous conference held by the Prime Minister and the President of the U.S.A. and the Combined Chiefs of Staff at Casablanca (Symbol) in January 1943, these plans were discussed at length. The British won their argument for concentrating all resources against Germany. The following decisions for the war against Germany and Italy were agreed upon. Full measures were to be taken to defeat the U-boat menace. The combined bomber offensive was to be intensified with the object of 'the progressive destruction and dislocation of the German military industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened'. Sicily was to be invaded in July and heavy bombers based in North Africa were to support operations in the Mediterranean. The Bolero target was set at 15 U.S. divisions; 938,000 U.S. troops including 172,000 airmen, were to be brought to Great Britain by the end of 1943. Amphibious operations from the United Kingdom were to be restricted to raids designed to provoke air battles and the possible seizure of a bridgehead across the Channel. A major landing would not take place until the early summer of 1944.

In April 1943 planning for cross channel operations received fresh impetus with the appointment of a Chief of Staff to the Supreme Allied Commander (Designate) known as COSSAC. He was Lieutenant General F.E. Morgan. The Supreme Commander, when appointed, was to be responsible to the Combined Chiefs of Staff for planning and executing operations to liberate north west Europe. Pending his appointment, COSSAC was responsible for carrying out the planning duties of the Supreme Commander. He was to report direct to the British Chiefs of Staff with whom were associated the commander of European Theatre of Operations, U.S. Army (ETOUSA), acting as the representative of the U.S. Chiefs of Staff in the United Kingdom.

COSSAC was to plan for the following operations:

- (i) An operation in 1943 on the largest scale that resources permitted with the object of testing the degree of resistance. This might find or produce a situation which would lead to
- (ii) A return to the continent with German resistance disintegrating. Plans (known as Rankin) were to be prepared to undertake this operation from that moment onwards with whatever forces might be available at the time.
- (iii) An invasion of the continent in 1944.

The last named was, of course, the most important operation and the draft plan, known as Overlord, was drawn up in time for the conference between the Prime Minister and the President and the Combined Chiefs of Staff held at Ottawa in August 1943 (Quadrant) where it met with their approval. Planning for Overlord and Rankin was carried out by a joint planning staff at Norfolk House, London. The R.A.F.

component consisted of staff officers of the Allied Air Commander-in-Chief (Designate) and until the formation of the Allied Expeditionary Air Force they represented the Air Commander-in-Chief. On the formation of the Allied Expeditionary Air Force they were to be absorbed in its headquarters.

The primary role of Fighter Command in 1943 was, as before, the defence of the British Isles but it was now recognised that any attempt at invasion could be discounted and the resumption of heavy air attacks against towns and industrial centres was improbable particularly as the combined bomber offensive against Germany, nightly and daily, became more effective. The only danger, that in the event was over-estimated, lay in reprisal raids against lightly defended towns. Secondly, it was to continue and intensify the fighter offensive, principally with the object of supporting and providing diversions for the daylight bombing raids of the VIIIth Air Force against German targets. Thirdly, it would support any large scale amphibious raid across the Channel, the chief aim of the Air Force being to provoke the G.A.F. into fighting a major air battle. Finally, it was to organise and assist in the development and training of a Tactical Air Force, which together with Fighter Command, would cover and support the eventual landings on the Continent.

The number of day fighter squadrons under Fighter Command, which included the Tactical Air Force, rose to its peak in August - 83 squadrons, including 48 Spitfire and 18 Typhoon squadrons. They could be used either for offensive or defensive purposes. The disparity between the strength of the Metropolitan Air Force and that of overseas commands could now no longer be questioned. The next round in the war against Germany was to be fought from the British Isles - the launching of Operation Overlord in the Spring of 1944.

The formation of a Tactical Air Force had followed upon the testing of a composite air support group containing fighters, fighter bombers and light bombers, drawing heavily for this purpose upon the experience gained in air to ground operations in the Western Desert and North Africa. The Tactical Air Force was formed in June and took its place besides Fighter Command in continuing the fighter offensive in addition to training in the air support role. In November the Allied Expeditionary Air Force was formed which included the American Tactical Air Force to be used to support the U.S. armies, the whole being under the command of the former Air Officer Commanding-in-Chief Fighter Command, Air Marshal Sir Trafford Leigh Mallory. Fighter Command which had been pruned of the bulk of its day and night fighter squadrons was included in A.E.A.F., being known as Air Defence Great Britain. It was responsible for the defence of the United Kingdom and, in particular, for the safeguarding from air attack of the land and sea forces assembling in southern England.

The year 1943 witnessed a swing in the favour of the Allies in their struggle against Germany. Three months after the British victory at El Alamein the Russians won a great victory at Stalingrad at the end of January. Important battles were also fought around Rostov and Kharkov but the Russians had not yet gathered strength for the offensives that were to drive the Germans across the Oder and out of the Balkans in 1944/1945. The British and American forces continued to make progress in north Africa and in May the

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Germans were finally evicted. The invasion of Sicily (Operation Husky) was launched in the second week of July and landings on the toe of Italy and at Salerno began in September.

In the west the effects of the Combined Bomber Offensive began to be felt in Germany. American bombers and fighters began to arrive in strength in Great Britain and this gave an added sting to daylight offensive operations from the United Kingdom which were a minor but important adjunct to the bombing offensive against Germany. In June 1943 the Pointblank directive placed the German fighter industry and the G.A.F. as top priority but daylight bombing could not properly exercise an influence until long range fighters began operating early in 1944. In the last five months covered in the ensuing two parts of this narrative air operations in support of Operation Overlord (landings on the coast of Normandy) were the prime consideration.

CHAPTER 11

THE AIR DEFENCE OF THE UNITED KINGDOM BY DAY

Introduction

The enemy's daylight fighter-bomber offensive against this country which had slackened in intensity since the end of October 1942 flared up again in March 1943 with a series of attacks against south and south-east coastal towns. While these raids had not succeeded in inflicting any serious damage on targets of military importance nor retarded the war effort of the country, they constituted a serious threat to the morale of the civil population, and the Air Staff continued to search for an effective antidote against the low level raider. After June, daylight attacks against the British Isles were reduced to a negligible number; large scale enemy air operations by day against this country virtually ceased until the attacks by pilotless aircraft which began shortly after the Allied landings in Normandy in June 1944.

Formation of Angriffsfuhrer England

There was a difference of opinion between the Intelligence Staff at Fighter Command and the Joint Intelligence Committee regarding the potential strength of the German fighter-bomber force. According to the former a large number of orthodox fighters could be converted to fighter bombers at short notice and they calculated that from January to March a force of 130 - 150 potential fighter bombers would be available for attacks on this country rising to 180 - 200 in the summer. However, they thought it unlikely that more than a small proportion of these aircraft would be used at any one time. Further, the increased enemy strength in the summer would be absorbed in a defensive capacity because of the R.A.F. cross channel fighter offensive.

A.H.B./IIS/110/
14/54, Min. No.
17.

The estimate of the Joint Intelligence Committee was that there would be about 400 single-engined fighters in the west throughout 1943. The scale of attack by fighter bombers and ground-strafer together would average, they calculated, between five and ten sorties per 24 hours with a maximum intensive scale of attack lasting up to three days at the maximum of 30 to 40 sorties. They believed there was no conclusive evidence to show that a proportion of the fighter force was being trained in an unorthodox role. Occasional offensive sorties were a normal feature in the employment of G.A.F. single-engined fighters on all fronts.

'Rise and Fall
of the G.A.F.'
A.M. Pamphlet
No.248, p.198.

The ineptitude of the German night-bomber crews in their operations against England had brought on them the extreme displeasure of Hitler and Goering and an attempt was made in March 1943 to put more vigour and efficiency into the bombing offensive, such as it was, by creating a new staff known as Angriffsfuhrer England (England Attack Command) which was to control the bombers and the bombing operations of Fliegerkorps IX (the bomber formation within Luftflotte 3). The Commander, appointed on 20 March, was Colonel Peltz (shortly to be promoted to Major General), a thrusting young officer who had taken part in all the major actions of the war to that date and who had held since the end of 1942 a staff appointment concerned with the inspection of bombers and the organization of the bomber arm. These changes did not interrupt the daylight fighter-bomber offensive against

A.D.I.(K)
Rept.373/1945,
paras.222-227.

southern England which, as will be seen, was to continue until the early summer, when mounting casualties caused it to be called off. It is worthwhile noting that Galland (General der Jagdflieger) strongly disapproved of the usurpation of the fighter arm by bomber pilots and tactics.

During 1942 the tip and run raids had been carried out first by Me.109's and when, in the summer of 1942 these attacks assumed larger proportions, the two fighter groups in France (J.G's 2 and 26) formed two special fighter-bomber staffeln which, by January 1943, were equipped with F.W.190's. They were able to put about 20 aircraft in the air for these attacks. Early that year a special fighter-bomber unit equipped with F.W.190's called Schnellkampf Gruppe (SK.G 10) was formed with the object of supplementing the anti-shipping forces. With the mounting scale of the Allied air offensive on the U-boat bases on the Western French coast as well as the widespread bombing activity over the rest of northern France, the fighters of J.G's 2 and 26 could no longer be spared for offensive purposes, and SK.G 10 was therefore brought to the Amiens area to engage in low level attacks on England. On 10 June it had a strength of 76 F.W.190's out of which 50 were serviceable.

On a number of occasions fighter bombers when engaged in attacking an important target such as London were escorted by fighters, the ratio of fighter escort to fighter bombers being 6 : 4 and the whole flight was carried out at low level to avoid radar detection.

Except for occasional penetrations at very great heights, long range bombers were but rarely used and were reserved for night operations against targets in this country.

Air-Ground Defences

(1) Dispositions of Fighter Command against Low Level Air Attacks

The Typhoon was believed to be the best fighter aircraft for intercepting the low level raider but it had not yet proved altogether successful in this role and was undergoing teething troubles with its Sabre engine. Five Typhoon squadrons, Nos.257 and 266 of No.10 Group based at Exeter and Warmwell; Nos.486 (RNZAF), 1 and 609 Squadrons of No.11 Group based at Tangmere, Lympne, and Manston respectively, maintained standing patrols or held aircraft at immediate readiness. A small number of Spitfire squadrons were held in readiness. Six Spitfire IX squadrons of No. 11 Group (Nos. 401, 122, 611, 340, 331 and 332) located at Kenley, Fairlop, Biggin Hill and North Weald were at one time or another employed against low level raiders. No. 91 Squadron (No. 11 Group) at Hawkinge equipped with Spitfires XII was available to deal with long range bombers attacking by day or for the protection of Channel shipping. Certain Spitfire VB squadrons flew on interception patrols from time to time.

Reduction of Anti Aircraft Command

It is appropriate before dealing with the ground defences against daylight raids to discuss the changes in A.A. Command in the period under review. The severe shortage of manpower which was being experienced by this country made reductions in the strength of A.A. Command imperative. A very large number of men were required in the Army for impending operations on

Fighter Cmd.
Orders of
Battle A.H.B./
IIM/A2/4A.

A.H.B./ID7/237
(C).

the continent while the growing superiority of the Allied Air Forces and the arrival of U.S. Army personnel with their own A.A. equipment made the retention of quantities of A.A. batteries and searchlights superfluous. The Chiefs of Staff decided that in 1943 A.A. Command should be reduced by 26,250 men and that the maximum strength of the Command should not exceed 180,000 men and 77,000 women. They believed that with the improved system of radar location, A.I. equipment, increased fighter strength and the employment of auxiliaries such as the Home Guard for manning gun sites there would be no deterioration in the defence of Great Britain.

N.A.D.(43) 4,
8 June 1943.

The strength of A.A. Command on 1 March 1943 was as follows. There were 288 heavy anti-aircraft batteries with 2,075 guns, 157 light anti-aircraft batteries with 1,453 40-millimetre guns and 105 20-millimetre guns manned together with 344 40-millimetre and 837 20-millimetre guns⁽¹⁾ deployed on the south and south-east coasts against the tip and run raids. There were 175 searchlight batteries in operation.

A.H.B./ID7/237
(C).

The General Staff urged further reductions in A.A. defences in the summer of 1943 and asked the Commander-in-Chief Fighter Command and the General Officer Commanding-in-Chief A.A. Command to consider reductions of either 20,000 or 50,000 men. There were wide tracts of the country which, in view of the decline of the enemy's long range bomber force, were unlikely to experience heavy air attacks again. Anti-aircraft defences might safely be removed from north and west of a datum line St. David's Head - Bletchley - Goole - Falkirk. There was, inevitably, much discussion over the best way in which to achieve these economies, the Army, for instance, intimating that a large proportion of the cuts should be met at the expense of the R.A.F. Regiment. By December preliminary cuts of 17,500 men were recommended by an inter-service committee set up by the Chiefs of Staff entailing a reduction of 22 searchlight batteries, 18 light anti-aircraft and 15 heavy anti-aircraft batteries together with a reduction of 500 balloons and 9,000 personnel from Balloon Command.

Ibid.
C.O.S.(43) 307.

Ibid
C.O.S.(43) 790
(O), 26 Dec.1943

Both the Commander of Fighter Command (or Air Defence Great Britain as it was then called) and the General Officer Commanding-in-Chief A.A. Command resisted these proposals, taking the point of view that the increased enemy bomber strength on the Western Front, the increased possibilities of jamming radar location equipment, the threat of 'V' Weapons and the redeployment of anti-aircraft batteries for Operation Overlord did not permit any reduction for the time being. Their argument did not convince either the Air or the General Staff who considered that the danger of enemy air attack (by piloted aircraft at least) was exaggerated and early in 1944 the Chiefs of Staff ordered the cut of 17,500 men to take place. However, very soon afterwards the flying bomb attacks were to cause a drastic redeployment of A.A. Command and this is dealt with in another narrative.

See this Narrative Vol. VII.

A.H.B./IIS/110/
14/7, Encl. 7A.

As there was then little likelihood of an invasion of the British Isles a review was made of existing airfield defences early in 1943. The War Office and Air Ministry agreed that permanent ground defences were no longer necessary and that a

(1) Including 158 20-millimetre guns and Beaverettes of the R.A.F. Regiment.

greater economy in manpower would be possible if 5,500 men of the R.A.F. Regiment were to assume responsibility for the defence of Air Ministry vulnerable points. This figure would save 2,000 men of the number then employed on this task by the Home Forces. The R.A.F. Regiment was to take over responsibility for the defence of certain airfields. On 3 April the Air Ministry stated that, although a review of the number of airfields requiring A.A. defence had not yet been completed by the Commander-in-Chief Fighter Command, the R.A.F. Regiment was ready to assume responsibility for manning 300 Bofors guns on airfields. The Army estimated that 1,000 personnel of A.A. Command would be saved in this way.

Light Anti Aircraft Gun Defences against low level Raiders

A.H.B./ID/12/
187.

The Air Staff were convinced that the most effective answer to the tip and run raider was to increase the light anti-aircraft defences especially as there was a reserve supply of A.A. weapons which was no longer required for the defence of airfields. For this purpose the lighter and handier 20-millimetre Hispano gun was better than the Bofors. Instructions were issued to hasten the delivery of suitable 20-millimetre mountings of which there was a shortage in A.A. Command and additional .303 light machine gun detachments were to be moved into the south coast area. The R.A.F. Regiment was to provide 200 static single mountings which were to be withdrawn from airfield defence. Two hundred twin .303 K guns mounted on Beaverettes (armoured vehicles used on airfields for defence against ground attack) were to be employed provisionally to supplement the light anti aircraft defences.

Ibid.

On 1 January 1943 the strength of 40-millimetre anti-aircraft guns along the south coast stood at 594 and on 12 March there were 588. The 20-millimetre Oerlikons of which there were 88 in January had been increased to 160 Oerlikons and Hispanos in March. A total of 1,612 .303 light machine guns, none of which had existed previously, were added by 12 March.

Balloon Barrages

F.C., O.R.B.,
App. F,
Jan. 1943 in
A.H.B./IIM/A2/
4A.

At the beginning of January 1943 the Air Officer Commanding-in-Chief Fighter Command proposed that a valuable deterrent to the low level raids might be found in the combination of a barrage of light Mark VI balloons with light anti aircraft guns. The balloons were to be operated by the gunners. He wanted to try out his idea at Eastbourne and Dartmouth. The balloons were only to fly in bad weather and he thought they might help to restrict the area over which fighter patrols would have to operate in low visibility.

A.H.B./ID/12/
187.

The Air Staff did not approve of the scheme for the following four reasons. It took an hour to raise or lower the balloons; during this time at least a quarter of the guns would not be manned. This might happen several times a day if the weather changed. It was doubtful in the number of balloons which could be handled by the available gunners would cover the area in sufficient density. The balloons would be a serious menace to friendly aircraft operating in low visibility conditions at the time when enemy raids were most frequent. Finally the balloons could not be flown in winds over 40 miles per hour, not an unusual occurrence on the English south coast.

Added to these tactical objections were three disadvantages of a political nature. The existence of balloons at any south coast town would lead to an immediate demand for balloon protection at places not so well protected and to which the enemy might well turn his attention. Experience had shown that once balloons had been deployed it was not easy to remove them. If the Dartmouth and Eastbourne project was a failure, it would not be easy to explain the withdrawal of the barrages. Since the balloons were only to be flown in bad weather, occasions would arise when they were grounded during a raid which would merely provide criticism. The Air Staff ruled that the experiment with the Mark VI balloons should be confined to the naval centre at Dartmouth where there would be no recriminations with the civil authorities.

Ibid.

In fact the experiment at Dartmouth proved that it was impractical for local A.A. units to man both balloons and guns. Whereupon Air Marshal Leigh Mallory suggested that the former task might be given to the Home Guard. They would be entrusted with the manning of barrages protecting 24 coastal towns. But he had not anticipated difficulties in balloon production. It transpired that there was a shortage of cotton for balloons and the new requirements would necessarily lead to a reduction in the balloon barrages guarding more important areas. There were also the interminable but unavoidable administrative complications attending the formation of a new civilian organization such as the provision of R.A.F. instructors for training personnel and the requirement of accommodation for manning personnel while the arming of balloons also presented an awkward problem.

Ibid.

On 3 July the Assistant Chief of Air Staff (Operations) informed Air Marshal Leigh Mallory that his balloon barrage project must be abandoned. As he saw it, enemy aircraft were not going to be deterred by the barrage but would climb at the last moment to attack. The extra time gained by A.A. gunners in preparing to engage hostile aircraft would be small. It was improbable that the scheme could be restricted to 24 towns along the south coast, as had been proposed, because the enemy had already turned his attention to east coast towns.

Provision of extra R.D.F. Cover

R.A.F. Signals
History, Vol.
IV, Chap. 15,
p. 239.

During the period February-March 1943 because of the lack of warning of the low level raider's approach certain urgent measures were taken to increase R.D.F. cover for the southern coast of England. Eight special R.D.F. (centimetre) equipments were to be installed in addition to stations already existing. They were to be of the Type 273, Mark V Admiralty pattern, of which six were in operation by the end of March. At that date the range of centimetre stations were limited to 30 miles thus making it impossible to plot all aircraft. At the end of February the Admiralty agreed to put three Type 273 Mark V stations at the disposal of the R.A.F., to be sited on existing C.H. or C.H.L. stations at the R.A.F.'s discretion, and in addition they promised that any information on very low flying aircraft obtained by them at their new station at Capel (then undergoing test) should be placed at the disposal of the Air Ministry. Both the Admiralty and the War Office agreed that all Coast Defence Mark IV stations from Dengie (Thames Estuary) to Start Point should be used primarily for aircraft detection during daylight. Two centimetre height (C.M.H.) Mark I stations which had been intended for

use by the Admiralty in Orkney were diverted instead to the south coast to help to strengthen existing R.D.F. defences.⁽¹⁾

A.H.B./ID/12/
187.

Information from the new R.D.F. stations was to be passed directly to sectors and Fighter Command issued instructions to the R.D.F. posts concerning the arcs which they should sweep in order to provide the best possible cover. It was expected that by 1 March the number of centimetre stations engaged in aircraft watching would be increased from four to 20; by 1 April to 24; thereafter it was hoped to increase the number by one every 14 days to a total of 40.

Enemy Operations and Results of Interceptions, January to June 1943.

(i) January to February: The Raid on London

The enemy's tactics in low level raids were designed to exploit any weakness in the British defences. They usually took the following form. The raiders, each armed with one 500-pound bomb, approached the coast at sea level, so as to evade R.D.F. detection, at high speed (usually 340 miles per hour). Climbing rapidly to bombing height they dived down out of the sun onto the target, normally a coastal town which enabled aircraft to escape quickly after the attack. The choice of targets was largely indiscriminate which made it difficult to concentrate anti-aircraft gun defences or to anticipate potential targets of the raiders. At their briefing enemy pilots were often told to attack anything and every thing liable to frighten the British public. Trains, motor buses, pedestrians, gatherings of people, herds of sheep and cattle were recommended as suitable targets. During January and February there was a tendency to attack targets associated with communications. Investigations into enemy air operations over Great Britain at this time showed that, per ton of bombs, the daylight raids were more efficient and more menacing, because of greater powers of discrimination, than night raids. But because of the limited total load that could be carried by day, either through having to employ fighter bombers or to await suitable weather conditions for long range bombers, that threat was unlikely to become dangerous.

A.D.I.(K) Rept.
No. 75/1943,
p.5.

A.W.A. Rept. No.
B.C. 18.
A.H.B./IIB/47/3.

Interception of the fighter bombers was very difficult (apart from the lack of early warning, already noted) because of their high speed and the difficulties of sighting very low level aircraft from an interceptor flying above them. The enemy also made extensive use of cloud particularly in deep penetration raids by Do.217's. Five important measures had been taken to counter the tip and run raids. The reporting of low-flying aircraft had been given absolute priority by the Royal Observer Corps posts. On spotting a low level raider the code word 'Rats' enabled the report to pass through the Royal Observer Corps posts to the sector controller with the utmost speed. These posts also fired rockets on sighting raiders which acted as a guide to patrolling fighters and indicated to other fighters to 'stand by' on certain airfields.

Standing patrols of ten Typhoons were maintained during the hours of daylight in the following areas:

(1) For further details see R.A.F. Signals History Volume IV, Chap. 15.

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- (i) Selsey Bill to St. Catherine's Point.
- (ii) Over the sea west of Beachy Head.
- (iii) Over the sea west of Dungeness.
- (iv) From Start Point to Exmouth.

A standing patrol was maintained between the North and South Foreland at first light.⁽¹⁾ In addition it has been shown that the light A.A. defences of the south coast had been considerably strengthened.

F.C. Form 'Y'
20. Jan. 1943
and
A.W.A. Rept.
No. B.C. 18.
A.H.B./IIB/47/
3.
Enemy Doc.
A.H.B. 6, Trans.
No. 172.5.

The heaviest attack in January took place against London on the 20th and was the daylight counterpart of the series of reprisal attacks for R.A.F. Bomber Command raids on Berlin which had begun on the night of 17/18 January. The enemy planned to divert the British fighter defences by staging fighter demonstrations off the Kent and Sussex coasts and over the Isle of Wight. Twenty-eight F.W. 190 fighter bombers escorted by single-engined fighters crossed the coast at about 1223 hours between Rye and Beachy Head and flew towards London at zero height in time to catch the lunch time crowds. The balloon barrage was caught unawares, as part of it had been grounded just before the raid in order that the calibration of radar gun-laying equipment could take place, and part of it was flying at 500 feet (calibration could not be carried out accurately if the balloons were flying at a height of over 500 feet within a radius of 15,000 yards of the radar gunlaying equipment because of the confusion of 'echoes'). The sirens sounded the warning after the first bombs had fallen because the Air Raid Warning Officer had been late in getting in touch with Scotland Yard. Probably not more than about twelve aircraft penetrated into the London area but eight industrial key points and five railway key points were attacked with 500 and 250-kilogram bombs at Lewisham, Poplar, Deptford, Bermondsey and Greenwich. The only serious damage was caused at a warehouse in the Surrey Commercial Docks which caught fire. The bombs caused numerous casualties to the people in the streets. Ten grounded barrage balloons were also shot up. About 200 Spitfires and Typhoons were put up in connection with the main raid and diversions and they met with considerable success for three fighter bombers and six fighters were shot down (five of them by Typhoons). A Spitfire and its pilot were lost.

The tardiness of the ground defences which had given rise to some uneasiness among the civil population led the Secretary of State for Air to call for an enquiry. The London balloon barrage which had hitherto been considered as Second Line⁽²⁾

FC./S. 32185.

- (1) By mid-April Fighter Command decided to reduce operational hours on the Typhoon as it was difficult to obtain spare parts for it. By then the low looking R.D.F. installations on the south coast had been increased, making it less imperative for patrols to operate. Group Controllers were instructed to work on the principle that patrols were to fly at irregular intervals when the weather was most suitable for tip and run raids or at other times when the enemy was expected.
- (2) When there was no enemy air activity 'Second Line' balloons were either close hauled or flown at a height not exceeding 500 feet.

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was consequently reclassified as Front Line together with the balloons at the important industrial centres of Yeovil, Weybridge and Langley. It was considered that the extensive enemy jamming of R.D.F. before the raid should have been brought to the notice of the officer-in-charge of the balloons and made him cut short the exercise. The Commander-in-Chief Fighter Command therefore decided that Air Raid Warning and Balloon Control Officers should be notified immediately on the jamming of the early warning system. A new table of heights for calibration tests was also issued. It was difficult to find means of improving the system of warning by siren. There were 447 sirens in London and to operate them from one control had been found dangerous as the system was apt to get out of order. The instructions issued to Air Raid Warning Officers in December 1942 stressing the need for over rather than for under insurance in deciding whether or not to sound the alarm were again emphasised.

A further failing arising from the raid was that discrepancies had been discovered between the plots recorded on the Fighter Command Headquarters operations table and those recorded by the Royal Observer Corps. This was caused by the splitting of the raids when they crossed the coast and made a discrepancy between Headquarters Fighter Command's and No. 11 Group's operations table. The Royal Observer Corps had, in fact, tracked them accurately. The Air Ministry had been aware of a weakness in the warning system when there were multiple raids and had provided for it with an elaborate scheme known as the Inland Reporting System but the plan was too extravagant in respect of manpower and equipment resources. An alternative scheme was then being worked out.

Other sharp attacks by fighter bombers in January took place on the 28th and 30th when Bexhill and Margate were attacked by some eight fighter bombers. At Bexhill the gas works was damaged and a fire was started in the retort house, interrupting the gas supply to Hastings.

Excluding the attack on London on 20 January there were 26 low level raids that month of which 85 per cent were not intercepted and 15 per cent were intercepted. Approximately 78 enemy aircraft took part in the low level raids; four were claimed to have been shot down by fighter aircraft; three were claimed destroyed by A.A. Command and one was claimed destroyed due to other causes.

In February 18 tip and run raids were made and six of them representing 33 per cent were intercepted. Four enemy aircraft were claimed to have been destroyed, two by Typhoons and two by anti-aircraft fire; one aircraft was claimed to have been probably destroyed, also by A.A. fire. On 9 February extensive attacks were made over East Anglia and the southern counties. Bombs were dropped at two points in outer London, seven in Sussex, four in east Suffolk, two in Hampshire and one each in Kent and Surrey. The damage done was not substantial and the total number of casualties amounted to 19 killed and 35 seriously injured.

On the next day in cloudy weather about 30 aircraft including Do.217's made nuisance attacks on the south coast, some aircraft penetrating as far inland as Newbury and Reading, both of which, together with Chichester, suffered the heaviest damage; there were altogether 77 fatal and 123 serious casualties incurred on that day. No interceptions were made.

F.C. Form 'Y'
and H.S.W.R.
Weekly Apprec.
(A.H.B./IIHL/13)
and Enemy Doc.
A.H.B.6, Trans.
A.H.B./II/72/5.

A.H.B./II/72/5.

F.C. Form 'Y'
and IIHL/13.

A.H.B./IIHL/13
F.C. Form 'Y'
and Enemy Doc.
A.H.B.6, Trans.
No. 172.5.

(55692)210

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(ii) March: Increase in Enemy Low Level Raids

A.W.A. Rept.
No. BC/18
A.H.B./IIB/47/3
Enemy Doc.
A.H.B.6 Trans.
No. 172.5

A.H.B./IIH1/13.

During the first two weeks of March the enemy increased his fighter-bomber attacks. On the 12th a surprise low level attack was made on London at 0730 hours when there was much haze on low ground. According to German records 110 aircraft were involved, including 19 Jabos (fighter bombers) 16 fighters as close fighter escort and 75 F.W.190 and Me.109 fighters. On the same day 24 fighter bombers were despatched against the south coast. About 16 aircraft reached London and dropped H.E. bombs. Pilots reported 'Heavy pedestrian and bus traffic; slight defence. Good results against houses and living targets.' No key points were affected. About 20 enemy fighters patrolled the Thames estuary and a further 20 flew off the Belgian and French coasts as rear cover.

F.C. Form 'Y'
12 Mar. 1943.

A force of 70 fighters went up to intercept the enemy. The honours of the day went to No. 331 (Norwegian) Squadron (Spitfire IX) which had been instructed to cut off two formations of enemy aircraft reported to be approaching Chelmsford and Hornchurch. At Maldon one formation passed under the Spitfires and as the latter turned in pursuit, the second formation was spotted 1,000 yards away to starboard. The Spitfires split up to attack each group of enemy aircraft and as they did so a third formation, also of 12 aircraft, was seen approaching over the sea from the north. Each group of enemy aircraft was eventually engaged and the claims were five destroyed, one probably destroyed and four damaged.

A.W.A. Rept.
No. BC/18.
A.H.B./IIB/47/3

In the London area the balloon barrage was again ordered up too late to be effective and was flying at 1,500 feet to 5,000 feet just at the time bombs were being dropped. Two enemy aircraft penetrated the barrage area but all the bombs were dropped outside it.

F.C. Form 'Y'
and A.H.B./
IIH1/13.

On 7 March 18 Jabos flew to attack Eastbourne. This was the first of a series of minor day 'blitzes' by fighter bombers on south and east coast towns. As usual they crossed the Channel at zero feet and arrived over the target area at 1252 hours. Property was severely damaged, including a hotel used by R.A.F. personnel and the railway line to Hampden Park. Fourteen civilians were reported killed and 23 seriously injured. Two Spitfires and two Typhoons flew to intercept but did not contact the raiders.

F.C. Form 'Y'.

A heavier attack was made on the 11th - on this occasion against Hastings. Some 27 aircraft appeared over the coast at Rye at 1530 hours. Several aircraft dropped bombs at Pett Level just east of Hastings and the remainder of the force proceeded to drop 22 H.E. bombs on the latter place. Meanwhile at about 1536 hours a rear support force appeared about three miles south of Dungeness to operate close inshore from Dungeness to Hastings at zero feet. Rear cover appeared to be provided by three aircraft which flew off the Le Touquet area at about 1544 hours. All enemy aircraft concerned in the raids had returned to the Somme area by 1600 hours. Standing patrols operating between Beachy Head and Dungeness were detailed to intercept the raiders; two Typhoons were ordered to sweep the Le Touquet area and all available aircraft of Nos. 64 and 403 Spitfire IX, Nos. 308 and 91 Spitfire V and No. 609 Typhoon Squadrons were ordered up to engage the raiders. The enemy was chased as far as the

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French coast but no claims were made. A.A. Command claimed two fighter aircraft.

Enemy Doc.
A.H.B. 6 Trans.
No. 172.5
K.P.I.D. Damage
Appreciation
Repts. Vol. 14.

FC/S. 32729,
Encl. 7B.

At 1004 hours on 24 March bombs, dropped by 17 Jabos, fell on the erecting and motor maintenance ships of Ashford Junction, one of the most important railway works in southern England. Two engines were wrecked and three damaged. Damage was also done to an empty passenger train and 12 trucks, stores, offices and shops; points and crossings at the entrance to the locomotive yard were blown out. Production in Ashford was seriously affected and the raid was altogether one of the most effective in the series of fighter-bomber attacks. As usual the raiders crossed the Channel at zero feet. The low looking Type 14 set at Capel gave 17½ miles warning of the raids and enabled 16 fighters to take off and the air raid warning was sounded in time to save many lives in Ashford. One F.W. 190 was hit by A.A. fire, after it had dropped its bombs, and crashed in Ashford. A Spitfire and pilot were reported missing.

Counter measures against the tip and run raider proceeded satisfactorily in March. Type 13, Mark 1 stations became operational at Fairlight near Hastings and at North Foreland. Type 14 stations⁽¹⁾ ultimately to replace all Type 13 stations, came into service at Beachy Head and Capel. The low powered surface watching C.D. sets between North Foreland and Start Point had been giving priority to air reporting by day since the end of February. Of these stations Beachy Head gave warning of approaching raiders on two occasions, but the remainder had been of little use. A Type 13 set was to be installed in the Isle of Sheppey which would cover the Thames Estuary. Another gap was in the Brighton-Worthing area where on 29 March four aircraft approached and bombed Brighton and Hove but it was expected that the Beachy Head and Truleigh Hill stations would soon cover this area.

Type 14 stations soon proved their worth. An outstanding example was on 13 March when the Ventnor station gave 40 miles warning on two F.W.'s 190 as a result of which both were destroyed by Typhoons of No. 266 Squadron. The only drawback on the new radar equipment was that it was liable to be distorted by reflections off the surface of a rough sea: for example, on 1 April three F.W. 190's reached Ventnor without being detected at all, that station being ineffective up to a range of 25 miles.

Ibid.

Standing patrols of Typhoons were maintained along the south coast some three miles from shore when weather permitted. They were controlled from a forward station at which information from one or two Type 13 or Type 14 stations was received. Forward stations used for such control were the C.H.L. stations at Foreness, Swingate, Beachy Head and Kingswear and the G.C.I. station at Black Gang which possessed unusual low looking characteristics. The controller of the sector in which these aircraft were operating was able to pass to the pilots the first reports from R.O.C. sources of undetected enemy aircraft which had penetrated the R.D.F. network.

Ibid.

The A.A. defences were strengthened in accordance with decisions already mentioned. Seventy-two 20-millimetre guns

(1) The Type 14 was in fact the Naval Type 277 set.

had been moved to the coast from R.A.F. airfields and 116 were to be in position by 9 April. In process of deployment were 240 U.P. (Unrotating Projectiles) single projectors Type 'J' and 'D', one hundred and thirty-four 40-millimetre guns for heavy A.A. gun sites and one hundred and twenty 40-millimetre guns to be used as A.A. weapons by Coast Artillery personnel.

(iii) April to June: Switch of Attacks to East Anglia and End of Low Level Raids.

Ibid, Encl. 17A
and A.H.B./II/
72/5.

See Chap. 12,
p.195

There was a lull in low level raids against southern England in April when only 30 (27 according to German records) aircraft crossed the English coastline - the smallest total since November 1942. Of this number seven were claimed to have been destroyed by fighters and A.A. guns, roughly one out of every five raiders. Not more than five attacks were made in the first nine days of the month and they were directed against coastal targets in Kent, Sussex and the Isle of Wight. This tiny effort was all the more surprising as Fighter Command had anticipated that the enemy would intensify rather than reduce his fighter-bomber effort. Two explanations were proffered. One, that during the second week of April the enemy was husbanding his resources for the moonlight medium altitude fighter-bomber attack which came on 16/17 April and that during the third and fourth weeks he was recovering from the losses incurred on that night, Second, that the substantial losses to aircraft during the first three months of the year had forced him to modify his plans, compelling him to extend his general policy of conservation of aircraft to fighter bombers. Fighter Command remained on the alert for renewed activity in the future. The heaviest attack was on 3 April against Eastbourne. Some 16 aircraft crossed the coast at Beachy Head flying at zero feet at 1445 hours. Twenty-eight fighters were airborne in connection with the raid but because of hazy weather no interceptions were made.

FC/S.32729,
Encl. 17A.

Two more Type 14 stations were opened at Start Point and The Verne (Portland) in April. A new system for warning light anti-aircraft guns by passing messages to A.A. troop headquarters direct from the R.D.F. operations rooms was introduced at Beachy Head and was subsequently extended to Dover, Ventnor, Start Point and the Verne area. Anti-Aircraft Command was responsible for all equipment used on this system and it claimed on 3 April to have destroyed at least one enemy aircraft and possibly a further two during an attack on Eastbourne.⁽¹⁾ The effectiveness of low looking R.D.F. was demonstrated on 29 April when two tip and run raiders approaching the south coast were intercepted and destroyed by two Typhoons of No. 486 Squadron which were at 'stand by' at Tangmere and were not airborne when the track of the enemy was first read.

One hundred and sixteen 20-millimetre guns from R.A.F. airfields were now in position and A.A. Command were deploying 40-millimetre guns on searchlight posts (initially there was one to every six searchlight sites between the Wash and Exmouth). Ultimately each alternate site was to be equipped with one Bofors gun: 384 guns were required for full deployment. Trouble was experienced with the mounting of the

(1) Three fighters were destroyed over the U.K. according to German documents (A.H.B.6).

20-mm gun then being issued to A.A. Command. Experiments were being made with an all round traverse and the guns were to be modified as soon as possible.

The lull did not last long and the offensive was resumed in the second week in May, this time against towns on the east coast. Yarmouth was the first to suffer attack followed by Lowestoft but south coast towns, including Folkestone, Brighton and Bournemouth, continued to be attacked. Twelve specific attacks were made in seven days by forces of 12 to 30 fighter bombers (average 20). The attacks took a familiar form; aircraft flew over the sea just above the waves and bombed at roof-top level. Ten attacks were made in good weather conditions with sunshine and seven in bad weather with varying amounts of low cloud, or in evening light. In most of the attacks made in sunlight enemy aircraft approached the target area across the sun and then turned down sun. Full use was made of natural features in the terrain when approaching a target, e.g. by flying along valleys and so unsighting Royal Observer Corps. and A.A. guns posts. Attacks on the East Anglian coast in May took place between 0700 and 0900 hours and between 1900 and 2000 hours, those on the south coast between 1200 and 1500 hours with the exception of one at 2200 hours.

A.W.A. Rept.
No. BC/20
A.H.B./IIB/47/3

On the whole the attacks were accurate and extensive damage was caused at Lowestoft, Bournemouth and Brighton. Compared with the German night bombing operations at the time the daylight raids were 70 per cent more accurate. Conversely, the British early warning system was becoming more efficient. The most outstanding success was on the evening of 25 May when the Type 14 station at Capel picked up 12 (there was a force of 19 according to German records) enemy aircraft as they left Cap Gris Nez en route for Folkestone. Seven Spitfires XII of No. 91 Squadron which were about to land after a patrol were at once informed. The Spitfires sighted the enemy aircraft off Folkestone at about 2135 hours whereupon the F.W.190's jettisoned their bombs and turned tail. The Spitfires gave chase and claimed to have destroyed five aircraft (the Germans recorded two aircraft lost). Only one bomb fell harmlessly in the bathing pool at Folkestone. In an attack on Hastings on 23 May raiders were plotted at 30 miles range and four Typhoons intercepted and shot down an F.W.190 into the sea.

FC/S.32729.
Encl.28B.

F.C. Form 'Y'
25 May 1943.

Ibid,
23 May 1943

The other occasion when fighters intercepted enemy aircraft before they dropped their bombs was on 11 May in an attack on Great Yarmouth. The force split up on making land-fall, one section attacking the town while the other made for targets near Winterton. An anti-shipping patrol of four Mustangs of No. 613 Squadron, Army Co-operation Command, was crossing the coast at the time en route to the Texel area and intercepted the force before it bombed. One aircraft was claimed as destroyed by air action and one by anti-aircraft fire.

A.W.A. Rept.
No. BC/20.
A.H.B./IIB/47/3.

The enemy suffered his heaviest loss that month on 30 May when nine fighters were lost in raids on Torquay, Frinton and Walton. Torquay suffered the most damage but five aircraft were claimed to have been destroyed, one by fighters and the remainder by anti-aircraft fire. This was about 23 per cent of the raiding force. In the case of the East Anglian targets, Colchester, the main target, was not bombed. Here no

Enemy Doc. A.H.B.6
Trans. No. 172.5 and
A.W.A. Rept. No. BC/
20. A.H.B./IIB/47/3.

interceptions were made by fighter aircraft but four aircraft were claimed destroyed by A.A. fire. The raid took place in the evening.

Ibid.

The anti-aircraft defences were at their most effective in May and claimed to have destroyed 25 enemy aircraft. They were in action against all enemy raiders except those which attacked the Southwold area on 15 May which were out of range. On several occasions only light machine guns could be brought into action on account of insufficient warning being received and because the enemy aircraft were flying too low.

Ibid.

Out of 17 raids in April and May public alerts preceded the bombs by one to eight minutes in eight raids, accompanied the bombs in two raids, followed the bombs by one to three minutes in five raids and failed to sound in two raids. These latter occasions were the raids on Folkestone (9 April) made in bad weather conditions and on Frinton and Walton (30 May). Though receiving no preliminary warning A.A. gun fire claimed to have destroyed one of the four aircraft attacking Folkestone and four of the 22 aircraft raiding Walton and Frinton. On the whole the warning area appeared to be more efficient on the south coast than in East Anglia. All the five cases of the warning following the bombs were in the latter area.

FC/S.32729.
Encl. 38B.

The first week of June saw the end of the tip and run raiders. The Isle of Wight, Margate and Eastbourne were attacked, the latter twice. There was no radar station in the Margate area to plot the raid as it came in towards the coast on 1 June but a single long range plot reported some minutes earlier by the Type 14 station at Capel gave an indication of possible trouble and the controllers concerned were warned. Two Typhoons of No. 609 Squadron on patrol claimed to have destroyed five enemy aircraft between them and A.A. destroyed one. Beachy Head Type 14 set gave 19 miles warning of the raid on Eastbourne on 4 June in which one hostile aircraft was claimed destroyed by fighters. The final raid on 6 June was detected by Fairlight Type 13 station at 29 miles range, as it approached from the south instead of the usual direct route from the south west. One F.W.190 was destroyed by Spitfires XII of No. 91 Squadron.

Enemy Doc.
A.H.B.6. Trans.

After 6 June a substantial part of the specialist fighter-bomber force was withdrawn because of the unfavourable developments for the Axis powers in the Mediterranean theatre, following upon the Allied conquest of Tunisia.

FC/S.32729.

The switch of fighter-bomber attacks to the East Coast compelled the Commander-in-Chief, Fighter Command, to strengthen the R.D.F. defences against very low flying aircraft in that area. Two Type 13 stations were transferred from the Kingswear area in Devon and the North Foreland to Hopton. It was also decided to install high powered equipments⁽¹⁾ at six existing Army CD. No. 1 Mark VI 'Tower' stations on the east coast which would give a useful degree of low flying cover. Hopton was the first station to become operational on 23 June, followed by Thorpeness and Winterton in July, Bard Hill in August and Benacre in September. A Type 13 station was to be installed at Warden Point on the Isle of Sheppey to give cover to the Thames estuary area.

(1) Naval Type 277.

Activity on the east coast did not prevent R.D.F. cover on the south coast from being improved. Type 14 stations were installed on all the approaches to Plymouth and others were to be installed at Worth Matravers, Kingsdown and Penolver.

The reinforcement of A.A. defences in south and south-eastern coastal areas continued and engaged a force of about 37,000 personnel including those charged with the maintenance of balloon barrages. In May the A.A. gun defences in these areas were as follows:

| | |
|----------------------|-------|
| Heavy A.A. guns | 308 |
| 40-mm " " | 862 |
| 20-mm " " | 301 |
| Multiple A.A. L.M.Gs | 1,119 |
| P.A.C. Rockets | 336 |

A mobile reserve of some 72 guns was being built up from airfield defence resources. This reserve could either be superimposed on existing defences or deployed quickly in any area which was undefended. It was increased in August and September largely by R.A.F. Regiment resources.

After the raids on the East Coast began a mobile Crittal balloon barrage was moved to Yarmouth and Lowestoft. It was in position by 13 May but no further attacks were made on the towns.

(iv) Long Range Bomber Attacks and High Altitude Raids:
March to June

F.C., O.R.S.
Rept. Nos.
488, 499.

The only long range bomber penetration in daylight was in the early hours of 8 May when some six Ju.88's operated in poor weather over Kent, Sussex, Essex and Suffolk causing no significant damage. Two Ju.88's were claimed to have been destroyed by Fighter Command.

There was a steady increase in high altitude raids during the period March to May (36 in March, 59 in April and 70 in May) in which no bombs were dropped. The majority of these aircraft did not penetrate beyond the coast; the general tendency was for Group controllers not to take action except in the case of raids which showed signs of approaching the coast. In June the total decreased to 38. This was due to the fact that no high altitude raid penetrated more than ten miles inland and there were only four enemy sorties in coastal areas.

A.H.B./II/72/5.

During the period mid-March to mid-June only three hostile aircraft engaged in high altitude raids were destroyed and two damaged. There were 38 failures to obtain decisive results. The two main reasons for failure were, firstly, inadequate fighter performance and, secondly, evasive action by the enemy or because hostile aircraft dived away before interception was possible. It was obvious that the enemy was avoiding combat by intercepting British R.T. transmissions.

The task of high level interception at this time was carried out by Spitfire VII'S of No. 124 Squadron - the only squadron available with Spitfires of this type. Production of these aircraft was slow because any increase had to be met at the expense of the Spitfire VIII and IX programmes. With regard to the second failure, investigations to reduce

interception of R.T. transmissions were carried out by Fighter Command. However, in the second half of 1943 the enemy ceased his activities in this type of operation.

Summary of Interception Results against Low Level Raids: January to June.

For the first two months of 1943 low level fighter-bomber attacks, altogether greater in number than in the last two months of 1942, do not call for comment apart from the surprise attack on London on 20 January. Weather conditions made interceptions difficult. In March a fresh wave of attacks began but this was accompanied by a corresponding improvement in interception. Of the 15 tip and run raids that month eight (53 per cent) were intercepted. Twenty out of 146 enemy aircraft (13 per cent) were claimed as destroyed, 13 by fighters and seven by A.A. gun fire. For the remainder of the period the improvement in the number of interceptions was maintained, aided by the installation of low-looking radar equipment. Altogether in the first half of 1943, 48 aircraft were claimed to have been destroyed by fighters⁽¹⁾ and 43 by A.A. fire. Two aircraft were destroyed through unknown causes. Over half of the A.A. guns claims were in May at the time when the enemy fighter-bomber activity was most intense thus justifying the increase in light A.A. defences in coastal areas.

F.C., O.R.S.
Rept. No. 516
A.H.B./II/39/2.

The low level raids yielded the following data about the methods of the enemy. First, attacks usually took place on days when there was low cloud; it was observed that whenever possible the enemy approached down sun; thirdly, whenever a large scale reprisal attack took place, such as the raid on London on 20 January, attempts to jam early warning radar stations were made (though there was also evidence that widespread jamming often occurred without a raid); finally, fighter bombers were reluctant to attack targets defended by balloons. In regard to the numbers of attacking aircraft in low level raids, until the end of April small formations of one to eight took part with occasionally a large diffused force of up to 30 aircraft. From early May onwards large formations of ten to 25 aircraft were employed.

Strength of Enemy Fighter Bomber Forces in the West and British Fighter Defences: July to December 1943.

Enemy Doc.
A.H.B.6/Trans.

A.D.I.(K)Rept.
373/1945(Galland
Interrog.Para.
227.

In the early summer one Gruppe of SK.G10 (the F.W. 190 fighter-bomber unit) was transferred to the Mediterranean theatre, leaving one Gruppe in the west on 10 November which contained 36 aircraft (27 serviceable). Appointment to this unit was not sought after by German pilots because of the high number of casualties it had suffered while on operations over southern England. After July its activities were confined to night operations. There was a small force of 16 Me.410's (11 serviceable on 10 November) which were occasionally used for daylight operations. The Dornier and Junkers bombers were not usually employed in daylight operations.

(1) Approximately 60 per cent of the claims were made by Typhoons and 40 per cent by Spitfires.

Fighter Cmd.
O.R.B. App.D.5,
19 July 1943.
A.H.B./IIM/A2/
4A.

Fighter Command was becoming increasingly pre-occupied with preparations for Operation Overlord, but at the same time it was necessary to retain a force to meet possible attack by tip and run raiders or by long-range bombers. The Air Officer Commanding No. 11 Group therefore continued to be responsible for the air defence of southeast England. Four Typhoon fighter squadrons (Nos. 486, 1, 56, 198) based at Tangmere, Lympne, Manston and Bradwell Bay respectively, were to intercept tip and run raiders. Nos. 41 and 91 Spitfire XII Squadrons at Biggin Hill and Martlesham were to provide general defence against long-range bombers, fighter bombers, shipping protection, cover for air sea rescue, etc. No. 124 Spitfire VII Squadron (Northolt) was reserved for defence against high altitude attacks.

The Air Officer Commanding No. 11 Group was also authorised to hold at his disposal and at a suitable state of readiness such squadrons of Nos. 83 and 84 Groups as he considered were necessary to meet any actual or potential air threat against south-east England. There were eleven fighter squadrons in No. 83 and ten fighter squadrons in No. 84 Group available for this purpose.

Enemy Operations: July to December 1943 - End of Daylight Bombing Raids on United Kingdom

A.H.B./II/72/5.

F.C., O.R.S.
Rept. No. 499.

There were two final, insignificant low level raids in the first week of July, both of which were in East Anglia. Only four aircraft were involved and one was destroyed from unknown causes. On 9 July eight Do. 217's operated over Sussex, Kent and Surrey and bombing and machine gun attacks were made at scattered points. The attack was very similar to the raid made on 8 May, bombers operating at 0/8000 feet and they flew in conditions of rain and low cloud. It was the last long range bomber attack in daylight of any consequence against Great Britain.

A.H.B./IIH1/13.

There followed a period of one hundred days in which no bombing incidents occurred in daylight over this country. It ended on 17 October when three Me. 410's dropped bombs on the Isle of Wight and Eastbourne causing little harm. There were only two further occasions when bombs were dropped overland in 1943. On 28 November bombs from a Ju. 88 fell harmlessly at Sandwich and Deal. Two Ju. 188's dropped bombs on Lewes race course inflicting no damage on 2 December. No more than about 60 reconnaissance flights were made in daylight during the last six months of the year.

Retrospect of Enemy Daylight Activity over Great Britain in 1943

A.W.A. Rept No.
B.C./28(A.H.B./
IIB/47/3) and
A.H.B./IIH1/13
Supp. to
Appreciation
No. 190.

In January and February day bombing continued on approximately the same scale as in 1942 and railways appeared to be the principal objective claiming about 25 tons of bombs. Such attacks were made both by long range and fighter bombers. The heaviest activity was on 9 and 10 February against targets in southern England with 15 and 12 long range bomber sorties respectively. On 7 March the final series to tip and run raids on south and south-east coast towns began and continued until 6 June. The coastal area of south-east England extending from Eastbourne to Gravesend was the most heavily attacked. It received nearly half of the total weight of bombs dropped by day. The Felixstowe-Lowestoft-Yarmouth area was the second most severely attacked. Eastbourne was the most heavily raided town with seven attacks and nearly 33 tons of bombs.

POINTS OF LANDFALL OF VERY LOW FLYING ENEMY RAIDS

JANUARY - JUNE 1943

JANUARY RAIDS
FEBRUARY " "
MARCH " "

←
- - -
←

APRIL RAIDS
MAY " "
JUNE " "

←
- - -
←

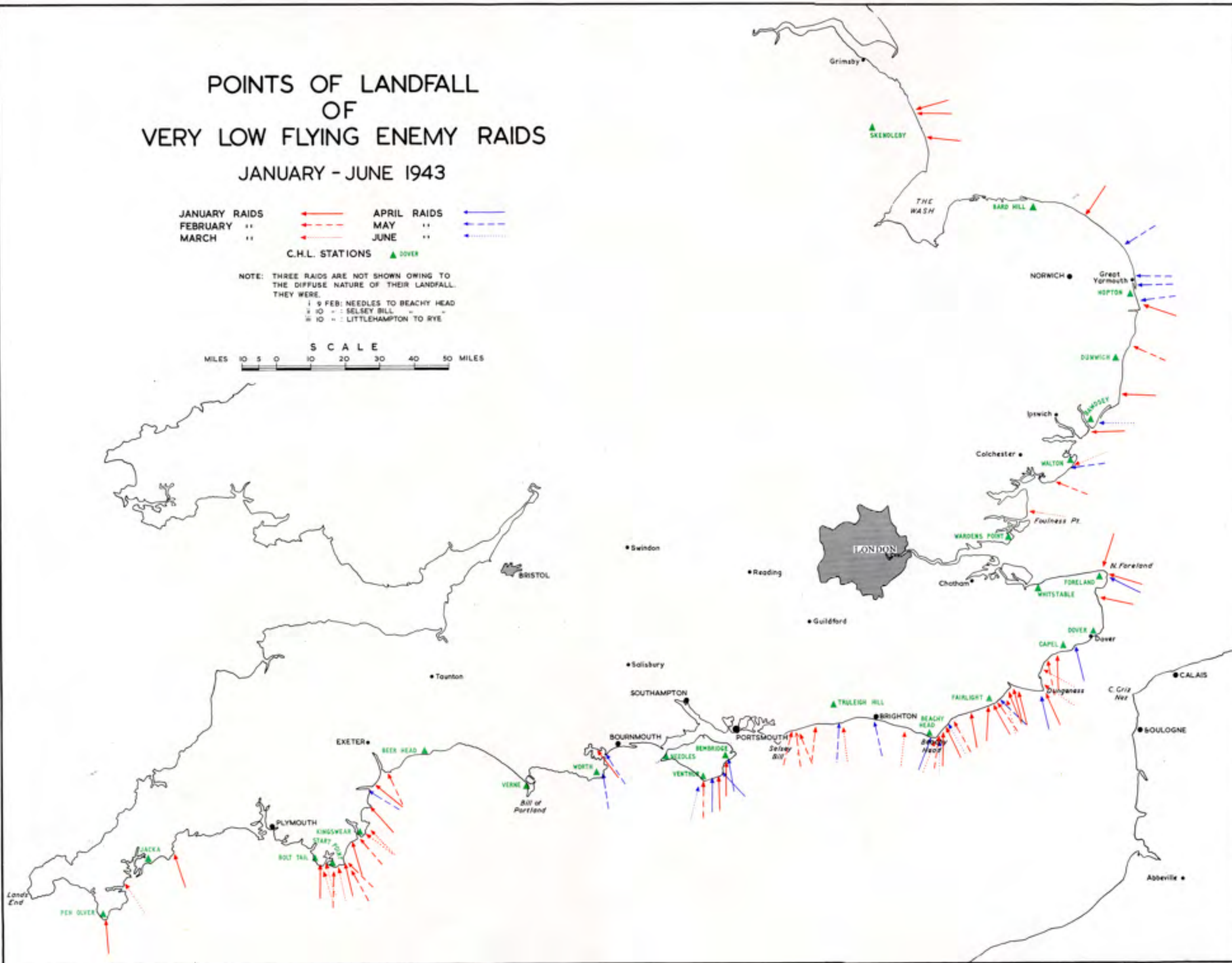
C.H.L. STATIONS ▲ DOVER

NOTE: THREE RAIDS ARE NOT SHOWN OWING TO THE DIFFUSE NATURE OF THEIR LANDFALL. THEY WERE:

1 9 FEB: NEEDLES TO BEACHY HEAD
2 10 " : SELSEY BILL " "
3 10 " : LITTLEHAMPTON TO RYE

SCALE

MILES 10 5 0 10 20 30 40 50 MILES



Next was Hastings raided five times with 24 tons. Torquay and Paignton were attacked three times (12 tons). In East Anglia Great Yarmouth received the greatest tonnage (10 tons). The most effective damage caused by fighter bombers was to the Southern Railway Works at Ashford on 24 March.

The fighter bomber or fast two seater bomber such as the Me.410 was the enemy's principal offensive weapon against this country in 1943. It had the advantage of being able to evade intercepting fighters and A.A. gunfire. However, the limitation to the bomb load carried by the small bomber and its inability to carry incendiaries was a great handicap and, on the whole, the threat to British industries and key points was greater at night when long range bombers achieved one of their rare concentrations.

A.H.B./IIG/114,
p.13.

Despite the difficulty of giving warning to the defences in these attacks by fast fighter bombers flying at zero feet, the enemy's casualty rate soon rose and the tip and run raids were abandoned. As a German account related: 'In this type of operation, consisting of bombing and strafing, bomber units suffered in attacks on densely populated built-up areas comparatively heavy losses. A great number of operations had to be abandoned because of weather conditions. Fighter-bomber attacks which had been carried out from spring 1942 to May 1943 on targets in south and south-east England and on shipping along these coasts had also proved too costly in relation to the results achieved. Therefore nuisance raids were carried out thereafter by night only by the two new high-speed Gruppen, one being equipped with F.W.190's and the other with Me.410's.' Of the 161 daylight attacks in the year, only ten occurred during the last six months.

A.W.A. Rept No.
B.C./28, Feb.1944.
A.H.B./IIB/47/3.

Below is a table which shows the enemy's daylight effort, claimed casualties by fighter and anti-aircraft guns and bomb tonnages in 1943.

| Month | E/A Overland | | | | Casualties to Overland A/C | | | | Total weight of Attack (Tonnes) |
|-------|--------------|-------|------|-------|----------------------------|-------|------|-------|---------------------------------|
| | L.R.B. | R'oce | F.B. | Total | L.R.B. | R'oce | F.B. | Total | |
| Jan. | 16 | 3 | 146 | 165 | 1 | - | 19 | 20 | 67.97 |
| Feb. | 28 | 23 | 81 | 132 | 1 | - | 2 | 3 | 68.58 |
| Mar. | - | 38 | 146 | 184 | - | - | 20 | 20 | 54.50 |
| Apr. | - | 26 | 36 | 62 | - | 1 | 4 | 5 | 14.00 |
| May | 7 | 25 | 232 | 264 | 2 | - | 37 | 39 | 87.10 |
| June | - | 12 | 83 | 95 | - | - | 12 | 12 | 32.42 |
| July | 10 | 14 | 4 | 28 | 2 | 2 | 1 | 5 | 5.71 |
| Aug. | - | 17 | - | 17 | - | 2 | - | 2 | - |
| Sept | - | 25 | - | 25 | - | 2 | - | 2 | - |
| Oct. | 3 | 3 | - | 6 | - | 2 | - | 2 | 2.05 |
| Nov. | 1 | - | - | 1 | - | - | - | - | .20 |
| Dec. | 2 | 1 | - | 3 | 1 | - | - | 1 | 2.00 |
| Year | 67 | 187 | 728 | 982 | 7 | 9 | 95 | 111 | 334.53 |

Once again it is difficult to assess the real number of enemy aircraft losses as the available German records are not divided into day and night operations while the division of fighter losses into 'Over United Kingdom' and 'Over France and Low Countries' cannot be guaranteed and must be accepted with reserve. German records state that 283 day and night bombers were destroyed in action in 1943. As the German daylight effort amounted to little more than ten per cent of the night effort it is reasonable to assume that the British estimates was fairly close to the mark. There is no doubt

that the improvement in the number of aircraft destroyed was largely due to the low looking radar equipment coming into action in the spring.

Enemy Daylight Reconnaissance: January to June 1944

A.H.B./IIM/13.

No bombs were dropped by day overland in the whole of 1944, daylight activity being confined almost entirely to reconnaissance flights. With the prospect of Allied landings on the north-west European coastline drawing nearer every day as the months went by, the enemy's desire for information of the dispositions of Allied landing craft, troop concentrations and other invasion activities must have been acute. Yet such was Allied air superiority that German daylight air reconnaissances over Great Britain were meagre in the extreme and not more than 32 overland reconnaissance flights were recorded in the first six months of the year though undoubtedly a number of sorties were flown over coastal waters. It was evident from prisoner of war interrogations that daylight reconnaissance had been proved very dangerous and difficult for some time but obviously night reconnaissance was at its best a poor substitute for daylight observation.⁽¹⁾

Enemy Doc.
A.H.B.6. Trans.
No. 172.7, p.3.

In January enemy reconnaissances over this country were recorded on only two days of the month. No reconnaissance aircraft were plotted in February and in March reconnaissances were limited to the North Sea, the Falmouth area and north of the Shetlands. According to records of Luftwaffe 3 353 sorties were flown in the first quarter of 1944 at the expense of 17 aircraft and 86 supporting fighters. The enemy claimed that photographic reconnaissances were flown over the English South coast for the first time since August 1943. In April the enemy displayed an interest in the increased shipping activity round the south coast by flying over the Isle of Wight and the Plymouth area. From 26 to 30 April and from 1 to 9 May reconnaissance patrols were flown daily over the south and southwest coasts but only two made landfall over Plymouth and near Falmouth. As May drew to its close and the Allied air offensive against targets in France and other occupied countries reached its climax, German reconnaissances continued to be flown over the Shetlands and Orkneys, Scapa Flow in particular; sorties over the English Channel were rare. It is possible that one of the main objects of the night attacks on the Plymouth, Weymouth, Portsmouth and Brighton areas in May was in fact, reconnaissance, the bombers being used as cover for reconnoitering aircraft.

A.D.G.B. Form
'Y', April-June
1944.

From about 20 April until D Day Air Defence of Great Britain maintained daily standing Spitfire patrols ranging in strength from six to 40 aircraft over the vulnerable assembly areas of the British and American invasion fleets such as the Isle of Wight, Lyme Bay, Portland, Falmouth and the Lizard area. Cover was also provided for the final invasion manoeuvre known as Exercise Fabius held on the Dorset coast in May. But these activities were uneventful.

It remains a fact that the great armada was collected at the ports, embarked and marshalled at sea and eventually launched to attack - an operation extending over a week - without any interference from the sea or air.⁽²⁾

- (1) In August 1943 one enemy reconnaissance aircraft (an Me.109) was destroyed over the Solent by heavy A.A. guns at 34,000 feet.
- (2) The only recorded overland activity in daylight in the first week in June was a reconnaissance sortie over the Margate area on the afternoon on 7 June.

CHAPTER 12

THE AIR DEFENCE OF THE UNITED KINGDOM BY NIGHTIntroduction

It will be recalled that during the last three months of 1942, enemy night air activity had been at its lowest scale since intensive night raids began in the autumn of 1940. The last attack of any weight had been the bombing of Canterbury following upon a daylight raid on 31 October/1 November. Previous to that, in July 1942, a series of fairly heavy attacks (for that period) were delivered against the Birmingham area. During 1943 the enemy night effort against Great Britain, apart from a couple of raids against London early in the year, continued to be slight. The principal targets were towns on or near the south-east and north-east coasts and only a few shallow penetrations were made inland. It was not until late January 1944 that a series of sharp attacks, greatly in excess of anything since May 1941, began on London. This chapter will deal with enemy overland night raids and British countermeasures and interception from January 1943 to the end of June 1944, when, apart from some desultory intruder activity in March 1945, attacks by piloted German aircraft against Great Britain ceased.

Raids on London and Coastal Towns: 1/2 January to 12/13 July 1943

(i) Comparison of German Bomber and British Fighter Strengths - German Bombing Policy

Enemy Doc.
A.H.B.6.
Trans.

On 10 January 1943 there were 122 long range bombers in Luftflotte 3 of which 67 were serviceable. They consisted of Do.217's from I and II KG.2; Ju.88's from I/KG.6 and F.W.200's from III/KG.40.⁽¹⁾ By June KG.6 (74 Ju.88's) was under orders to move to Istres where it was to operate under Luftflotte 2 on the Mediterranean Front. On 10 June there were 160 long range bombers of which 123 were serviceable. In addition, the F.W.190 fighter bombers of SK.G 10 were available for night operations, of which 50 were serviceable out of 76.

A.H.B./IIS/110/
14/54,
Encl.12B.

N.A.D.(43)1,
Para.7.

R.A.F. Intelligence estimated that during the winter months the enemy would have available a force of 150 to 200 long range bombers in the west and that they would be able to make a sustained effort of 15 to 20 aircraft per 24 hours against this country. During the summer months the total number of bombers might be increased to 200 capable of a sustained effort of 30 aircraft per 24 hours. The increasingly effective bombing of Germany gave rise to fears that the Germans would retaliate with heavy raids on the capital and elsewhere, and the Prime Minister stated on 16 March that the air defences should be brought to the highest state of efficiency.

However, the delay of the enemy in producing more up to date types of bombers made large scale reprisal raids out of the question. The bombers then in the line varied little

(1) The F.W.200's (Strength 19; Serviceable 7) were usually reserved for attacks on shipping.

Enemy Doc.
A.H.B. 6 Trans.
Nos. VII/153,
pp.10-11, and
VII/154,
pp.16-17, 21-22.

See Chap.11,
p. 171.

from those employed in 1940 and 1941 and, moreover, the dispersal of aircrews to other fronts and the casualties that had been suffered in the past two years had brought about a serious deterioration in the quality of bomber crews. A policy of reprisal raids against Britain had been promoted, as already seen, by Hitler and Goering from the latter half of 1942 onwards. But their failure to grasp the technical problems of an air force to say nothing of air strategy merely made them increasingly irritated by the performance of the long range bomber force in the west. They interpreted Fliegerkorps IX's attacks on ports and shipping and minelaying operations (in fact the only practicable policy to follow) as a sign of cowardice and accused Luftflotte 3 of not daring to fly inland over Britain. Their dissatisfaction had led to the regrouping of the bomber force in the west under Angriffsfuhrer England.

The idea of Angriffsfuhrer England seems to have emanated from Goering and his circle, and Peltz, to whom a number of qualities had been ascribed, was no more than a protégé. From the start his position was anomalous and was doomed to failure because as General Koller (at this time Chief of Staff to Luftflotte 3 and later to be Chief of the German Air Staff) bitterly wrote after the war: 'General Major Peltz was "O.C. Attacks on Britain" and A.O. Bombers at one and the same time. He was personally subordinate to Goering but was responsible to the Chief of Air Staff as far as his work was concerned. He had a battle H.Q. in France, a Command H.Q. at Rangsdorf and he had to go to Berlin once a week for an over-all situation conference. Besides this he generally had to pay a weekly visit to Goering who was at Berchtesgaden, Nuremburg or Karinhall; he also had to go once a week to East Prussia to see the Chief of Air Staff and to Luftflotte 3 in Paris. Consequently Peltz was travelling all the time and did not undertake the command of either of his posts.All this is a classical example of the absurd way in which the Commander-in-Chief of the Luftwaffe and his circle organised things, where single individuals were encouraged to build their empires'.

A.H.B./ID8/
406A.

N.A.D.(43)1,3,
9 Progress
Repts. by
A.O.C.-in-C.
F.Cmd. on Night
Interception.
See this Narr.
Part IV,
Chap.16.

Meanwhile the new Commander-in-Chief Fighter Command, Air Marshal Leigh Mallory, had begun to mould his night-fighter force into a more aggressive shape. The ten Turbinlite squadrons were disbanded on 25 January. The two intruder squadrons were to discard their Bostons and re-equip with Mosquito VI fighter bombers as soon as possible. The night offensive was to be increased by ten new flights of Mosquitos II which were to be attached to A.I. Mosquito Squadrons. This was to be done by cutting down the A.I. night-fighter squadrons from 22 to 20.⁽¹⁾ He also established at Drem No. 1692 Radio Development Flight whose immediate task was to test a homing device to enable night fighters to establish contact with German A.I. - equipped fighters, known as Serrate. These changes will be discussed in more detail in the chapter on night offensive operations.

(1) In fact, at the end of February, there were only 19 A.I. squadrons (one of which, No. 219 Beaufighter Squadron, was earmarked for overseas service). Air Marshal Leigh Mallory considered that 20 squadrons should be the absolute minimum in the eventuality of heavy enemy night raids.

The formation of the new ranger flights proceeded slowly but by the end of May seven squadrons had been equipped. The effect of these measures was to increase not only the offensive power, but the flexibility of the night-fighter force as the Mosquitos II could be used as intruders/rangers by day or by night and also as night fighters for manning the searchlight boxes. In the event of the enemy attempting to jam the night defence organisation, the intruders were thought to be the best form of defence. These re-adjustments were also economical and made available some 2,300 men and 92 aircraft.

F. Cnd Order of
Battle in O.R.B.
App. C.
A.H.B./IIM/A2/
4A.

The order of battle for operational night-fighter squadrons at three dates during this period was as follows: (1)

| | 7 Jan. No. | 1943 I.E. | 4 Mar. No. | 1943 I.E. | 3 June No. | 1943 I.E. |
|----------------------|---------------|--------------|---------------|--------------|---------------|--------------|
| Beaufighter I | 5 | 90 | 3 | 48 | 2 | 38 |
| Beaufighter II | 1 | 16 | 1 | 16 | - | - |
| Beaufighter VI | 6 | 96 | 7 | 112 | 7 | 112 |
| Mosquito II | 6 | 96 | 8 | 170 | 7 | 112 |
| Mosquito XII | - | - | - | - | 2 | 32 |
| Hurricane/ Boston | | | | | | |
| Intruder | 2 | 32 | 1 | 16 | 1 | 16 |
| Mosquito II | | | | | | |
| Intruder | - | - | - | - | 1 | 16 |
| Turbinlite | 10 | 60 | - | - | - | - |
| TOTAL | 30 | 390 | 20 | 362 | 20 | 326 |

(ii) Development of A.I., I.F.F. and Searchlight-aided Interceptions

In this phase of the German night bombing offensive against Great Britain the bombers flew in low and took strong evasive action against the R.A.F. night fighters. The experimental A.I. Mark VIIIA of which 500 hand-made sets were made, was introduced to counter the low-flying night bomber and its place was shortly to be taken by the A.I. Mark VIII, then in course of production, with which most of the night-fighter force was to be equipped. (2) The first A.I. Mark VIIIA sets were fitted in Beaufighters of the Fighter Interception Unit and of No. 219 Beaufighter Squadron early in 1943. The first claim for A.I. Mark VIIIA was made on 20/21 January when a Beaufighter of the Fighter Interception Unit shot down a Do.217. This was followed up with a further claim on 3 February by No. 219 Squadron. In both cases the combats took place shortly after the delivery of the aircraft and the interceptions were made against violently evading targets at low heights - types of interception which could not have been possible with the old forms of A.I. equipment. In March five claims for aircraft destroyed were made with A.I. Mark VIIIA and three probables and these successes continued to be maintained. By the end of May 1943 five Beaufighter Squadrons had been equipped with

N.A.D.(43)1,
paras. 16-27.

- (1) For strength of A.A. defences see Chap.11 p.172. For location of night fighter squadrons see Appendix No.16.
(2) See R.A.F. Signals History, Vol. V, Chap. 10.

A.I. Mark VIIIA.(1) Meanwhile Beaufighters with the A.I. Mark VII equipments were despatched to the Mediterranean theatre and interceptions with that type of A.I. did not occur after March.

The I.F.F.'s I and II had also become obsolescent mainly because the number of wavebands on which they were required to work had steadily increased. These developments have been described elsewhere.(2) Suffice it to state that by the end of August all the night-fighter squadrons had been fitted with Mark IIIG I.F.F. and facilities for interrogation. Mark IIIG I.F.F. was also installed in about one third of the day-fighter aircraft; the remainder were equipped later in the autumn. The fitting of G.C.I. stations with Mark III I.F.F. interrogators proceeded satisfactorily. The total number of radar stations thus equipped by the end of the summer were:

C.H. Stations 39

C.H.L. Stations 49

G.C.I. Stations 11

In addition experiments were in progress with airborne interrogator/responders fitted on night fighters with the object of avoiding the possibility of intercepting friendly bombers fitted with I.F.F. Mark III.(3)

See Part I,
Chap. 4,
p.40 and p.63.

Control of
Night Fighter
A/C 18 Nov.
1942 (copy) in
A.H.B./IIM/A16/
1E, App. E.

An account has already been given of the procedure for searchlight-aided interceptions and it was seen that the results in 1942 were unsatisfactory, partly, because the searchlights were unable to give night fighters adequate indication of the locality of the target and, partly, because of the lack of enemy overland night activity. During 1942/1943 a new procedure for searchlight-aided interceptions was tried out, known as Gauntlet. This was designed to speed up searchlight-aided interceptions whilst retaining more control of fighters than under Crackers (the procedure used for high density raids on dark nights). In addition to the beam around which the night fighter circled and which remained in a vertical position throughout the raid, a second beam was exposed at an angle of 30° pointing towards the approaching raiders, enabling the night fighter to judge more or less accurately its sphere of influence. Pilots were to report searchlight intersections to the Controller; the latter summed up the tactical situation at the time and decided whether or not to allow the pilot to investigate. If the fighter did not make A.I. contact, or in the case of non-A.I. equipped fighters, failed to see the target, the pilot was recalled to his orbit after four minutes. On return he reported to the Controller who gave him a height at which to circle.

A.D.G.B. O.R.S.
Rept. No. 3 in
A.H.B./IIM/A2/
4A, Dec. 1943.

The infrequency of large scale deep penetrations over Great Britain by night during 1943 and the evasive action of enemy bombers afforded few opportunities for searchlight-aided fighters and over one third of attempted interceptions were abandoned as the 'enemy' turned out to be a friendly aircraft. However, it appeared that, of the two procedures,

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- (1) They were Nos. 68, 249, 125, 29, 604 Squadrons.
 - (2) See R.A.F. Signals History, Vol. V, Chap. 7.
 - (3) See R.A.F. Signals History, Chapter 7, page 94.

Smack was the more efficient. On an average, between March and September 1943, it took eleven attempts to produce one combat under Smack procedure whereas 96 attempts were necessary under Gauntlet. In this period six aircraft were claimed to have been destroyed or probably destroyed under the two procedures.⁽¹⁾ It was quite evident that searchlight-aided interceptions could never be as successful as G.C.I. controlled interceptions but a number of opportunities for the former method occurred in the raids on London early in 1944 and will be discussed later in this chapter.

See p.217.

F. Cmd. Op.
Inst. No.35/
1943.
A.H.B./IIB1/
64(B).

With the construction of Fixed Type G.C.I. stations during 1943 it was possible to control searchlight-aided interceptions as well as G.C.I./A.I. interceptions from a G.C.I. station (hitherto each G.C.I. had only been able to control a single fighter at a time and the Sector Operations Room was responsible for the control of searchlight-aided interceptions and the pool of fighters from which the various G.C.I.s within a sector were served). This made it possible to co-ordinate properly G.C.I./A.I. and searchlight-aided interceptions.

(iii) Searchlights and Balloons

N.A.D.(43)1,
paras.47-54 and
N.A.D.(43)3,
paras.57-61.

A cut of 20,000 personnel was made in Balloon Command during the spring of 1943. It was, however, possible to retain the barrages at London, Plymouth, Falmouth and Yeovil. The total cut came to 624 balloons. Mobile balloon barrages continued to operate at Norwich, Chelmsford, Canterbury and Salisbury but on 15 May, the barrage at the latter place was moved to Swindon for a period of two and a half weeks and then to Great Yarmouth and Lowestoft as a countermeasure to the persistent enemy low level daylight attacks which were being made on the East Anglian coast. For similar reasons the Newcastle balloon barrage was extended to include Sunderland.

N.A.D.(43)3,
paras. 47-48.

The area covered by searchlights was also reduced, from Northern Ireland, Scotland and parts of Wales including Milford Haven. Air Marshal Leigh Mallory considered that the limit of reduction had now been reached because it only led to difficulties in training night fighters and providing homing facilities for night bombers. Searchlights and A.A. guns were withdrawn from a large number of airfields, leaving only nine important coastal night-fighter airfields with full scale ground defences.

(iv) Enemy Operations: 1/2 January to 31 March/1 April⁽²⁾

Enemy Doc.
A.H.B.6 Trans.
No.172.5 and
A.W.A. Rept.
No.BC/18, May
1943, pp. 4-5.
A.H.B./IIB/47/3.

The only raid of importance in January took place on the 17/18th. It was a reprisal for an R.A.F. Bomber Command raid on Berlin on the previous night. A force of 118 bombers was despatched against the capital in two waves. In the first phase, beginning at approximately 2030 hours and lasting for two hours, 60 bombers crossed the coast between Dungeness and Beachy Head and spread over Kent, Surrey and Sussex. The target area was 'W.S.W. of the big bend in the Thames'.

- (1) Searchlights may have acted as a deterrent to fighter bombers operating at night and on one occasion an F.W.190 was homed to Manston by searchlights and landed intact.
- (2) See App. No.22 for details of all important night raids on Great Britain in 1943.

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During the same period ten bombers made a diversionary attack on Portland and 34 aircraft dropped mines in the Thames and Humber estuaries. In the second phase of attack, beginning at 0400 hours which lasted an hour, a further 58 bombers were despatched to attack 'targets between Albert Bridge Battersea to Belmont Works' but although weather favoured the second wave of raiders with a smaller amount of cloud and improved visibility, only about 15 aircraft reached the target area. One prisoner of war from a shot-down aircraft said that he believed that a number of aircrews were deceived by searchlights far south of London and dropped their bombs in open country. Others stated that they had jettisoned or released their bombs at random within the target area. Most of the bombs (amounting to 43 tons) in the London area fell in the eastern and south-eastern suburbs and bomb plots showed that the enemy was unable to bomb any specific target.

Fighter Cmd.
Form 'Y'.

Fighter Command flew 119 interception sorties and Beau-fighters of No. 29 Squadron and a Mosquito of No. 85 Squadron shot down four Ju.88's and a Do.217. A Ju.88 and a Do.217 also failed to reach base. All these aircraft were in the second attack and German records confirm the claims. It was the first time that S.L.C. (radar controlled) searchlights were really tested in action and four of the enemy were claimed to have been destroyed with their aid. The aircraft were shot down either through searchlights illuminating the target enabling night fighters to attack it or by providing indications to a night fighter which obtained A.I. contact and homed on the enemy. Damage in London was neither substantial nor of military importance and there were no more than 78 fatal casualties. It was indicative of the enemy's inability to concentrate that the spill-over amounted to 68 incidents outside London.

N.A.D.(43) 1,
para. 36.

Monthly Summ. of
Searchlight Activity
for Jan. 1943
App.D12 in A.H.B./
IIM/A21/4A Feb. 1943.

A.H.B./IIM/13.

A.W.A. Rept.
No. BC/18,
pp. 5-6.

In February the principal targets were Plymouth, bombed on the 13/14th and Swansea on the 16/17th. The latter attack was the most effective. It was, in fact, the most accurate night raid in the first quarter of 1943, a raiding efficiency of 51 per cent being achieved.⁽¹⁾ The main attack developed between 2210 hours and 2230 hours in moonlight. The balloon barrage was ordered to fly at 6,500 feet at 2157 hours. The enemy claimed that it did not deter the raiders but there are no reports of aircraft penetrating beyond it. Four bombers were shot down by Beaufighters of No. 125 Squadron with A.I. Mark IV over the Bristol Channel.⁽²⁾

There was a noticeable increase in night activity in March, possibly as a result of more favourable weather and by way of reprisal for R.A.F. raids on Germany. A total of 131 tons fell on this country. All but three of the targets, London, Norwich and Edinburgh, were coastal towns. They were Southampton, Hull, Newcastle, Sunderland, Grimsby and Hartlepool. But though it was on a larger scale than in previous months, the enemy's effort was singularly unsuccessful.

A.W.A. Rept.
No. BC/18.
A.H.B. IIB/47/3.

The heaviest attack was on London on 3/4 March: another reprisal for a British raid on Berlin two nights before. It was even less successful than the attack of 17/18 January.

(1) 'Raiding efficiency' is the proportion of the total weight of bombs dropped within a radius of 50 miles of the target which fell within the target area.
(2) According to German records four bombers were lost.



Mosquito XII



Dornier 217

Enemy Doc.
A.H.B.6, Trans.
No.172.5.

According to the German account '117 aircraft (took part) in attack on London, target area West South West of bend in Thames. Three waves from 2029 to 0504 hours. Weather unfavourable became worse. For second and third waves strong night fighter activity back to French coast..... Six bombers lost.' It was estimated that only about 15 aircraft reached the London area. In the first wave most of the bombs fell in Essex and in the second the spill was widely scattered over south east England and East Anglia.

A.H.B./IHH1/3.

The chief feature of the raid was the renewed use of the S.D.2 anti-personnel bomb now fitted with a hyper-sensitive fuse which rendered detonation possible for an indefinite period afterwards. Apart from this the raid is memorable for the tragic incident at Bethnal Green tube shelter where the fall of a woman on the steps leading down to the shelter, encumbered by a baby and a bundle, precipitated that of those behind her as they pressed forward and 178 people died from suffocation.

Enemy Doc.
A.H.B.6 Trans.
No.172.5 and
A.W.A. Rept.
No. BC/18 p.6.
A.H.B./IIB/
47/3.

The other attacks in the month were remarkable only for their ineptitude. In particular the raid on Southampton when, according to the enemy report, 'ground mist made attack difficult. Alternative targets at Portsmouth attacked.' Most of the bombs dropped about 30 miles north-east of Southampton and none in the town itself. According to a captured enemy aircrew it was intended to attack the town from the north-west, crossing the coast at Selsey Bill and flying round north of Portsmouth and Southampton, presumably with the object of avoiding the defences on the direct route up the Solent and Southampton Water. Tracks plotted by Fighter Command showed most of the enemy aircraft crossing the coast east of Selsey Bill and instead of flying north-west to Southampton a number became lost in the Midhurst area. The first two enemy aircraft crossed the coast east of Beachy Head and it is interesting to note that Haslemere is in approximately the same position relative to Beachy Head as is Southampton to Selsey Bill. Flares and incendiary bombs dropped by these two aircraft in the Haslemere area may have misled those that followed into dropping their bombs there. Prisoners of war reported spotting a number of decoy fires. As there was no decoy activity that night it seems probable that they were, in fact, bombs. Three bombers were shot down.

Ibid.

Other unsuccessful attacks were directed against Grimsby (15/16 March), Edinburgh (24/25 March), and Norwich (28/29 March). The nearest bomb to Grimsby fell six miles away. The attack on Edinburgh was made in foggy weather and German reports state that out of 35 bombers only 14 reached the target area. Bombs were dropped by D/R methods but none fell on Edinburgh. Eight aircraft were destroyed, one by fighters and two by A.A. fire, while the remainder lost themselves and crashed on the moors. In the attack directed on Norwich no bombs fell in the target area and 13 tons were scattered over East Anglia within a distance of 50 miles of the target.

(v) Enemy Operations 1/2 April to 13/14 July

N.A.D.(43) 3
paras. 709 and
A.W.A. Rept.
No. BC/19 p.3.
A.H.B./IIB/47/3.
(55692) 227

In April the F.W.190 fighter bomber made its first appearance in night raids over south-east England and particularly over the London area, forces operating on three nights during the moon period. The aircraft carried two extra jettisonable petrol tanks and one 500 kg. or one 250 kg. bomb.

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They operated from a base in the Somme area and made their sorties under R/T control.⁽¹⁾ The fighter bombers adopted the following tactics: they climbed over their bases to a height of approximately 10,000 feet and then proceeded towards Calais climbing until a height of 20,000 feet was reached. From there they were given a vector by R/T and they maintained height until the target had been reached and bombed. They then made for the Channel, being homed by R/T to one of the number of airfields in northern France. On other occasions the pilot got a visual fix when long range bombers were used as pathfinders, the fighter bomber attacking when a fire had been raised.

A.H.B./ID/12/58.

The high speed and violent evasive action of the F.W.190 made interception difficult. Moreover, the use of Mark VIII A.I. was forbidden over the Channel and although there were standing patrols under the G.C.I. stations at Wartling and Sandwich, north-east and south-east of Cap Griz Nez, it gave little time for interception. It was proposed to employ Mosquito intruders over the enemy airfields so as to catch aircraft before they attacked. Over land there were A.I./searchlight-aided fighters manning forward orbit beacons and further inland the normal system of searchlight box interceptions. Searchlights were directly concerned in the destruction of at least two enemy aircraft and later captured airorews admitted being confused by searchlight activity. From 16/17 April, the date of the first fighter-bomber raid by night, until 19/20 June A.I. contacts were obtained on no less than 50 per cent of some 110 fighter bombers, while fighters claimed to have destroyed seven and A.A. fire one, and six, which either lost themselves or ran out of fuel, landed in England. Total enemy casualties represented about 12 per cent of the aircraft involved in the raids.

Enemy Doc.
A.H.B.6. Trans.
No.172.5.

The first raid was a fiasco. London was the target but only about half the force (23 aircraft) reached south-east England and such was the pilots' standard of navigation that only two bombs fell in the London Civil Defence region. Three aircraft landed at West Malling because of fuel shortage and in the belief that they were over France. A fourth crashed elsewhere in Kent. Two others were also lost. One result from the night attacks was that the daylight tip and run raids were suspended in April - an indication of the enemy's limited resources.

A.W.A. Rept.
No. BC/19,
pp.4-5.
A.H.B./IIB/
4/7/3.

Long range bomber activity decreased in April (although small scale long range bomber attacks were not supplanted by the fighter bombers) the only attacks of any significance being one against Chelmsford (14/15 April) and Aberdeen (21/22 April), the latter place being raided by aircraft based on Stavanger. About ten tons of bombs were dropped in the Chelmsford borough. Two wheat stacks were fired by incendiary bombs early in the raid about five miles south-east of Harwich and attracted some 15 tons of bombs. The Hoffman Ball-Bearing Works at Chelmsford, one of the enemy's main objectives, was contrary to enemy reports, not seriously damaged.

A.H.B./IIB1/13.

A.W.A. Report
No. BC/19,
pp.4-5 A.H.B./
IIB/4/7/3.

The raid on Aberdeen was more effective than any night attack experienced since the beginning of the year. This may be explained by the fact that it was carried out at dusk in half light, from low level initially, and in the absence of

(1) This made them more vulnerable to jamming and consequent interception by night fighters.

a balloon barrage or heavy A.A. defences. Weather conditions were also good. Out of a force of 29 aircraft at least six bombed from under 500 feet and the remainder from 3,000 feet to 10,000 feet. No losses were suffered. In spite of German claims no bombs were dropped in the harbour area. The main weight of the attack (39 tons) was on the northern and west part of the town and direct hits were scored on the Gordon Barracks just to the north of the city boundary.

A.W.A. Rept.
Nos. BC/19 and
BC/28 in
A.H.B./IIB/47/3
and A.H.B./
IIB/1/13.

In May the following towns were raided, Norwich, Chelmsford, Cardiff and Sunderland (the latter being raided twice.)⁽¹⁾ The heaviest damage was caused to Sunderland which the Germans had persistently attempted to destroy for the past eighteen months, yet the latest attacks were the only ones in which the weight of bombs dropped on the town exceeded five tons. Fatal casualties in the second attack on Sunderland, including those in South Shields, were 85 people killed and 15 missing, believed killed. About 5000 houses were damaged or slightly damaged.

Towns raided in June were Plymouth, Grimsby (raided twice) and Hull: 167 tons of bombs were aimed at them, of which 57 tons fell on the target and 91 tons on the target or on land within 50 miles. The dropping of flares preceded the attacks. As in April and May, fighter bombers were active over London and the south-eastern counties by night during the period near full moon. Twenty-one bombs were dropped on London on seven nights.

A.W.A. Rept.
No. BC/22.
A.H.B./IIB/
47/3.

The attack on Grimsby on 12/13 July was notable for the dropping of some six tons of S.D.2 (Butterfly) anti-personnel bombs which fell along with incendiaries and H.E. Presumably the enemy's intention was to hinder fire fighters after the raid and so encourage widespread conflagration. If this was so, his purpose failed completely. While one serious and four medium fires were started, no anti-personnel bombs fell in the immediate vicinity of any of them and consequently had little effect on the efficiency of the fire fighting services. Their main effect was felt after the raid was over. Fifty-seven persons were killed, mostly among the civilian population, and the bombs continued to be a nuisance and a menace for a week after the raid. The Luftwaffe did not exploit these tactics as it logically should have done, with the exception of an attack on Lincoln on 17/18 August when a mixed load of S.D.2 and small incendiaries were dropped. (That attack was a complete failure).

Ibid.

The attack on Grimsby was the most accurate night attack of the year. If Cleethorpes is included as part of the target area, a raiding efficiency of 99 per cent was achieved. All bombs which fell in the target area were within two miles of the central aiming point, the dock area. Nevertheless, no serious damage was done to the docks, apart from a number of fires. Residential property suffered more in proportion and the railway system was temporarily disorganised. The enemy was unable to maintain such accuracy. The raid should be compared with one on Hull two weeks later when no bombs were dropped within eight miles of the town.

(1) See App. No. 22 for details of major raids.

Enemy Path-finding Technique

A.W.A. Rept.
No. BC/19, p.1
A.H.B./IIB/47/3
A.H.B./IIG/114,
p.13.

During April and May there began to emerge the first indications of a pathfinder technique involving more careful routeing of the bomber force and an attempt at more accurate marking of the target area by leading aircraft using flares and incendiary bombs. A special Gruppe (I/K.G.66) was responsible for pathfinding tasks and according to the enemy 'such aids made it possible to concentrate attacks to a greater extent and made operations less dependent on weather and moonlight'.

Annex to A.W.A.
Rept. No.
BC/24,
12 Oct. 1943.
A.H.B./IIB/47/3.

After a short time it was possible with experience gained in raids combined with interrogation of captured aircrew to establish the procedure followed by the enemy in pathfinder technique. The bombers flew from their airfields to a convenient point on the coast, which was usually identified by a high-powered visual beacon and then flew over the sea on a set course, keeping at a low altitude, probably between 150 to 450 feet. They continued at this course and height until they reached a given turning point, usually 60 to 100 kilometres from the English coast. This point was marked by a special aircraft known as a "Wendepunkt-Markierer" (Turning point marker), manned by an experienced crew which flew to the spot, ahead of the main force and circled, dropping a series of flares so that the sea was illuminated for about 20 minutes. The aircraft carried 18 or 20 L.C. 50 parachute flares, all of one colour, usually red, white, green or yellow. Sometimes the turning points were marked by 'See Lux' sea rescue flares which burned on the surface of the water but these only burned for a comparatively short time; they burned red-white-red or white-red-white. Navigational aids were often used by the turning point marker aircraft and possibly by the main bomber force. Once the marker aircraft had completed its task it returned to base.

When the aircraft of the main attacking force reached their turning point, they took up course for the target, climbing as quickly as possible to a height of 9,000 to 12,000 feet. Meanwhile one aircraft known as the 'Zielfinder' or target pin-pointing aircraft, flew on ahead to the target. It was usually flown by a crew with a very experienced navigator and was often piloted by the Gruppenkommandeur or one of the Staffelkapitans. This aircraft flew without navigational aids. The task of the 'Zielfinder' aircraft was to reach the target about ten minutes before the main force and to release flares to indicate the targets position. Coloured flares were used, the colour being varied from operation to operation. The task of marking the target was continued by three other aircraft which flew a few minutes ahead of the main force. The first of these was known as Zielmarkierer (Target Marker) and was timed to arrive immediately the flares were released by the Zielfinder. The Zielmarkierer dropped a full load of incendiaries to light up the target. The remaining two aircraft were called 'Beleuchter' (Target Illuminators); they arrived next on the scene and dropped a further succession of flares for the benefit of the main force.

Pathfinder tactics were first employed on an extensive scale in the raid on Cardiff on 17/18 May and from then onwards, until early July, the efficiency of raiding improved, although it was to fail badly in attacks later in the year.

Infiltration of Enemy Aircraft during Bomber Command Operations

A.H.B./ID/12/
58.

Apart from the enemy's use of pathfinding technique, some of the improvement in bombing during June and July was due to the fact that enemy bombers were meeting little opposition on their way to the target area as they were infiltrating into the stream of Bomber Command aircraft returning from the continent and were thus undetected by R.D.F. On 23 June the Chief of Air Staff complained that on the two previous nights enemy bombers had crossed the English coast without being plotted and all had got away safely. The defences again failed to detect the enemy until just before they crossed the coastline on 13/14 July when attacking Hull. The comment of the Chief of Air Staff to the Director of Fighter Operations was: 'We have been sending out bombers for nearly four years now! What is the matter?' The increasing number of Allied aircraft in the air at night made the task of detecting the sneaking raiders still more urgent and Sir Charles Portal wanted to know how the scientists were going to tackle it.

A quick solution was not forthcoming. There was no evidence of any deterioration in the performance of the radar chain but it was at the same time impossible to identify a handful of hostile aircraft among so many friendly ones.⁽¹⁾ The problem of identification had been occupying the attention of both the technical and operational staffs for some years, and in neither cases were they hopeful of finding a complete answer. In the blitzes of 1940/1941 when the number of enemy aircraft visible on the radar tube was great, a system of area reporting had to be adopted. When the tube was saturated the station reported the boundaries of the area and the number of aircraft in it. At that time there were often a number of friendly aircraft among a mass of hostile aircraft. Now the position was reversed but the problem was essentially the same and in such circumstances individual tracking and very accurate filtering were impossible.

Ibid.

It was possible, however, to improve the warning system. Firstly, the I.F.F. Mark III was to be modified in order to give it greater mobility to read on individual aircraft. Second, an attempt was made to improve ground detection. A prototype Mark III I.F.F. system was installed at the G.L. Royal Observer Corps post at Lexden near Colchester. It was to provide a coastal band of narrow vertical radar cover in the hope that each aircraft crossing it could be observed and reported if not showing I.F.F. While not materially increasing the warning given, it could assist in identifying hostile aircraft mingling with the British bomber stream.

(1) Identification of enemy bombers entering the country with returning British bombers was made more difficult by the change over from Mark II I.F.F. to Mark III I.F.F. The latter had a different form of presentation from the Mark II. In the Mark III display aircraft responses and I.F.F. responses were on different traces and had to be correlated. No direction information was obtained from the I.F.F. responses. Thus if an enemy aircraft and a friendly aircraft were flying at the same range, it was not easy to decide which was the one showing I.F.F. When numbers of aircraft were involved this difficulty was accentuated.

Thirdly, Roller Blind mechanism was installed in C.H. stations to enable them to track an individual aircraft. This was a mechanical device by means of which one observer could make pencil marks opposite echoes (showing on the C.R. tube) on a moving paper roll. By this means a single observer could semi-automatically track a number of aircraft, and, though the tracks might cross and re-cross, could more easily retain identification and continuity of the several tracks. By mid-August eight stations had been fitted and the remainder were being supplied at the rate of three per week.

Finally it was decided to widen the circulation of 'Y' information. All 'Y' information was immediately passed direct to the Filter Room Controller to be used by him for identifying aircraft. Air Raid Warning Officers at all Groups were to take every advantage of such information. A provisional instruction was also issued under which No. 11 Group Filter Room Controller was to pass to the Duty Air Raid Warning Officer the estimated landfalls of enemy tracks which had faded because of known limitations of the radar system, and when evidence was available to indicate that the aircraft was likely to approach this country. The Air Raid Warning Officer was authorised at his own discretion to give warning of an approaching raid. This procedure was to be extended to all Groups if it proved successful.

Summary of Period 1/2 January to 13/14 July 1943

A.W.A. Rept. No.
BC/28, Feb.
1944, Tables
1-2 in A.H.B./
IIB/47/3.

During this period in which the enemy made some 60 attacks against this country, there were only two in which forces of more than 50 aircraft approached anywhere near the target (in this case London). London received the largest number of attacks but only two of these raids were made by long range bombers, the remainder being fighter-bomber night raids. The following table shows those targets which were the most heavily attacked (i.e. attacks in which ten or more aircraft were involved.)

| | Target | No. of Attacks | Bomb Tonnage | |
|----------------|------------|----------------|-----------------|-----------|
| | | | Aimed at Target | On Target |
| See App. No.22 | London | 3 | 236.5 | 56 |
| | Sunderland | 2 | 186 | 130 |
| | Hull | 2 | 101 | 49 |
| | Grimsby | 1 | 57 | 36 |
| | Aberdeen | 1 | 58.5 | 39 |
| | Chelmsford | 2 | 190 | 25 |
| | Plymouth | 2 | 105 | 26.4 |
| | Cardiff | 1 | 92 | 20 |
| | Swansea | 1 | 27 | 6.4 |
| | Norwich | 3 | 156 | 3.7 |

The most accurate attacks were made in May, June and early July; this is accountable to better weather conditions and the use of pathfinder technique. The following table shows the most effective attacks against towns in Great Britain:

A.W.A. Rept.
No. BC/28,
Feb. 1944,
Table 5.
A.H.B./IIB/
47/3.

| Date | Target | Raiding Efficiency |
|-------------|------------|-----------------------------------------|
| 12/13 July | Grimsby | 82% (99% if Cleethorpes is included) |
| 23/24 June | Hull | 77% |
| 15/16 May) | Sunderland | 64% |
| 23/24 May) | | |
| 21/22 April | Aberdeen | 66% |

Ibid,
Table 1.

F. Cmd. O.R.S.
Repts. on
'Fighter Inter-
ception System
and Ops.' 1943.
A.H.B./IIM/A2/4A.

A.W.A. Rept.
No. BG/18,
May 1943, p. 4.
A.H.B./IIB/47/3.

During the first six months of the year approximately 911 overland enemy long range bomber sorties, 145 fighter bomber and 9 reconnaissance sorties, making a total of 1,065 overland night sorties, were flown. Fighter Command claimed to have destroyed $65\frac{1}{2}$ enemy aircraft, probably destroyed 11 and damaged 20 in defensive operations. Of these $34\frac{1}{2}$ were destroyed with the A.I. Mark VIII, 11 by A.I. Mark VII, seven by A.I. Mark V and 10 by A.I. Mark IV. Only two were claimed to have been destroyed by Catseye fighters. The majority of the A.I. interceptions were made under G.C.I. control; second most successful were those under control of C.H.L.

That the enemy had a high respect for the British night fighters and R.D.F. system was proved by his resorting increasingly to evasive action during this period. Bombers were being fitted with backward looking A.I. and measures were taken to increase their speed. Captured aircrew declared that it was a regular practice to take evasive action against night fighters within 50 miles of the coast. Crews were warned that even 30° changes of course were insufficient to evade British fighters and ground control and they were instructed to alter course by as much as 45° to 50° periodically every 30 seconds to a minute. Aircraft were also continually to dive and climb as height change was reported to be most effective against ground R.D.F. At night enemy aircraft crossed the sea at low level and began to climb and take evasive action when reaching the convoy lanes about 50 miles off the coast. Such violent evasive action which added to the difficulties of navigation was the reason why so many aircraft got lost and failed to reach their objective, particularly when inexperienced crews were employed.

Decline in Long Range Bomber Penetrations. Intruder
Attacks on Eastern England: 13/14 July 1943 to 21/22
January 1944.

(i) German Bomber Force and British Night Air Defences

A.M. Pamphlet
No. 248,
Chap. 11, p. 270
et seq.

In the Mediterranean theatre during this period the enemy expended his air power in a desperate effort to drive the Allies into the sea at Sicily and later on the Italian beaches. Aircraft from the eastern and western fronts were drawn south for this purpose. The Mediterranean theatre became the graveyard of the Luftwaffe during the period 1942/1943 because of the heavy casualties in aircrew and aircraft. That campaign interfered with all its plans for recovery and expansion and vitally handicapped it in the two tasks which confronted it in 1943/1944 - the defence of German industry from heavy air attack and the defence of the Western Wall against an Allied invasion. From the beginning of 1943 there was a serious deterioration in the quality of aircrew which has already been noted in enemy air operations over England.

By the autumn of 1943 the Germans realised that to keep a large air force in the Mediterranean area was of no value. Allied intentions in the west were daily becoming more ominous. Colonel Peltz had by then been promoted to Major General and Fliegerkorps IX was reinforced by long range bomber units from Italy. Several of these units had been transferred from France to Italy in the early summer. These changes, due to the vacillating policy adopted by the

German High Command, did not lead to any intensification in the bombing offensive against Great Britain as yet.

Enemy Doc.
A.H.B.6 Trans.

On 10 November there were 302 long range bombers in Fliegerkorps IX of which 145 were serviceable.⁽¹⁾ Nearly 70 of the latter were Do.217's. Apart from the Me.410, of which 11 were serviceable, the Ju.188 made its first appearance. The Ju.188 had better flying qualities than the Ju.88 and was faster, roomier and had a better rate of climb. It was easier in take off, steadier in flight at slow speeds and had a lower landing speed than the Ju.88. One of its advantages was that inexperienced pilots were able to fly it with a war load. It was employed mainly in the specialist pathfinder unit. Another aircraft which was yet to make its first flight over England was the He.177 (strength 40 : 11 serviceable).⁽²⁾ SKG.10, the fighter bomber unit, remained in the west (strength 28: 15 serviceable).

At the beginning of September the order of battle for night-fighter squadrons in Fighter Command was as follows:

| <u>Type of Aircraft</u> | <u>No.</u> | <u>I.E.</u> | |
|----------------------------|------------|-------------|--------------------------------------------------|
| Beaufighter VI | 7 | 112 | 2 Sqns. A.I. Mk.V; 4 " " " VIII; 1 Serrate |
| Mosquito II | 6 | 96 | 6 Sqns. A.I. Mk.V |
| Mosquito XII | 4 | 60 | 4 " " " VIII |
| Intruders (Mosquito VI) | 2 | 32 | - |
| TOTAL | 19 | 300 | |

During the summer No. 219 Beaufighter and No. 256 Mosquito Squadrons were transferred to the Mediterranean theatre.

The ranger flights, which had been formed in the spring and were re-equipping with Mosquitos VI, were to be transferred to No. 2 Group of the Tactical Force and were to be used for the time being on bomber support operations. The development of Serrate operations will be discussed in the chapter on night offensive operations.

N.A.D.43(9),
16 Sept. 1943,
paras. 12-14.

(iv) Delays in the development of A.I. Mark X (SCR.720).
Searchlight Defences

Improvements on the A.I. Mark VIIIA equipment had gone forward since the beginning of the year and a modified set known as the A.I. Mark VIII was ready by the summer. It proved its worth in September and October when the destruction of every enemy aircraft over Great Britain during that period by Fighter Command was accomplished with its aid. By the early spring of 1944 ten night-fighter squadrons had been equipped with A.I. Mark VIII. The 1 $\frac{1}{2}$ -metre equipment continued

- (1) The following long range bomber formations were based in the west on that date KG's 2, 6, 40, 66 and 100.
- (2) This bomber was a failure and Goering expressed his disgust over it in no uncertain terms (see A.H.B.6 Miloh Documents, Vol. 62. 'Goering's address to the aircraft industry 13 Sept. 1942'. A description of the development and structure of the He.177 will be found in A.D.I.(K) Reports 487/1943 and 70/1944.).

to be used in certain squadrons as late as December 1943 when three enemy aircraft were destroyed on one night out of four bombers intercepted by this equipment.

But new developments in air warfare that summer made the introduction of more efficient types of A.I. equipment imperative. R.A.F. Bomber Command was eager to use Window to confuse the German radar defences. It was obvious that the enemy would retaliate with the same technique as soon as they discovered its potentialities and the British Chiefs of Staff were reluctant to authorise the employment of Window over enemy territory until adequate countermeasures were available should it be turned against the British night air defences. Secondly, it had become necessary to counter the tail warning device with which German high speed bombers were being equipped. The possibility of the enemy's use of Window was the more important and absorbing problem.

The new A.I. Mark IX, the successor to the Mark VIII, was intended to be proof against Window and a new G.C.I. equipment called the Type 21 set which was able to operate in conditions of Window was to be introduced at the same time as the new A.I.⁽¹⁾ As it was believed that the new equipment would be available by the end of the year the Chiefs of Staff authorised the use of Window on 15 July 1943 and Window was used operationally for the first time on 24/25 July.

N.A.D. (43) 3,
June 1943,
paras. 28-29.

A.H.B./ID4/
381A, Mins. of
Mtgs. 19 Aug.
1943 and
22 Dec. 1943.

The development of the new radar equipments proved lengthier than had been anticipated.⁽²⁾ Experiments with the A.I. Mark IX were abandoned at an early stage when it became clear that its evolution to the operational stage would be too slow to be of any use in operations in the immediate future. Instead an American A.I. of similar pattern - the SCR.720 was adopted and when modified by British scientists became known as the A.I. Mark X. It was found that violent evasive action could be followed more easily with A.I. Mark X than with other forms of A.I. and difficult contacts obtained from G.C.I. control or contacts obtained while on free lance patrol could readily be followed as the type of display provided enabled the observer to see the bearing of the target as well as its course. In the second week of August the Air Staff ordered 100 sets of A.I. Mark X to be fitted in the Mosquito XVII and the Prime Minister was assured that they would be ready by the end of the year.

But defects in the A.I. Mark X equipment caused a delay in the delivery of the Mosquito XVII to Air Defence Great Britain and by the end of December not one of the hundred Mosquitos (supposed to be able to carry out interceptions in the face of interference from Window) had arrived. One squadron was expected to be fully equipped by January 1944 and the remainder by the end of April but doubts as to the efficacy of A.I. Mark X were being expressed. At the same time Air Defence Great Britain was deficient of two Mosquito (A.I. Mark VIII) squadrons (only six had so far been fitted).

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- (1) The first six sets were to be ready for January 1944.
(2) See R.A.F. Signals History, Volume V, Chapter 10 for technical details.

SECRET

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Meanwhile a new type of Mosquito - the Mark XIX⁽¹⁾ - had been evolved able to carry both A.I.'s Mark VIII and X, which was to fill the gap until the faster Mosquito XXX began production in May 1944. It was decided that the first fifty out of the 170 Mosquitos XIX ordered would be wired for A.I. Mark VIII until the A.I. Mark X had been finally proved. Provision was also made in the event of A.I. Mark X proving a failure to wire a further 100 to 150 Mosquitos XIX for A.I. Mark VIII.

By the end of December the position in regard to A.I. equipped fighters was as follows: five Beaufighter squadrons were equipped with A.I. Mark VIIIA, six out of twelve Mosquito squadrons were fitted with A.I. Mark VIII and the remainder with A.I. Mark IV or V.

N.A.D. (44) 1,
para. 33.

A further reduction in the area covered by searchlights was made in the summer months. Searchlight belts were reduced to a width of 28 miles with detachments at 6,000 yards spacing. Economy measures enabled a greater concentration of searchlights to be provided in East Anglia and the southern counties. By the end of the year the searchlight belt extended along the coast from Plymouth to Scarborough to an average depth of 28 miles inland. All inner belts had been abolished but in south-east England the layout covered all No. 11 Group area and the spacing of the London belt was thickened to 3,500 yards as opposed to 6,000 yards elsewhere.

(iii) Enemy Air Operations: 13/14 July to 6/7 October.
Growth in Intruder Activity

Night raids by long range bombers now grew spasmodic and operations by high speed bombers became more prevalent. The aircraft usually employed was the Me.410, a twin-engined bomber with a crew of two, an improved version of the Me.210. Its maximum speed was 380 miles per hour and it had a radius of action of 400 miles and an extreme range of 1,350 miles. It carried two 500 kg. bombs.

A.W.A. Rept.
No. BC/22, p.1.
A.H.B./IIB/
47/3.

The only raid of any size in the second half of July was on Hull on the 25/26th but no bombs dropped anywhere near the target area. Enemy raiders dropped bombs on nine nights during August but with the exception of three nights, the scale of activity was small, consisting of a few intruder sorties by high speed bombers. On 11/12 August the main concentration was on Plymouth (the most accurate attack of the month with a raiding efficiency of 62 per cent) and on the 15/16 around Portsmouth. On the 17/18th the enemy claimed Lincoln and the Midlands as their target but in fact scattered over 30 tons of bombs round the coastline from the East Riding of Yorkshire to Brighton. The nearest bombs to Lincoln were dropped at Woodhall Spa, about 15 miles to the east. There was another small target near Hull but no bombs fell anywhere that could strictly be called the Midlands. Eleven bombers were lost by the enemy out of 88 despatched, the principal agents of destruction being the Beaufighters of Nos. 68 and 604 Squadrons.

A.W.A. Rept.
No. BC/G/12,
Dec. 1943.
A.H.B./IIB/47/3.

A new feature of enemy air operations which began in August was the number of attacks on airfields in East Anglia and eastern England in general by intruders, usually Me.410's

(1) This Mosquito replaced the Mosquito XIV which could only carry A.I. Mark VIII (at that stage Mosquito Squadrons were equipped with Marks XII/XIII and Mark II; the Mosquito XIII was due to stop production in January 1944).

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Fighter Cmd.
O.R.B., Entry,
6 Oct. 1943.

A.W.A. Rept.
No. BC/G/12,
Dec. 1943.
A.H.B./IIB/47/
3.

(although Ju.88's and F.W.190's were also reported); the threat was sufficient to warrant the reinforcement of No. 12 Group by a detachment of the latest type of Mosquito - the Mark XII equipped with A.I. Mk.VIII. Intruder activity continued on a small scale throughout the latter part of the year. In August eleven per cent and in September twenty per cent of enemy aircraft flying over-land by night attacked airfields and R.A.F. stations. By the end of September nineteen attacks had been made on airfields. In October U.S.A.A.F. bases in East Anglia were attacked. Attacks were usually made at low level by single aircraft, a favourite weapon being the S.D.2 anti-personnel bomb. From August to October 2,484 of these bombs totalling 4.97 tonnes were dropped in 28 attacks. Attacks were either made in the very early hours of the morning or fairly late at night. There was little time to give any warning of the presence of hostile aircraft. Of the 59 attacks from September to October 33 were made with no moon. The majority of these were from low level in conditions varying from 0 to 10/10th cloud. Medium and high level attacks were made when there was no cloud. (1) With the moon less than half full, the majority of attacks (including all the low level attacks) were made in cloudless conditions. With the moon between half and full most of the attacks were made in moderate amounts of cloud. Damage was of a minor character. In only ten out of 59 attacks were airfields rendered temporarily unserviceable: nine of these were due, wholly or partly, to the presence of unexploded anti-personnel bombs.

Enemy Doc.
A.H.B.6.
Trans. No.172-5.

F.C. Form 'Y'
and Sqdn.
O.R.Bs.

Interception and the number of enemy aircraft destroyed increased in the early autumn. Out of 34 bombers which failed to return to their bases in August nine were shot down on the 23/24th. On that night 'ten fast bombers' operated against airfields in Cambridgeshire. Five aircraft were claimed by Mosquitos (A.I. Mark VIIIA) of Nos. 29 and 85 Squadrons for the loss of no pilots or aircraft. One of the pilots was Wing Commander J. Cunningham of No. 85 Squadron who claimed his eighteenth victory. The highest number of aircraft shot down on any one night in September was on the 15/16th when seven Ju.188's were lost in an attack on the London area. Three aircraft were claimed by night fighters. One Mosquito was shot down off Foreness and another crashed near Ashford in Kent - but the crew of the latter were saved. Claims were made again by No. 85 Squadron and by No. 488 Squadron. Average enemy losses per night during the period October to November were 1.3.

A.W.A. Rept.
No. BC/24.
A.H.B./IIB/47/3.

September was the quietest month, in so far as enemy over-land bombing was concerned, since November 1942. Approximately 42 metric tons of bombs were dropped on nine nights nearly half of which was dropped in the attack of the 15/16th on London. No concentrated area bombing was attempted. The remainder of the raids were against East Anglia or south east England.

(1) It should be added that clear moonless nights were prevalent between 22 September and 5 October when about one half of the total number of attacks occurred.

(iv) Enemy Operations: 6/7 October 1943 to 21/22 January 1944.
Spasmodic Raids on London. Dropping of Duppel

A.W.A. Repts.
 BC/25-29.
 A.H.B./IIB/47/
 3.

Beginning on the night of 6/7 October the London area again became a target for attack by small forces of fighter bombers and Me.410's. Spasmodic attacks of this nature continued until late January. There was no attempt at concentrated or heavy bombing over London and heavy attacks such as they were, were confined to the coastal areas on the eastern and southern coasts. From 6/7 October to 21/22 January London was raided on 33 nights. The heaviest attacks were in October when 28 metric tons of bombs were dropped. No damage of any import was inflicted throughout the period.

A.W.A. Rept.
 No. BC/25 p.1.
 A.H.B./IIB/47/
 3.

In October the main raids were on the 7/8th against London and Norwich, on the 20/21st against Hull and on the 23/24th against Great Yarmouth. Out of a total weight of approximately 111 tonnes presumably intended for these towns, only eight and a quarter tonnes fell within their boundaries - eight tonnes in London and a quarter of a tonne in Yarmouth. The raid on the 7/8th was the occasion for the enemy's first use of Window (known as Duppel) in support of an air attack on this country. While at first it was somewhat puzzling to a number of staff, unaware of the new technique, operating G.C.I. and C.H.L. stations and to night fighter crews, who attacked spurious 'echoes', it was not wholly successful, especially when personnel who already possessed some knowledge of Window in respect of Bomber Command operations were confronted with its effects on their own equipment. Measures were taken to make those likely to be concerned acquainted with the purpose and effects of Window. Captured enemy aircrew when interrogated did not appear to have much faith in such counter measures against the British R.D.F. and admitted to taking violent evasive action in spite of them. It is unlikely that the enemy's casualty rate was in any way affected by the employment of Window. Window continued to be used in small quantities for the remainder of the year.

A.H.B./II/39/2
 F.C. O.R.B.
 Rept. No. 512.

The enemy also began to use coloured flares extensively on night operations either to route the main bomber force to and from the target area, or to mark the target, or to mark the area in which Window had been dropped. At the same time, flares were dropped over London and the Home Counties without any apparent relation to the bombing and for a long time mystified investigators. The reason for this activity was that the enemy was experimenting with new aids for bombing and navigation. The specialist pathfinder unit, KG.66, mentioned earlier in this chapter, busied itself with these operations in anticipation of the new series of reprisal raids against London then being planned.

R.A.F. Signals
 History,
 Vol. III,
 Ch. 5, p.50.

A.W.A.Repts.
 Nos. BC/26-27
 A.H.B./IIB/47/
 3.

The spurt of effort in October was not maintained and there was a decline in enemy air activity over England in November and December; raiders flew overland on not more than 20 nights, making scattered and ineffective attacks. Two exceptions were the raids on Ipswich (3/4 November) and Plymouth (15/16 November). About eleven and a half tons of high explosive and four and a half tons of incendiary bombs fell on Ipswich - about 40 per cent of the total weight of attack. The spill was mainly to the north and north-east of the town. Damage by fire occurred to a factory at Bramford north of Ipswich and H.E. bombs blocked both railway lines to the north. But there was no damage to military targets.

Ibid.

Forty-six aircraft took off to bomb Plymouth on 15/16 November but only half reached the target area. As usual bombers took considerable evasive action and made rapid changes in height. The defences were on the alert. The balloon barrage flew at 4,600 feet for the greater part of the attack. A smoke screen was in operation in the dock area and effectively covered vulnerable targets. Only one H.E. bomb fell in the dockyard.

There was no attempt at a concentrated night attack on any English town in December or early January.

Addendum to
A.W.A. Rept.
BG/G/12,
June 1944.
A.H.B./IIB/47/4

A.W.A. Rept.
No. BC/27
A.H.B./IIB/47/3
and Enemy Doc.
A.H.B.6 Trans.
No.172-5.

Intruder activity in November and December was slight compared to the three previous months. Only 23 aircraft attacked R.A.F. stations. Of these 19 sorties were flown in December mainly on the night of the 10/11th. A ball-bearing factory at Chelmsford was, in fact, the primary target that night. Bad weather prevented the main attack from developing and 'emergency targets', presumably airfields, were attacked. Four aircraft were lost. Before making landfall Window was dropped out to sea roughly parallel with the coast from Orfordness to the Thames Estuary. The U.S.A.A.F. airfield at Gosfield in East Anglia was singled out for attack by as many as ten to twelve aircraft which dropped nearly 17 metric tons of bombs. It was probably the heaviest attack on any airfield since that on Exeter airfield on 11/12 May 1941. Only three days before General J. L. Devers of the U.S. Army had opened this airfield and had made a speech warning the enemy of the growing strength of the American bomber offensive against Germany.

Summary of Period 13/14 July 1943 to 21/22 January 1944

After the raids on Hull and Grimsby in early July the character of night bombing changed from one of occasional raids by heavy bombers to sporadic attacks by high speed bombers such as the F.W. 190 fighter bomber and the Me.410; targets were found in southern and south-eastern coastal towns rather than in the north-east. The British night air defences were clearly more than a match for the enemy for although the Do.217 was better equipped with defensive armament than other German bombers, it could not, because of its greater weight, easily evade night fighters once they had marked it down. The two features of enemy night attacks in the latter part of 1943 were attacks by intruder aircraft on airfields in the Midlands and East Anglia in retaliation for the increasingly powerful combined bomber offensive and, secondly, renewed attacks on London by fighter bombers in the autumn accompanied by the dropping of Duppel or Window.

A.W.A. Rept.
No. BC/28,
Tables 1 - 2.
A.H.B./IIB/47/3.

F.Cmd.O.R.S. Repts.
'Fighter Interception
System and Ops.'
1943.
A.H.B./A2/4A.

From July to December 1943, the enemy flew some 818 long range bomber, 165 fighter bomber, and seven reconnaissance overland sorties - a total of 990 night sorties and 791.79 tons of bombs. The R.A.F. claimed to have destroyed 66½, probably destroyed seven and damaged 13. Of these, 61½ were claimed to have been destroyed with A.I. Mark VIIIA/Mark VIII, four with A.I. Mark V and one with A.I. Mark IV. The first success with A.I. Mark VIII was on 15 September when No.488 Squadron shot down a Do.217. Once again the majority of interceptions were made under G.C.I. control. Anti-Aircraft Command claimed 20½ aircraft destroyed, three probably destroyed and eight damaged. According to German records, aircraft lost on raids in Great Britain amounted to 160 while

Enemy Doc.
A.H.B.6
Trans.

44 were damaged. (1) During this period there was no enemy daylight activity over England and these figures can be assigned to night operations without reservation.

A.H.B./ID/12/
58.

The evasive tactics of the enemy during 1943 imposed considerable strain on the night-fighter crews. (2) At the same time the latter were affected by a number of other factors; a large number of experienced aircrew were despatched overseas (for example, between November 1942 and the end of March 1943 191 night-fighter crews were posted away from the Command); many experienced G.C.I. controllers and R.D.F. personnel were also withdrawn; the period marked the transition from Beaufighters to Mosquitos and witnessed the introduction of a new type of A.I. equipment; a number of specialised offensive operations, to be described in a later chapter, requiring assiduous training also preoccupied a number of night-fighter squadrons.

See Chap. 16.

The Final Bombing of London by Piloted Aircraft 21/22 January to 19/20 April 1944

German Forces Available and New Navigational Aids

Enemy Doc.
A.H.B.6.
Trans.

Angriffsfuehrer England had been substantially reinforced by bomber units from Italy in the autumn and early winter of 1943 in anticipation of the forthcoming raids on London. Since the beginning of January, however, Allied aircraft had been operating in strength over Italy preparing the way for the Allied seaborne assault at Anzio and Nettuno which took place on 22 January. Between that date, the day after the first of the new series of attacks against London, and the end of January, 55 long range bombers of Luftflotte 3 were transferred to the Mediterranean Theatre; some of the bombers which had operated against London were attacking Allied shipping off Anzio on the nights of 23 and 24 January.

R.A.F.
Narrative:
'Italian
Campaign,
1943-1945',
Vol. I, Chap. 7,
p.248.

On 20 January the following formations were based on the Western Front:

| | |
|---------------------------|----------------------------------|
| Stab I, II, III V/KG. 2 | I/KG. 66 |
| Stab I, II, III /KG. 6 | Stab I/KG. 76 ⁽⁴⁾ |
| II /KG. 30 ⁽³⁾ | I/KG. 100 (less 3rd Staffeln) |
| Part of I /KG. 40 | I/SKG. 10 |
| Stab I, II /KG. 54 | |

They contributed a total strength of 524 bombers of all types of which 462 were serviceable. The force was composed mainly of Ju.88's, 188's and Do. 217's. Also included in the total were 46 He.177's the new four-engined bomber capable of carrying a heavier bomb load than the Junkers and Dorniers, and 27 Me.410's and 25 F.W. 190's which, as already has been seen, were also employed in night operations.

- (1) This figure does not include aircraft lost in attacks against shipping.
- (2) For an interesting description of night-fighter tactics at this time see Appendix No.26.
- (3) 40 aircraft transferred to the Mediterranean Theatre between 22 and 31 January.
- (4) 15 aircraft transferred to the Mediterranean Theatre between 22 and 31 January.

A.H.B./IIS/110/
14/15, Encl. 4A
J.I.C. (43)515
(O) Final
20 Dec. 1943.

N.A.D. (44)
1st Mtg.,
para. 6.

A.H.B./IIS/
110/14/15,
Encl. 4A.

R.A.F. Intelligence had estimated that if, at the beginning of 1944, the enemy should contemplate making heavier attacks on Great Britain, he would have at his disposal some 500 bombers. Potential nightly effort in decreasing scale would be: maximum effort 300 to 350 sorties, intensive effort, 175 to 200 sorties for not more than two or three nights; sustained effort between 50 and 75 sorties per night. It was learned correctly at the end of January that a number of bombers had been transferred to the Italian front and the estimate of the enemy's likely effort was accordingly reduced by some 50 sorties.

It was presumed, firstly, that the G.A.F. would operate largely at night and that its lack of experience in night raiding would result in a failure to concentrate and to press home attacks; and, secondly, that like Bomber Command, it would concentrate its attacks into a short period of time during any one night rather than spread the effort over a longer period of the night as in 1940/1941. The most probable target would be London, firstly in retaliation for the recent bombing of Berlin and, secondly, because the inexperience of the bomber crews precluded attacks on industrial targets in the Midlands or northern England.

Events bore out the main points in this forecast. In effect, the force at Major General Peltz's disposal was by no means as formidable as its numbers might suggest. Furthermore Peltz recognised that British industrial production and Allied invasion preparations in general were unlikely to be retarded by the raids but he hoped that the pathfinding technique which had been evolved during 1943 would help to overcome the shortcomings of the operational efficiency of his bomber crews and that with such a large target as London, they could not avoid inflicting some damage or affecting morale. A new radio aid to navigation had been devised with which it was hoped that the pathfinders would be able to mark their target accurately. It was known as Egon and was somewhat similar to Oboe in function. Egon aircraft were fitted with a high powered I.F.F. equipment (Fuge 25A) which responded to signals from the Freya or Mammut radar stations in the Pas de Calais. At the same time instructions were passed to the bombers by radio telephony. Great faith was placed in the Fuge 25A but it proved to be without justification. Other navigational aids used were Knickerbein, a well established method, occasionally Benito, a German version of Gee called Hyperbel and Sonne. Benito and Hyperbel were the only two aids which were capable of high accuracy over London, if unjammed. The raids were to demonstrate that the pathfinders were quite incapable of benefiting from the devices put at their disposal and even the most successful skymarking, assisted by the Egon Procedure, could have been improved upon by a good crew using visual means. As the Air Warfare Analysis Section noted: 'to the pathfinder aircraft must go most of the credit for the German's particularly unsuccessful bombing during 1944'.

A.W.A.S. Rept.
No. BC/35, p. 3.
A.H.B./IIB/47/3.

The procedure of target marking for the first raids on London in 1944 was as follows. The bombers were guided to the target area either by a run-up line marked on the ground by incendiary bombs or by a line of approach denoted by skymarker flares. The target itself was marked by incendiary bombs, skymarker flares, or a combination of both. The direction of attack for the main force was up or down wind. Ground markers were used in conditions of good visibility and skymarkers (or a combination of both) in cloud of up to 6/10ths.

Measures adopted by the enemy to confuse the British defences were more varied than was his wont. The low level approach flight across the Channel which had become familiar in 1943 was modified. Aircraft began to gain height sometime before reaching the English coast, the object being to avoid interception while making a steep climb and to prevent overmuch evasive action. Landfall was often made under cover of friendly aircraft activity and detection was made more difficult by a liberal use of Duppel which jammed the standard type of G.C.I. and C.H.L. High speed bombers which were able to fly faster than the Mosquito also took part in night raids. Finally, most of the long range bombers were fitted with a backward looking A.I. called Neptun Gerat or Fu Ge 216. (1) The British countermeasures against all these devices will be related in due course.

(ii) British Night Fighter Squadrons available and preparations made by A.D.G.B. for the eventuality of Mass Raids

The order of battle for the night-fighter squadrons of Air Defence Great Britain at the start of the German raids on London in 1944 was as follows:

A.D.G.B. Orders
of Battle,
Jan. 1944.
A.H.B./IIM/A2/
5A.

| <u>Aircraft</u> | <u>Type of A.I.</u> |
|-------------------------------|---------------------|
| 5 Mosquito XII/XIII Squadrons | Mark VIII |
| 2 Mosquito XII/XVII " | Mark X (2) |
| 5 Beaufighter VI " | Mark VIII |
| 2 Intruder Mosquito VI " | |
| 4 Mosquito II " | Mark V (3) |

The Mosquito night-fighter squadrons of No. 11 Group were responsible for most of the interceptions and were disposed thus: No.29 Squadron at Ford, Nos. 85 and 96 Squadrons at West Malling, No. 488 Squadron at Bradwell Bay and No. 410 Squadron at Castle Camps. Nos. 418 and 605 Intruder Squadrons based at Ford and Bradwell Bay were used for pursuing the bombers to their bases. Other night-fighter squadrons were drawn into the battle, especially when the enemy extended his attacks to Hull, Bristol and ports on the south coast. Nos. 456, 151, 157 Mosquito and 406 Beaufighter Squadrons in No. 10 Group and Nos. 68, 409, 604 Beaufighter and 25 and 264 Mosquito Squadrons in No. 12 Group took part as did No. 307 Mosquito Squadron in No. 13 Group.

Air Defence Great Britain was not caught napping by the advent of the mass raids on London. On the contrary, it was well aware that there had been a considerable increase in the potential scale of bomber attack upon Great Britain. Since late in 1942 the operations staff at Fighter Command had been working on the problem of engaging enemy raids concentrated in time and space. The existing night defence organisation had been planned to deal with enemy bombers approaching the country from different directions and in streams of comparatively thin density. Plans were therefore made whereby it would be possible to bring a large number of night-fighter

Fighter Cmd.
O.R.B.,
App. A1,
Feb. 1943.
A.H.B./IIM/
A2/5A.

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- (1) British Gee was also used, as a captured British Gee set was recovered from a crashed Ju.188 on 24 February. For further details about German navigational aids the reader should consult R.A.F. Signals History Vol.VII, Chap.5.
 - (2) But only one Squadron was fully equipped. One Beaufighter and one Mosquito squadron were re-equipping with Mark X.
 - (3) Including one squadron used for Instep operations.

aircraft into action against an imminent enemy mass bombing raid. The problem was not an easy one to solve, for although large numbers of aircraft could be brought to the scene of operations, the number of controlled interceptions which could be undertaken by the G.C.I.'s and searchlights would be insufficient to give an adequate number of interceptions and combats.

There were three methods by which it might be possible to inflict casualties on the enemy under mass raid conditions. First, the highest number of interceptions would be obtained by twin-engined A.I. fighters operating on free-lance patrols across the path of the enemy bombers, both overland, and oversea. Secondly, the maximum number of intruder aircraft were to be despatched to patrol enemy bases and engage enemy aircraft on their return. Thirdly, the maximum number of single-engined aircraft were to be used during moonlight periods for a 'Fighter Night' over the target.⁽¹⁾ Night fighter squadrons were exercised along these lines during 1943 in collaboration with R.A.F. Bomber Command, but as yet, an opportunity to try out these tactics against the enemy had not arisen.

A.M. File
C.M.S. 402,
Encls. 73A - 86A
and Minute
No. 86.

Investigations were also made into the possibility of using flares dropped from aircraft as an aid to night interception. The G.A.F. had used them a good deal in its attempt to intercept R.A.F. Bomber Command aircraft over Germany. It was considered, however, that there was no conclusive evidence to show that illumination by flares of bomber aircraft was of substantial assistance to fighters without other aids. Whereas the German radar screen was a considerable distance from the main objectives of R.A.F. Bomber Command, the British defensive perimeter, on the other hand, was only a short distance from major targets in England and there would not be time for flares to be dropped on a large scale for the purpose of illuminating enemy bombers. Moreover, at least four squadrons of bomber type aircraft would be required to carry the flares, to climb to not less than 25,000 feet where they would be above the bomber streams, and to maintain a cruising speed of about 240 miles per hour. Aircraft capable of such performance and able to carry a load of flares did not exist.

Air Defence Great Britain believed that flares might be used in smaller numbers to indicate the path of a mass bomber raid and they might assist free-lance A.I. night fighters outside the searchlight belt or over the belt itself in cloudy weather when searchlights were unable to operate. Trials were carried out in March 1944 with flares fired from rocket projectors but, as in the case of earlier experiments in 1941, they were unsuccessful and the project was abandoned.

Sir Roderic Hill, Air Marshal Commanding Air Defence Great Britain was more concerned with developing counter-measures against the enemy's possible jamming of the V.H.F./R/T procedure, for successful night interception was dependent

(1) A detailed description of these methods will be found in Fighter Command Operational Instruction No.9/1943 entitled 'Employment of Night Fighter Aircraft in the event of a mass raid by enemy bombers' (Fighter Cmd O.R.B., App. A.1. Feb. 1943 (A.H.B./IIM/A2/4A)).

upon good R/T communication between ground and air. He therefore decided to press his demands for an alternative system to R/T which would be impervious to enemy jamming⁽¹⁾ and to bring the Mark X A.I.-equipped aircraft (there was only one squadron completely fitted) with the Type 21 G.C.Is. into operation as quickly as possible.

A.H.B./I.D.7/
237(C).

As for the ground defences, at the outset of the raids there were 2,412 heavy A.A. guns, 1,104 light A.A. guns, of which just over 500 of both types were sited in the London area; 3,312 searchlights and 1,200 balloons, of which 320 were defending the London area.

(iii) The Opening of the Attack.

There is little reason to doubt that the raids were launched on Hitler's orders and, as foreseen, were intended to be a measure of reprisal against the recent heavy night attacks on the German capital and to stimulate flagging morale on the home front. Aircrews taking part were roused with a speech made by Peltz at Chateaudun. Bad weather caused the raids, planned for Christmas 1943, to be postponed until 21/22 January. The bombers had previously been well dispersed and were quickly concentrated before the raids began. Attacks were to be made with mass formations of two hundred to three hundred aircraft because it was believed that only by this method would 'a tolerable ratio of losses to results ... be achieved'. The strength of the enemy effort on that night was greatly underestimated because of the disturbing effect of Window on the G.C.Is. while many aircraft failed to press home their attack or else dropped their bombs into the sea. But if German secret reports are correct⁽²⁾ 447 aircraft took off, at least, to bomb London - the strongest force despatched against this country since mid-1941. All the bomber units in Fliegerkorps IX, with the exception of I/KG.40, took part. The bulk of the force consisted of Ju's 88, but Ju's 188, Do's 217, Me's 410, F.W's 190 and He's 177 also flew; for the last named, it was their first sortie over Great Britain.

A.M. Pamphlet
No. 248,
Chap. 13,
pp. 321-322.
A.D.I. (K) Rept.
No. 48/1944.

Enemy Doc.
A.H.B.6 Trans.
No. 172.7.

Ibid and
A.W.A.S. Rept.
No. BC/29.
A.H.B./IIR/47/3.

The attack was made in two waves. A number of crews had to fly two sorties. The first, in which 227 aircraft were despatched, lasted from 2040 to 2233 hours. The leading aircraft crossed the coast of Beachy Head flying at a height of 10,000 feet, followed by the remainder which made landfall between the Isle of Wight and North Foreland. After crossing the coast they fanned out over south-east England at heights of seven to 22,000 feet. Contrary to the enemy's belief, the bombing was wildly inaccurate in spite of the use of navigational aids and the dropping of flares over the target area.⁽³⁾

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- (1) This was known by the code name Beechnut and was a system of sending and receiving intelligence by means of a series of impulses, modulating the carrier frequency of an existing radio link such as V.H.F. with a probable life of six months before the enemy could effectively jam it. In September 1943 it had been decided to adopt it for use by fighter and tactical reconnaissance aircraft of the Tactical Air Force. (A.H.B./IIR/85/888 Encl. 4A).
 - (2) Information on German figures for the raids has been drawn from 'Ablauf des Krieges von 1-1-44 - 31-3-44' originated by 'Chef Genst. 8 Abteilung Az. NR 409/33.' (A.H.B.6. Trans. No. 172.7).
 - (3) According to the German report 'the smallness of the Pathfinder Force jeopardised the success of the attack'. In later attacks the pathfinder force was greater and 'correspondingly more effective'. Enemy Doc. A.H.B.6. Trans.

One concentration of bombs fell 14 miles north-west of Beachy Head and another on the eastern edge of the London Civil Defence Region. It is hard to discover why bombs should have been dropped so far away from the target area in conditions of good visibility but the most likely explanation is that many of the bomber crews were inexperienced and once embarrassed by the defences dropped their bombs and turned tail. Haystack fires almost certainly diverted some of the bombs east of London.

The second wave of 220 aircraft crossed the coast between Selsey Bill and North Foreland at 0415 hours. Although weather conditions had deteriorated this attack was slightly more successful than the first. Government buildings and the Charing Cross area were believed to be the principal targets. A few incendiaries fell in Westminster but only after the marker flares in that area had burned out. In both phases only 37 tons fell in the Central London area and 300 or more tons were scattered over the countryside.

The defences were seriously handicapped, firstly because of the enemy's extensive use of Window, secondly because friendly bombers were returning from northern France and finally because of a Bulls eye⁽¹⁾ exercise which was in progress over southern England. They gave, nevertheless, a good account of themselves. Air Defence Great Britain flew 96 sorties and together with the anti-aircraft guns claimed to have destroyed 16 enemy bombers. Searchlights were invaluable in assisting fighters to shoot down several of the enemy. Smack and Gauntlet procedures were used. In fact German operational losses through Allied action amounted to 25 bombers; eighteen bombers were destroyed for reasons other than that of Allied defensive action. Altogether it was a substantial loss for one operation. In none of the subsequent raids on London were so many aircraft despatched in one night nor were such heavy losses experienced.

A.D.G.B.
Form 'Y'.
A.H.B./IIM/
A2/5A.
N.A.D. (44)1,
para. 11.

Enemy Doc.
A.H.B.6 Trans.
No. 172.7 and
A.W.A.S. Rept.
No. EG/29 in
A.H.B./IIB/47/
3.

Apart from the heavy casualties the raid had disclosed the inability of the enemy's ground organisation to direct and service large bomber formations after such a long period of inaction and the next eight days were spent in overhauling the airfield control system. On 29/30 January 285 aircraft were despatched against London but the attack was again a failure in spite of pathfinders using Egon and Benito aids. The only serious damage was caused by a fire at the Surrey Commercial Docks. Again only about 37 tons fell in the target area and most of the bombs fell east of London in Essex and Kent. Eleven bombers were shot down and seven more were destroyed on operations but not due to Allied action.⁽²⁾ It is interesting to note that in both raids the highest proportion of losses were suffered by the Junkers 88 while the fast bombers such as the Me.410 rarely fell victim.

The German propaganda system made great capital out of the January attacks and claimed that immense devastation had been caused in London. From a perusal of G.A.F. reports it appears that the German Air Staff for some weeks really believed that their pathfinding technique was producing good results.

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- (1) Training exercise for R.A.F. Bomber Command in collaboration with A.D.G.B.
 - (2) See App. No. 23 for details of all major raids on Great Britain in 1944.

(iv) Intensification of Attacks in February - Changes in Pathfinding Technique and New Navigational Aids

Enemy Doc.
A.H.B.6
Trans.No.172.7.

In February the tempo of bombing increased. There were seven major attacks in which the enemy despatched 1,387 aircraft against the capital. A total of 838 tons was dropped together with 4,325 incendiary bombs and 960 ground markers and flares. Losses continued to be heavy, 67 aircraft failing to return, these being mainly Ju's 88. In the last five attacks of the month from the 18/19th onwards there was a slight improvement in accuracy but the standard still fell short of that achieved in April and May 1941.

A.W.A.S. Rept.
No. BC/30,
pp. 3-4
A.H.B./IIB/
47/3.

In its initial form the pathfinding procedure, as described earlier, involved a very intricate use of skymarker flares and ground markers (or incendiary bombs) which could only have been possible with the aid of the most precise bombing and navigation instruments and with immaculate timing. But the Egon procedure had so far proved a failure and it was decided to simplify it by scrapping the original intricate sky pattern in favour of a concentration of flares, all of the same colour over the target area. Differently coloured flares denoted either turning points for the bombing run or defined the windward edge of the general target area.

It was possible that, again like Bomber Command, a Master Bomber was used on occasion to monitor the dropping of flares and bombs; a few tracks were seen which might have fitted such an aircraft but no instructions were heard on R/T.

Enemy Doc.
A.H.B.6 Trans.
No.172-7 and,
A.W.A.S.Rept.
No.BC/30.
A.H.B./IIB/47/
3.

A.D.G.B.
FORM 'Y'.

The first attack on London in February was on the 3/4th in which 240 aircraft took part. The raid was not a success, most of the bombs falling east of London. The pathfinders were so inept in marking the target that no concentration was achieved. The German report comments with respect on Air Defence Great Britain's activity that night (81 fighters were airborne). Thirteen bombers were lost on the raid, fighters and A.A. claiming ten destroyed or possibly destroyed. Another five aircraft were destroyed through other causes. The next big attack on London (230 aircraft) was on 13/14 February, and was again highly inaccurate. The attack developed over Clacton and in the Shoreham district of Kent despite favourable weather conditions. The enemy believed that 'air and ground marker flares dropped according to the 'Y' and Truhe systems⁽¹⁾ fell slightly east of the target area. It may be assumed that effective results from the bombing were obtained in the central London area'. In fact, only about four tons of bombs out of at least 170 fell on the target.

A.W.A.S. Rept.
No. BC/35,
Table 5,
A.H.B./IIB/
47/3.

A.W.A.S. Rept.
No. BC/30.
A.H.B./IIB/
47/3.
A.H.B./IIB/13.
Ibid.

After these dismal failures the raids on 18/19 and 20/21 February were surprisingly accurate and achieved raiding efficiencies of 73.70 per cent and 73.43 per cent respectively. They were the most successful of the series of raids in early 1944. In the raid on the 18/19th, 480 fires were reported in London and railway communications were dislocated. Two nights later rail transport was again interrupted. A stick of bombs fell between the Horse Guards Parade and Downing Street and a number of Government buildings in that district were affected by blast. The target for that night was an area of approximately three and a half square miles south-east of Waterloo

(1) 'Y' Gerat was the airborne receiver used in Benito and Truhe was a long range pulse navigational system similar to the American Loran system. It was infrequently used.

A.W.A.S. Rept.
No. BC/30.
A.H.B./IIB/
47/3.
Enemy Doc.
A.H.B.6 Trans.
No. 172.7.

Ibid.

A.H.B./IIH1/13.

Enemy Doc.
A.H.B.6.
Trans. No.
172.7
A.H.B./IIH1/13.

N.A.D. (44)
2nd Meeting,
para. 1.

Enemy Doc.
A.H.B.6 Trans.
No. 172.7.

N.A.D. (44)
3rd Meeting,
para. 6.

Ibid and
N.A.D. (44) 8,
31 Mar. 1944.

station 'opposite to the main area of government buildings'. The chief concentration fell approximately five miles to the west south west. Altogether 400 aircraft were despatched on these two raids and approximately 272 tons of bombs fell in central London. Losses over Great Britain in the two raids amounted to seven bombers. Another eight failed to return to base.

The raiders returned again that week on the 22/23rd and 23/24th: 346 aircraft took part. But they were unable to maintain the standard of accuracy achieved earlier in the week. On the 22/23rd a concentrated attack was made in the Staines area, the outcome of faulty placing of flares. On the next night no concentration was reported and bombs fell haphazardly from south London to the coast. The heaviest damage was inflicted in the Chelsea, Battersea and Fulham boroughs. In the first named a block of flats was destroyed with heavy casualties. Eleven enemy bombers were destroyed in the course of the two raids. The last attack of the month on 24/25 February was made by 170 aircraft; about 69 per cent of the total weight of bombs fell in London. Lambeth, Acton and Wandsworth reported the greatest damage but there were no serious incidents. The G.A.F. lost eight aircraft. Conditions on that night favoured the searchlights and several bombers were destroyed by fighters with their aid.

(v) The Final Raids on London in March and April

In March the raids on London began to peter out. The strength of the bomber force used for attacks on England was now reduced to 384 aircraft of which 299 were serviceable on 29 February. There had been heavy losses and further bomber formations had been diverted to the Mediterranean theatre. Although there was an improvement in the concentration of marker flares over London compared with the last two heavy attacks in February there was no corresponding improvement in the efficiency of the bombing. The raid on the 14/15th was upset by poor weather and the operations planned for SKG.10 and half of KG.51 were cancelled. The markers were lost in cloud and the bombs were not concentrated on the target. It was believed that the strenuous evasive action taken by the enemy affected their gyro-controlled instruments and made navigation extra difficult. In spite of this the G.A.F. persisted in believing that most of the bombs had found their mark. The most serious repercussion from this raid was the destruction of one million radio valves stored at Wembley. They were intended for use in Army general purpose W.T. communication sets. The reason why such a large number of valves had been stored in so vulnerable an area was stated by the Ministry of Supply to be due to lack of storage space and to a temporary rise in holdings just at the time of the raid. Seventeen bombers, of which eleven were accounted for by fighters or A.A. guns, were lost. Searchlights again aided interception.

Enemy Doc.
A.H.B.6 Trans.
A.H.B./IIH/13
Enemy Doc.
A.H.B.6 Trans. and
A.W.A.S. Rept.
No. BC/31.
A.H.B./IIB/47/3.

Westminster Abbey was the target for 144 aircraft on 21/22 March. Many incendiary bombs were dropped causing 247 minor fires. On 24/25 March 143 aircraft were despatched to raid the capital. Most of the damage was in the Croydon area but according to the G.A.F. 'the bombs were well concentrated on the central part of the city'. Thirteen bombers were shot down and three more failed to return to base.

Enemy Doc.
A.H.B.6. Trans.
No. 172.7.

The G.A.F. also claimed that 'in addition to the concentrated attacks on London, on seven nights a total of 116 aircraft carried out nuisance raids against the capital'. All these operations had a negligible effect on the life of the country.

Enemy Doc.
A.H.B.6. Trans.
No. 172.9.

On 18/19 April after a lapse of over three weeks Peltz directed his final major attack on London. The target was the dock area around Tower Bridge and the route flown by the 125 aircraft was similar to that prescribed for the raids on 14/15 and 21/22 March. The aircraft came in from the north-east via turning points on the North Sea, east of Newmarket, to the target area and home by Dymchurch and Boulogne. The bombing was confined to north-east London with roughly half the total weight of bombs spilled outside Greater London. No bombs were dropped within five miles of Tower Bridge. Eleven bombers were destroyed. A minor raid on the next night brought the bombing of London by piloted aircraft to an inglorious close.

(vi) Attacks on Hull and Bristol

Enemy Doc.
A.H.B.6 Trans.
No. 172.7
and
A.W.A.S. Rept.
No. BC/31.
A.H.B./IIB/47/3

While the raids on London were in progress attacks were attempted on Hull and Bristol during March by forces of 131 and 139 aircraft respectively. Both attacks were complete failures due to faulty skymarking assisted by decoy action. In the attack on Hull on 19/20 March the German report stated that the reason for failure was the loss of the first marker aircraft which resulted in the target being marked five minutes too late while the jamming of the radio navigational aids further complicated matters. It was also probable that wrong estimation of wind was an additional reason for failure for the skymarkers were dropped south of Hull and blown further south by the wind. All bombs fell south of the Humber in Lincolnshire. Decoy action and fires or burning incendiaries on the ground assisted in diverting the attack, involving 92 tons of bombs, away from Hull.

The raid on Bristol on 27/28 March was also a failure, no bombs falling in the target area despite German claims that: 'well placed markers renewed when necessary made it possible for the bombs to be concentrated effectively in the target area'. The main concentration of bombs, in fact, occurred south of Weston-Super-Mare while the main concentration of flares fell as far away as the Portland-Weymouth area, where groups of red flares were renewed for periods of 45 to 60 minutes. It was possible that these flares and others near Plymouth were intended to divert attention from the Bristol area. The decoy at Bleadon south of Weston-Super-Mare undoubtedly contributed to the failure of this attack.

Enemy Doc.
A.H.B.6. Trans.
No. 172.7 and
A.D.G.B.
Form 'Y'.

The enemy did not escape lightly. On the 19/20th nine aircraft were lost in action the highest proportion being claimed by fighters. On the 27/28th eight bombers were shot down by Mosquitos and A.A. fire. Aircraft of No. 10 Group were responsible for over half of the interceptions.

(vii) Performance of A.I. Equipment and Searchlight-controlled Interceptions in Raids against London

See p. 201
et seq.

N.A.D. (44) 1,
paras. 24 - 26.

A.H.B./II/
76/48(B).

See p. 203.

A.H.B./II/76/
48(B).

A.H.B./IIS/
110/5/126,
Encl. 12A.
See Chap. 16.

A.D.G.B.
O.R.S. Repts.
Nos. 45 and 55,
1944.

Ibid.

The delays in the arrival of A.I. Mark X have already been described and since the equipment was more complicated than the A.I. Mark VIII at least 20 hours flying were required for an aircrew to become proficient in its use. No. 85 Squadron was the farthest advanced in re-equipping with A.I. Mark X in January and No. 25 Squadron was partially equipped. Nos. 456 and 125 Squadrons began to re-equip early in February and after the comparatively heavy raids in that month the Air Staff decided to re-equip a fifth squadron (No. 125) with A.I. Mark X as rapidly as possible. All five squadrons were to have Mosquitos XVII.

Meanwhile the Mosquitos XIX, intended to be a stop gap until the arrival of the Mosquitos XXX and able to carry either A.I. Mark VIII or Mark X, were due to be issued to squadrons beginning in April. They were, however, diverted to No. 100 (Bomber Support) Group of Bomber Command⁽¹⁾, as there had been of late very heavy bomber casualties, together with Nos. 85 and 157 Mosquito squadrons, about which more will be related in the appropriate chapter. By the end of March 95 Mosquitos XVII had been delivered to the squadrons. But with the removal of the Mosquitos XIX to No. 100 Group there was nothing in reserve for the replacement of these Mosquitos. This hiatus, which coincided with the heavy raids on London, continued until the arrival of the Mosquitos XXX in the early summer.

After a poor start probably accountable to cloudy weather and Duppel, the number of interceptions increased and the improvement was maintained until the end of the raids. Pending the arrival of A.I. Mark X, A.I. Mark VIII was the most successful A.I. equipment and with its assistance 37 bombers were claimed to have been shot down in February and March. Security prevented A.I. Mark VIII from being used over the Channel until 1 May and this undoubtedly saved a number of homing enemy bombers from destruction. The A.I. Mark X quickly showed its superiority and by the end of March 23 bombers were claimed to have been destroyed with its aid, 17 of them in March. Although it had increased range and better cover and ability to work through Duppel there was in the beginning little to choose between A.I. Mark VIII and the Mark X, as it was found that the former was also able, on occasion, to operate in Duppel.

Night fighters operating under G.C.I. and C.H.I. control continued to account for the highest number of interceptions. In February, for example, to this form of control was attributed the destruction of 18 German bombers, the total being increased to 28 in March. But from February to April a greater number of attempts than hitherto (568) were made to intercept enemy raiders with the assistance of searchlights and searchlight

(1) The Mosquito XVII was considered to be unsuitable for bomber support operations as it could not be fitted with wing tanks and its Merlin 21 engines were unacceptable to Bomber Command.

orbits were manned on every night that the enemy crossed the coast. The majority of attempts were made by A.I.-equipped aircraft. All procedures, Smack, Gauntlet, Crackers, Searchlight-aided Freelance and S.L.C. Carpet were used. In the three months 11½ aircraft were claimed to have been destroyed or probably destroyed under Smack and Gauntlet and eight destroyed or probably destroyed under Crackers, searchlight-aided freelance and other searchlight-controlled operations. Five aircraft were also claimed as destroyed under Smack and Gauntlet in the raid on 21/22 January. In areas where large quantities of Window had fallen control of aircraft engaged on searchlight aided interceptions reverted from the fixed G.C.I. to the Sector Operations Room but on the whole searchlights were little affected by Window.

(viii) Countermeasures against Enemy Window, A.I. Equipment and Navigational Aids

Before summarising the results of the 'Little Blitz' an account must be given of the countermeasures taken against the various devices employed by the enemy to assist his bombing. First of all Duppel or Window. In general, the early warning given by the British radar chain was not affected by the dropping of Window but as an area became affected by Window, G.C.I. stations operating in the 150 and 50 centimetre bands found it increasingly difficult to resolve aircraft from Window responses. Only one of the six Type 21 G.C.I. sets which were to have been available by the beginning of 1944, (1) was in action in January at Sandwich and then only with the plan position equipment and not with the height finding apparatus. It proved able to control interceptions in an area impregnated by Window by virtue of its narrow beam although exercises over south-east England with aircraft dropping 50-centimetre Window showed that even the Type 21 set was not immune. (2) By the last week of February the G.C.I. station at Wartling had been equipped with a Type 21 set with plan position equipment only. Window was used in every major raid in January and February and in the latter month was probably responsible for 15.5 per cent of the failures in interception. It was not always successful; for example on one raid it was effectively dispersed by high winds. By the end of February the G.C.I. stations were no longer being swamped by Window. At the end of March six Type 21 sets were operational with both plan position and height finding equipment at Sandwich, Wartling, Trimley Heath, Sopley, Neatishead and Hope Cove, all in south and southeast England. As a result only 7.9 per cent of the failures to intercept enemy raiders could be attributed to Window. Six further stations in southern and south-western England were to be ready by the end of April. They were never required to go into action. Altogether in the series of raids from January to March Type 21 sets were responsible for the destruction or probable destruction of

N.A.D. (44)
1st Mtg.,
para. 2.

A.H.B./II/
76/48(B).

O.R.S.
A.D.G.B.
Rept. No. 59.

-
- (1) Due to difficulties in the experimental development of the equipment and to sub contractors falling behind schedule in production. However, improvements in the set in the meantime made the installations which were available in March much more valuable operationally than those which should have been provided by 1 January 1944. (N.A.D. (44) 1st Meeting para. 2)).
 - (2) Exercises with Window were held on 2, 9 and 16 March.

N.A.D. (44) 1,
paras. 21-22.

N.A.D. (44)
1st Meeting
para. 7 and
3rd Meeting
para. 2

N.A.D. (44) 4.
R.A.F. Signals
History, Vol. VII,
Chap. 5 and
A.H.B./II/76/48(B).

N.A.D. (44)
1st Meeting
para. 4.

Ibid and
N.A.D. Cttee
Loose Papers
(D.D. Ops.)
(unindexed).

12 enemy aircraft. Radar controlled searchlights were also able to work through Window. It required evenly laid Window of considerable density to affect all searchlights in a given area and if a few remained free to operate, it was possible to engage enemy aircraft with them. Nevertheless General Sir Frederick Pile requested that 1,000 sets of S.L.C. Mark 9X, a powerful centimetric equipment, should be delivered at an early date. But he was informed by the Ministry of Supply that it would be impossible to issue them before March 1945 as their production would affect the output of radar equipment needed for offensive use. (1)

Secondly, the measures taken to jam Neptun Gerat and the Egon Procedure. The Neptun Gerat was first noted in a crashed enemy aircraft in October 1943 and in November a receiver in good condition was recovered from the wreckage of a Ju. 88. The Americans had produced a transmitter known as Dinah capable of jamming Neptun, but it was in urgent demand for the combined bomber offensive which had the highest priority and in any case the Air Staff's scientific advisers believed that a more efficient equipment could be produced in a shorter time with a modified form of A.S.V. Mark II; (2) T.R.E. (3) was instructed to develop and produce six ground jammers which were to be installed on G.C.I. sites in southeast England. As a temporary measure, pending the arrival of these jammers, eleven Light Warning sets in southeast England were adapted to intercept Neptun signals; they were in action by the end of February. The whole scheme was known by the code name Meerschmum and was controlled by the Filter Officer at Headquarters, A.D.G.B. The ground jammers were completed by the end of May 1944. By this time Neptun was rarely used. Prisoners of war stated that radar indications from other bombers in the same stream so confused aircrew that they preferred to rely on visual warnings. Meerschmum in its final form was, for this reason, never used operationally. Trials with the airborne jammer were inconclusive.

A jammer used to interrupt the V.H.F. R/T control of fighter bombers (4) was adapted and brought into action against long range bombers receiving radio directions in the target area under the Egon procedure. The transmitter used was sited at Alexandra Palace, London. German aircrew captured later confirmed its effectiveness and the subsequent adoption by the enemy alternative channels of communication provided conclusive evidence. Interference with the ranging system of Egon was a problem less easy to solve. It was decided as an interim measure to turn the Mandrel sets, (5) which had been installed in the Dover area for Bomber Command, inland, whereby it was possible to jam the Freya early warning stations in the Pas de Calais which were operating the Egon system. Their control was also vested in Headquarters Air Defence Great Britain working in close collaboration with No. 80 Wing. The enemy Freyas were jammed by Mandrel though not very effectively. Measures, involving elaborate experimenting, were taken to jam the FuGe 25A (the airborne receiver for Egon) itself as well

-
- (1) 50 hand made sets were to be ready by the end of that summer.
 - (2) Anti-surface vessel.
 - (3) Telecommunications Research Establishment.
 - (4) Known as Cigarette.
 - (5) R.A.F. jammer against enemy early warning system.

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as the Freya as it was then feared that the enemy would use the Egon procedure to bomb Allied beachheads on the Continent and headquarters. In the event, its employment in an offensive capacity was short lived and by May 1944 had ceased completely.

(ix) Modification of Mosquito to intercept the Fast German Bomber

N.A.D.(44)(1),
para.13.

No. 85 Squadron
O.R.B.,
Jan. 1944
N.A.D.(44)
1st Mtg.,
para.8.

A.H.B./IIS/
110/5/126,
Encls.7A, 12A.

A.D.G.B.,
O.R.B.,
App. D5,
April 1944.
A.H.B./IIM/
A2/5A.

Thirdly, there was the problem of intercepting the German high speed bomber such as the Me.410. The margin of speed between the latter and the Mosquito was too small and while Air Chief Marshal Leigh Mallory had been demanding that Mosquitos be fitted with more powerful engines since the summer of 1943, the problem in the spring of 1944 was to produce a stop gap until the arrival of the Mosquito XXX. Tests were carried out in January 1944 by a Mosquito of No. 85 Squadron fitted with a special apparatus for injecting nitrous oxide (N2O) into the air intake, thereby increasing the speed of the aircraft by 40 miles per hour. As operational trials proved to be satisfactory, Air Chief Marshal Leigh Mallory was given permission to order fifty sets of N2O equipment to be manufactured with all haste for use in Nos. 96 and 410 Squadrons. These two squadrons were equipped with Mosquitos XIII and A.I. Mark VIII. It was unfortunate that the N2O equipment could not, for structural reasons, be fitted in the Mosquito XVII. The sets were to be ready by the end of March and, in fact, 45 aircraft had been installed by that date and the remaining five sets were held in reserve.

N2O equipment was ordered for the Mosquitos XIX which were eventually diverted to Bomber Command. As the Mosquitos XXX were expected shortly, the Mosquitos XII of No. 85 Group, the night fighter component of 2nd T.A.F., then under command of Air Defence Great Britain, were fitted with N2O instead.

Summary of the Final Raids on London

A.H.B./IIH1
/13
Review of
Enemy Air
Attacks on
Gt. Britain
p.7 and Enemy
Docs A.H.B.6
Trans.
Nos. 172.7
and 172.9.

The raids on London between 21/22 January and 19/20 April were, without doubt, an utter failure. They failed in their primary object to affect the morale of the civil population to any degree and British war production did not suffer any appreciable setback. (1) Civilian casualties during the first quarter of 1944 amounted to 1,349 fatal and 2,615 serious. Approximately 2,800 sorties were flown in raids on London and in the period about 2,600 metric tons of bombs were dropped, in addition to some 9,600 incendiaries, mostly intended for the capital. Bombs of up to 2,500 Kg were used. In contrast to the night raids of 1940/1941 attacks were concentrated in the shortest possible time. A complicated system of flares which was subject to constant variations placed the success of the raids wholly in the hands of the pathfinders, the only crews to be equipped with bombsights. The remainder of the bomber crews followed sheeplike and bombed on the flares. The deterioration of the navigation and operational ability of the German bomber crews stands out clearly when the raids of 1944 are compared

(1) Nor were the ports (Bristol, Liverpool, Southampton, the Clyde) being used by U.S. Forces to unload troops and equipment for Overlord in any way affected. In February during the height of the attacks on London 115,703 tons were unloaded at Bristol alone and in April 97,373 U.S. troops were disembarked on Clydeside. (Effect of Air Power on Mil. Ops. by General Omar Bradley, Chap. II, p.19, A.H.B./IIS/108/1).

with those of 1941. The bombs dropped on London in early 1944 represented 4.1 per cent of the total weight directed against the city whereas in the two raids on 16/17 April and 10/11 May 1941 at least 85 per cent of the total weight of attack was estimated to have fallen in London. The two most effective raids on London were on 18/19 and 20/21 February when approximately 145 and 127 metric tons of bombs fell in the London area.

Enemy Doc.
A.H.B.6.
Trans. VII/135.

A.D.G.B.
O.R.S. Repts.
Nos. 45, 55
and A.D.G.B.
Form 'Y'.

The aircraft losses were disastrous for the German bomber arm for during the period of heavy raids on London from 21/22 January to 18/19 April 139 bombers were destroyed by the British defences and 59 others failed to return to base through other causes. This was over six per cent of the total number of aircraft despatched. Air Defence Great Britain claimed to have destroyed or possibly destroyed 91½ aircraft and A.A. Command 53½ raiders. The British air and ground defences had thus been able to inflict a higher rate of casualties on the enemy bomber force than the German night defences could inflict on R.A.F. Bomber Command during its long flights over Europe en route to targets in Germany. (1) In this manner the German bomber force in the West, instead of being retained for attacking the Allied invasion forces, was frittered away. The bomber force was also required on the Mediterranean and Eastern Theatres of War. A number of bombers for Luftflotte 3 had to be transferred to the Mediterranean immediately after the start of the raids on London where they took part in anti-ship attacks over Anzio, and in the vicinity of Algiers and Bougie. Large scale bombing operations were in progress against the Russian armies in the Ukraine at the same time.

The G.A.F. was experiencing losses in other ways. As a result of the large number of inexperienced aircrews the accident rate was abnormally high. (2) Secondly, the Allied air offensive against airfields in northern France and the Low Countries was becoming increasingly effective. In the first six months of 1944, 148 German bombers were destroyed and 120 damaged on the ground by Allied bombs or aircraft fire. On 10 April the strength of bombers in Luftflotte 3 was 286 aircraft, of which 217 were serviceable but by the same date in May the strength had fallen to 213 aircraft of which 146 were serviceable. Meanwhile the combined bomber offensive against Germany had brought about a radical change in the enemy's air policy, namely the decision to concentrate on fighter production to the exclusion of the long range bombers. It was to lead to the virtual elimination of the German bomber force, such bomber aircraft as still were produced (for example the Ju.88) being required largely for the maintenance and still further expansion of the night-fighter defences.

A.M. Pamphlet
No. 24S,
Chap. 13,
p. 322.

- (1) See A.C.M. Sir Roderic Hill's 'Despatch on Air Operations by A.D.G.B. and Fighter Command in connection with the German Flying Bomb and Rocket Offensives 1944/1945' Pt. I, para. 15.
- (2) During February 1944 alone the Luftwaffe as a whole lost 1,300 aircraft in flying accidents. The principal cause (33.1 per cent) of these accidents was attributed to errors in landing. (Enemy Doc. A.H.B.6 Trans No.172.7).

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Attacks on Ports and Shipping Concentrations in Southern England
20/21 April to 29/30 May 1944.

A.W.A.S.
Rept. No.
BG/32.
A.H.B./IIB/
47/3.

In the last week of April the enemy abandoned his raids on London and turned his attention to those coastal areas which had become the base for the Allied cross-channel assault. The abortive attacks on Bristol and Hull at the end of March had at last convinced the German Air Staff that the performance of their pathfinders was extremely erratic and General Peltz insisted that a reconnaissance aircraft must photograph target markers on all raids over England. Photographic flash bombs were reported on a number of occasions in areas where flares and bombs were being dropped.

Hull was the first target in the new series of raids - a town which the G.A.F. had always experienced difficulty in finding. The final raid on 20/21 April was no exception for not a single bomb fell anywhere near the town. A force of 130 aircraft took part, of which probably less than half reached the English coast. The German report⁽¹⁾ goes on to state that: 'observation had showed that the target was marked correctly at the right time. Crews who had flown several sorties against Hull confirmed the great success of the raid'. British observers believed that there were two reasons for its failure; first the wrong estimation of wind strength by the target markers and, second, the blind reliance of the main force crews on the accuracy of the pathfinders. Two of the enemy bombers were lost.

Ibid.

Bristol, another target which the G.A.F. had found difficult to hit, was on 23/24 April again the objective for a force of 117 bombers, none of which approached even its vicinity. The south coast towns of Poole and Bournemouth, nearly 60 miles distant, instead received the attack. The successful jamming of the pathfinders navigational aids by British countermeasures was the cause of this gross error and fresh markers following upon the first wave renewed the flares which had already been dropped in the wrong place. Even so, it is difficult to believe that all the bomber crews thought that they were over the right target. It was yet another example of the implicit reliance of bomber crews on the pathfinders.

Ibid.

In the last week of April the G.A.F. attempted to disrupt the considerable shipping activity in ports on the south coast. On the 25/26th all available bombers of Fliegerkorps IX were thrown into two attacks on shipping off Portsmouth. The first raid broke down because of poor visibility and the successful jamming of German navigational aids. A few bombs were scattered over the Isle of Wight and from Portsmouth to Selsey Bill. In the second raid pathfinders, unable to use their radar, found their way to the target by D/R but they arrived late and the bombs, dropped in dense cloud, did not find their mark. The Portsmouth area was attacked on the following four nights and mines were also laid in the approaches to the harbour. However, the damage and nuisance effects were negligible. There were other difficulties which beset the bomber force. On the 26/27th two Geschwaders, due to attack Portsmouth, were

(1) Enemy reports of raids against England in April are drawn from 'Tatigkeits-Erfahr-und Monatsberichte der Luftfl. 3. Einheiten fur Monat April 1944'. (A.H.B. 6 Trans. No. 172.9)

prevented from taking off by R.A.F. bombers flying over their base to attack transportation targets in northern France.

Ibid and Enemy
Doc. A.H.B. 6
Trans. No.
299.2.

The climax of the attacks on the south coast came on 29/30 April when 100 aircraft flew to Plymouth to bomb the battleship King George V and a cruiser. The attack achieved some notoriety because it was the first time that the P.C. 1,400 kg (Fritz-X) radio-controlled bomb was used against shipping in home waters. The bomb which had been invented in 1942 was fitted with a special tail unit containing a radio control mechanism and could be guided by the observer in the bomber making the attack. The minimum height for dropping the F.X. bomb was 12,000 feet. This was to give the bomb sufficient velocity and also to give the bomb-aimer time to apply corrections. Most attacks were made at a height varying between 12,000 and 19,000 feet. The bomb was photographed once during its fall and again at the time of impact. Twelve Do. 217's of III/KG. 100 each carried one bomb to Plymouth. ⁽¹⁾ The marking of the target by the pathfinder force again miscarried and together with the presence of mist and smoke over the target led to an abortive attack. One of the Dorniers which carried an F.X. bomb subsequently crashed in the vicinity of the target area. No further operations with missiles of this type took place against Great Britain.

A.W.A.S.
Rept. No.
BC/33
A.H.B./IIB/
47/3.

In May the enemy made a final attempt to improve his bombing technique but to no effect. After a raid on Bristol incendiary bombs and marker flares were no longer dropped in order that the bomber crews would treat any fires on the ground as decoys and so disregard them. Turning point and marker flares were also abandoned. Apart from the use of Window German aircraft equipped with jammers known as Kettenhund also began to operate against the British radar screen. They carried the jamming apparatus with their usual bomb load and were briefed to fly on the fringe of the bomber stream.

The raid on Bristol on 14/15 May was again devoid of any success. Only three tons of bombs fell in Bristol and 85 tons were scattered between this town and Southampton and Portsmouth: the nearest flares to Bristol were dropped 40 miles away. Fourteen bombers were lost. The only other large raid that month was on Portsmouth on 15/16 May but in spite of the absence of flares, naval decoy fires diverted a proportion of the bomb load away from the port. Between 22/23 May and 29/30 May Portsmouth, Weymouth, Torquay and Falmouth were raided. Extravagant claims were made for nearly all the attacks but apart from some oil storage tanks set alight at Falmouth, the damage inflicted in all four attacks was negligible.

Attacks on Airfields and Intruder Operations 21/22 January to 30/31 May 1944.

Addendum to
A.W.A.S. Rept.
BC/G/12.
June 1944
A.H.B./IIB/
47/4.

The large scale raids on London from January to March were accompanied by minor attacks on R.A.F. airfields either with the object of weakening the defences or as a secondary target for enemy aircraft unable to reach London. It is

(1) By the summer of 1943 this unit had been trained for operations with F.X. bombs and between July and September 1943 attacks were made against shipping in a number of Mediterranean ports. The Italian battleship Roma was sunk and two American cruisers and one British warship (H.M.S. Warspite) was severely damaged by F.X. bombs. III/KG. 100 withdrew from the Italian campaign in October and until the attack on Plymouth had taken no further part in operations. (Enemy Doc. A.H.B. 6 Trans).

significant that nearly all the attacks on airfields during these months were on fighter stations or their associated dummy flarepaths. In April and May there was a revival of purely intruder activity against Bomber Command aircraft and, in addition to the bombing of airfields, a large number of machine gun and cannon fire attacks were made either against airfields or against friendly aircraft about to land. Attacks were usually made by solitary Me.410's or Ju.88's but on occasion were made by two or three aircraft and more rarely by as many as seven or eight bombers.

From January to May 1944, 82 aircraft dropped 46 tons of bombs on airfields, 33 aircraft dropped 42 tons on dummy airfields and six aircraft discharged seven tons of bombs on six miscellaneous R.A.F. stations. The most intensive activity was in April when 35 aircraft bombed airfields. Over the whole period nine airfields were made temporarily unserviceable but the damage was very slight. Twenty-five British aircraft were destroyed, of which 13 were in April, and 56 were damaged.

In the last week of May the night-fighter strength in Air Defence Great Britain was as follows. There were two Beaufighter VI Squadrons which were due to re-equip with Mosquitos XVII/XIX and Mosquitos XXX respectively. Apart from the two Mosquito VI Intruder squadrons, the remainder of the night-fighter force was composed of nine Mosquito XII/XIII and four Mosquito XVII squadrons, of which two were shortly to be re-equipped with Mosquitos XXX. It should be noted here that in the first week of May Nos. 85 and 157 Mosquito Squadrons were transferred to No. 100 (Bomber Support) Group Bomber Command. Both squadrons were equipped or re-equipping with Mosquitos XVII.

Final Night Raids against Great Britain in June 1944

These were largely a continuation of the intruder activity already described and three tons of bombs were dropped on airfields in East Anglia. About 36 aircraft flew overland. One airfield temporarily became unserviceable and three others were slightly damaged. No attempt was made to attack or reconnoitre troop and shipping concentrations immediately prior to or during the landing in Normandy. An attack by fighter bombers on Seething and Bungay airfields on 27/28 June was the final night raid on Great Britain with the exception of some small scale intruder operations against Bomber Command airfields in March 1945. On 12/13 June the first flying bombs were launched against southern England. It now remained to be seen whether the 'V' weapons would be more successful than the piloted bomber had been in attempting to break the spirit of the civilian population.

Summary and Conclusion

During 1943 it was estimated that the enemy flew 2,055 overland night sorties against Great Britain and dropped on British soil a total of 1,985 tons of bombs in 133 nights which was less than the total load dropped by R.A.F. Bomber Command in a single heavy raid.⁽¹⁾ Their greatest effort was

(1) Altogether in day and night attacks the G.A.F. dropped 2,320 tons of bombs in 1943. As an example of its decline it is interesting to compare this total with the 55,500 tons dropped during the twelve month period July 1940 to June 1941. In sharp contrast to the German effort, the weight of R.A.F. Bomber Command attacks on Germany had risen from 15,150 tons during the same twelve months to 136,000 tons in 1943.

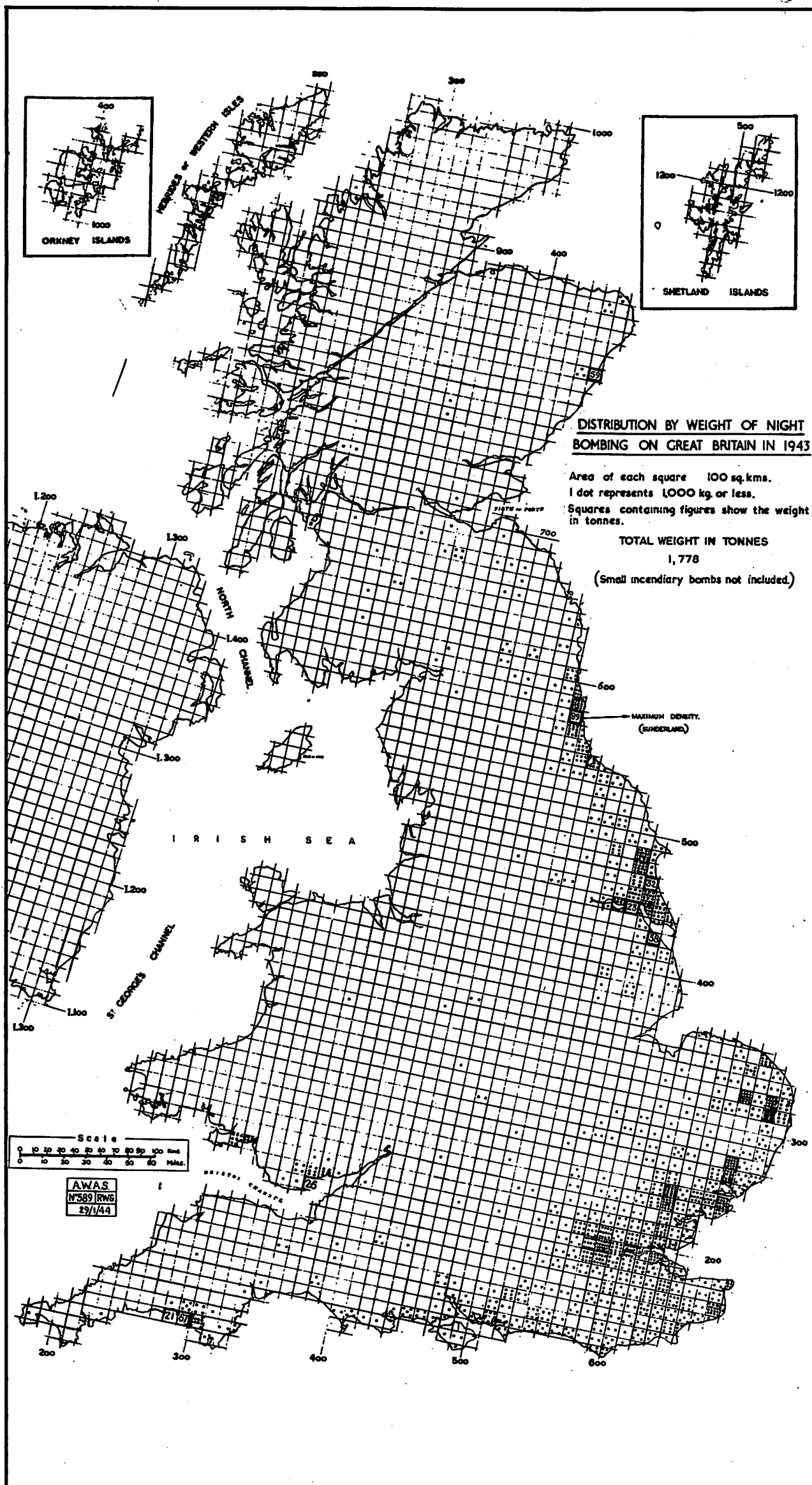
A.D.G.B.
Order of Battle
25 May 1944.
A.H.B./IIM/
A2/5A.

See Part IV,
Chap. 16.

A.W.A.S.
Rept. No.
BC/34.
A.H.B./IIB/
47/3.

See this
Narrative
Part IV,
Chap. 17.

A.W.A.S.
Rept. Nos.
BC/28 and
BC/35
A.H.B./IIB/
47/3.



in March when 408 tons of bombs were discharged mostly on southeast England. Raiding activity was also high in May and October. In the first six months of 1944, 2,890 sorties were flown and 3,177 tons of bombs were discharged in 77 nights: approximately 39 per cent of the total bombload was made up of small incendiary bombs. The total weight of bombs recorded in the whole of 1943 had been exceeded by mid-March 1944. The heaviest raids occurred in February with 1,200 tons intended for London; second was March with 826 tons.

See Map
No. 6

In 1943 the greatest weight of bombs fell in the London area. Next in order came Hull, Grimsby, Aberdeen, Cardiff and Chelmsford. About one third of the bombs dropped by night fell in East Anglia in the area bounded by Southend on Sea, Cambridge and Cromer. In 1944 London received almost one third of the total tonnage of bombs dropped by piloted aircraft. After London the most heavily attacked towns were Portsmouth and Gosport (but not more than 36 tons fell on the target), Gravesend and Southend. It is demonstrative of the enemy's failure during 1944 that Portsmouth alone of his chief coastal targets appear in this list. The most heavily bombed region was southeast England because of the raids on London. South and southwest England came next with the raids on Portsmouth, Plymouth and Bristol. It is significant that in all the enemy raids in 1943/1944 targets were chosen in coastal areas or in places which called for only a short approach overland, thus showing the enemy's respect for the efficient early warning system and for the alertness of the British fighter defences. The use of the high speed bomber for night as well as for day operations was another token of respect.

In this period Fighter Command, later Air Defence Great Britain, flew a total of 2,678 sorties in response to enemy aircraft. This figure does not include the numerous routine sorties such as shipping patrols and sorties flown to investigate unidentified air activity. In 1943 alone the claims made by Fighter Command/Air Defence Great Britain and Anti-Aircraft Command for enemy aircraft flying against overland and coastal targets were as follows:

| | <u>Destroyed</u> | <u>Probably Destroyed</u> | <u>Damaged</u> | |
|------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|----------------|-----------|
| F. Cmd. O.R.S. Repts. 'Fighter Interception System and Operations', 1943 A.H.B./IIM/ A2/4A. | Fighter Command/ A.D.G.B. | 133 | 18 | 34 |
| | A.A. Command | 46 | 7 | 23 |
| | | <u>179</u> | <u>25</u> | <u>57</u> |

Of this total, which does not include homing bombers destroyed by intruders, 131 enemy aircraft were claimed to have been destroyed by A.I. night fighters, including 97 by means of the Mark VIII, while only two were claimed to have been shot down by Catseye fighters.

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Enemy records which unfortunately are not broken down into day and night operations assign the following losses of bomber aircraft while flying into operations against Great Britain, excluding air attacks on shipping. (1)

Enemy Doc.
A.H.B.6
Trans.
No. 144.4.

| <u>Due to Allied Action</u> | | <u>Not due to Allied Action</u> | |
|-----------------------------|----------------|---------------------------------|----------------|
| <u>Destroyed</u> | <u>Damaged</u> | <u>Destroyed</u> | <u>Damaged</u> |
| 283 | 50 | 72 | 86 |

It is probable that approximately 100 enemy aircraft were destroyed during daylight attacks. Fighter Command probably accounted for approximately 100 German bombers in night operations.

From January to June 1944 Air Defence Great Britain flew 2,312 sorties to intercept enemy aircraft and its claims, again not including those of intruders were:

A.D.G.B. O.R.S.
Repts. Fighter
Interception
System and
Operations,
1944.

| | <u>Destroyed</u> | <u>Probably Destroyed</u> | <u>Damaged</u> |
|--------------|-------------------|---------------------------|----------------|
| A.D.G.B. | 145 $\frac{1}{2}$ | 21 | 30 |
| A.A. Command | 70 $\frac{1}{2}$ | 4 | 20 |
| | <u>216</u> | <u>25</u> | <u>50</u> |

Of the total number claimed destroyed, aircraft equipped with A.I. Mark VIII accounted for 93 $\frac{1}{2}$ destroyed and 12 probably destroyed and those with A.I. Mark X 51 destroyed and nine probably destroyed. One aircraft was claimed destroyed by a Catseye fighter. According to the records of Luftflotte 3 operational losses suffered on the Western Front during the period January to May 1944 were:

Enemy Doc.
A.H.B.6.
Trans.
No. VII/135.

| <u>Due to Allied Action</u> | | <u>Not due to Allied Action</u> | |
|-----------------------------|----------------|---------------------------------|----------------|
| <u>Destroyed</u> | <u>Damaged</u> | <u>Destroyed</u> | <u>Damaged</u> |
| 281 | 36 | 196 | 120 |

In addition to these totals, as already mentioned, 148 bomber aircraft were destroyed and 120 damaged on the ground as a result of Allied air action.

The discrepancy between British and German figures is perhaps due to the fact that there is no distinction in the German figures for 1944 between aircraft lost on overland raids and minelaying and anti-shipping expeditions. At any rate it is certain that the British night defences destroyed over 200 of the enemy's long range bomber force - a heavy loss which the enemy could ill afford to sustain on the eve of the Allied landings on the continent. The large number of aircraft destroyed or damaged by accident and not through Allied action is characteristic of the G.A.F. at this time with its high proportion of inexperienced aircrews.

Fighter Command/A.D.G.B. lost 16 fighters in night interceptions in 1943 and 23 were damaged; the figures for the first six months of 1944 were eight and three respectively.

(1) In attacks against shipping 90 enemy bombers were lost and 16 damaged; 21 were destroyed and 12 damaged through causes other than Allied action.

Fighter
Command,
Form 'Y'.

DISTRIBUTION BY WEIGHT OF AIRCRAFT BOMBING ON GREAT BRITAIN IN 1944

Area of each square 100 sq.kms.

One dot represents 1000 kg or less

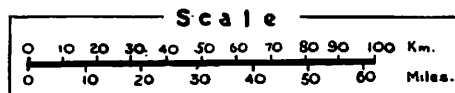
Squares containing figures show the weight in tonnes.

WEIGHT ON LONDON 974 TONNES.

TOTAL WEIGHT IN TONNES

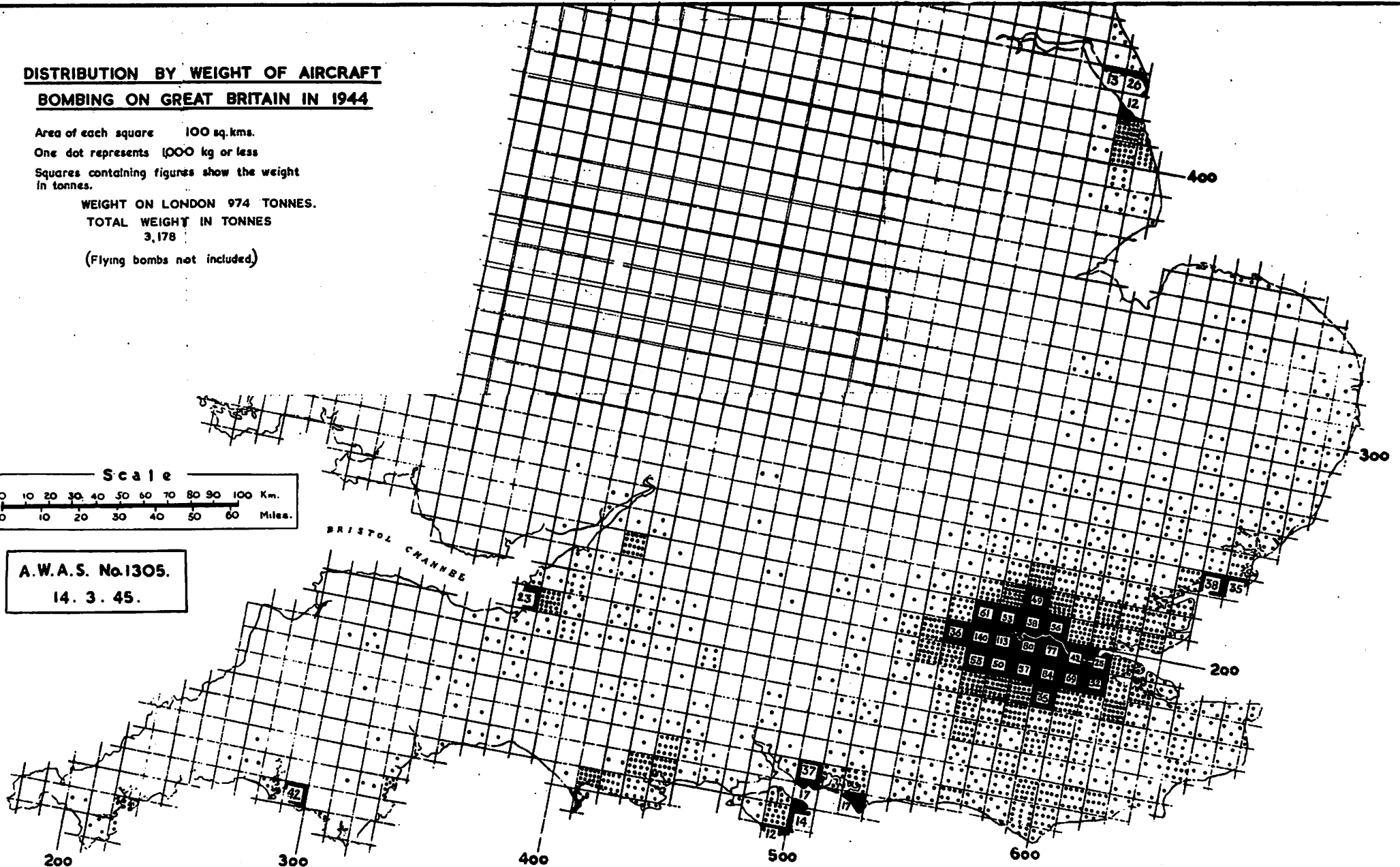
3,178

(Flying bombs not included)



A.W.A.S. No.1305.

14. 3. 45.



The raids on London in the spring of 1944 were the last large scale offensive operations of the G.A.F. against Great Britain. Apart from their nuisance value and some benefit for propaganda purposes the enemy had derived little of military advantage from night raids in 1943/1944. It had squandered its most experienced aircrews in battles on the Russian and Mediterranean fronts. The sustained bombing of Great Britain could only be accomplished with a steady flow of trained reinforcements. Fuel shortages in Germany were also becoming a serious factor in air operations and in training. By the spring of 1944 the decision was taken to concentrate all resources on the production of fighter aircraft for the defence of the Reich and it sounded the death knell of the German bomber arm. The German Air Staff had throughout this period shown itself unable to define a clear bombing policy. The Achilles heel of Great Britain was its sea communications; it might have been possible to sever these arteries with combined attacks by aircraft and U-boats. The air attack of targets most essential to this country was, nevertheless, abandoned in favour of the 'nuisance' raid, the war on morale; sound strategy was sacrificed for political expediency.

Good progress had been made by Fighter Command during these eighteen months with new aircraft and A.I. equipment. The Beaufighter was largely replaced by the Mosquito night fighter. But the most modern version of Mosquito able to carry the latest type of A.I. was, as has been seen, slow in reaching squadrons. During the critical period from January 1944 to the end of April when enemy night raids were heavier than they had been at any time since May 1941 there were only five squadrons of Mosquitos XVII able to carry A.I. Mark X and the Mosquitos XIX, originally intended for defensive purposes and to provide replacements for the Mark XVII, were switched to Bomber Command.

By mid 1943 the A.I. Mark VII was being superseded by the Mark VIII which proved itself to be more efficient in intercepting violently evading bombers.. The A.I. Mark VIIIA, was in general use by the end of that year. By January 1944 the first squadrons with the still more highly developed A.I. Mark X, based on an American model and supposed to be immune against Window, were in action. While a number of interceptions were made with the aid of radar controlled searchlights when weather and moonlight were favourable, the A.I./G.C.I. aided interception continued to be the most successful in destroying enemy aircraft. German attempts to swamp the defences with Duppel were not, on the whole, successful and their employment of special navigational aids and tail warning devices was offset by the inexperience of the bomber crews as well as by the development of successful radio countermeasures in Great Britain.

During the period under review Fighter Command succeeded admirably in combining a defensive with an offensive role with the minimum number of night fighter squadrons - usually not more than nineteen. The defensive role was, of course, the primary one; it was always considered a possibility, especially by members of the War Cabinet whose responsibility was home security, that the enemy would retaliate for the destruction inflicted on German cities by R.A.F. Bomber Command. And this task acquired additional importance when large naval and military forces began to assemble for Operation Overlord. In connection with this

role aircrew had to become proficient with new types of aircraft and A.I. equipment. At the same time night-fighter squadrons were training for or carrying out offensive operations such as ranger patrols by day and by night, supporting the operations of Coastal Command over the Bay of Biscay, and supporting the night raids of Bomber Command by attacking enemy night fighters or raiding night fighter bases on the continent. Apart from these activities the Command continued to provide experienced aircrew and ground personnel for overseas theatres of war. Finally, six highly skilled night-fighter squadrons in the Command were transferred to Bomber Command in the period. Yet at no time were the night air defences weakened because of these extraneous commitments.

CHAPTER 13

THE AIR DEFENCE OF SHIPPING IN HOME WATERS

Introduction

See Part I,
Chap. 5.

The threat of air attack against British coastwise shipping had greatly diminished during 1942 as air and radio counter-measures against this form of attack became more proficient and as the G.A.F. was diverted to other theatres of war. The peak of sinkings by direct air attack and by mines was reached in January and February 1942; by the end of the year, although minelaying sorties by aircraft were still being flown in some strength, direct air attacks on merchant or naval shipping were few and far between.

Ibid.

The anti-shipping offensive of the G.A.F. had rarely received more than perfunctory support from the German High Command and it has already been shown how German air operations in the west were increasingly confined to reprisal raids against English towns. Meanwhile E-Boats continued to prey upon shipping in the Channel and off the coast of east and south-east England. During the eighteen months under review the production of these craft was increased and operations intensified. The attack and destruction of enemy E-Boats was, of course, primarily the responsibility of the Royal Navy but there were not always enough naval craft available for this purpose and in the course of operations from 1940 to 1942 it had been discovered that aircraft were a valuable deterrent to E-Boats.

In this chapter the part played by Fighter Command in the defence of Allied shipping from attack by E-Boats and from direct attack by air will be summarised briefly. A more comprehensive account of the R.A.F. in maritime warfare will be found in the R.A.F. narrative bearing that name, Volume III, Chapter XIV and Volume IV, Chapter XVI.

Defence against E-boats

FC/S.29500,
Encl. 18A.

Adm./T.S.D./
F.D.S./X.237
p. 207.

A.H.B./IIK/67/
563,
Encls. 6A-7A.

In the late summer of 1942 the Admiralty placed under the operational control of Fighter Command some A.S.V. Mark II - fitted Albacores of the Fleet Air Arm.⁽¹⁾ Swordfish of the Fleet Air Arm were already operating under the control of Coastal Command. During the winter 1942/1943 the air war against E-boats was largely maintained by these Albacores and Swordfish. Altogether in 1942, 180 direct air attacks on E-boats at sea had been made, but as yet not a single enemy vessel had been sunk. Nevertheless the activities of the E-boats had been confined to the dark hours, a factor which determined the type of aircraft which could most effectively be used against them. The requirements of such aircraft were that it should be comparatively slow (a fast aircraft was unsuitable for low altitude flights over the sea at night), it should have a good view ahead and below, possess reasonable endurance and bomb capacity and it should be fitted with radar.

(1) On 7 January 1943 the following squadrons of the Fleet Air Arm were operating under the control of Fighter Command: Nos.800, 804 (Sea Hurricanes) operating from Grimsetter and Ouston; Nos.841, 823 (Albacores) operating from Manston and Nos.884 and 886 (Seafires and Fulmars respectively) operating from Turnhouse.

The Albacore and Swordfish were the only operational aircraft which, in any way, fulfilled these requirements.

A.H.B./IIH/
240/10/11.

No.12 Group continued during 1943 to despatch aircraft under Operation Marksman - the attack of E-boats which had been damaged by surface vessels and were unable to reach base under cover of darkness or undamaged E-boats which were returning to base in broad daylight.(1)

A.M. File
CS/14415/1,
Encl. 19A.
FC/S.29500,
Encls. 109A,
115A, 128A
and 131A.

The Admiralty had only temporarily loaned their aircraft to the R.A.F. for shorebased operations and by the summer of 1943, as new carriers were being commissioned, were demanding their return. It was important that operations against E-boats should be intensified and for this air support was essential. On 20 August it was agreed that a composite squadron (No.415 R.C.A.F.) should be formed for air operations against E-boats consisting of one flight of Wellingtons XIII equipped with A.S.V. Mark II and V.H.F. R/T which was to be employed in a reconnaissance role and one flight of eight Albacores of No.841 Squadron to carry out strikes on E-boats under control of Fighter Command. No.415 Squadron began to operate as a whole in November 1943, although the Albacores had been operating without a break throughout that year. The Albacores of No.841 Squadron were based at Tangmere and Exeter.(2)

A.H.B./IIK/67/
563.

After a lull during the summer months the E-boats resumed their offensive on south coast convoys in the autumn of 1943. The Admiralty, on being pressed, increased the establishment of Albacores to 15. On 2 December 1943, No.415 Squadron (establishment 12 Wellingtons and 12 Albacores) took over the whole of the anti-E-boat commitment from No.841 Squadron.

(i) Air Operations against E-boats January to May 1943

Adm./T.S.D./
F.D.S./X.237,
p. 210.

The maximum number of E-boats ever available for the attack of Allied shipping was 20; the force was only brought to full strength when the season and weather were propitious for Allied amphibious operations against the continent. As already stated E-boats operated from Ijmuiden, Ostend, Boulogne and occasionally Cherbourg. Their dual function was either to make direct attacks on shipping with torpedoes or to lay mines in well-frequented shipping lanes.

Fighter
Command,
Form 'Y'.

Ibid.

From January to May 1943 E-boats carrying torpedoes made 154 (70) sorties and E-Boat minelayers made 92 (222) sorties. The share of Fighter Command in anti-E-boat operations amounted to 318 sorties, of which 46 aircraft actually attacked a target.(3) Included in this total were 19 attacks made by aircraft not specifically engaged on anti-E-boat operations. The only E-boat (S.75) confirmed sunk by air attack in this period was by Spitfires of No.118 Squadron. Operating under Operation Marksman, on 5 March, they attacked with cannon fire E-boats which had been molesting a convoy off

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- (1) Operation Marksman was cancelled by No.16 Group Coastal Command on 14 January 1944.
 - (2) For the development of tactics against E-boats see R.A.F. Narrative; 'The R.A.F. in Maritime War', Volume IV, Chapter XVI.
 - (3) See App. No.25 for figures relating to air defence of shipping.

Adm./T.S.D./
F.D.S.
X.237/48.

R.A.F.
Narrative:
'R.A.F. in
Maritime War',
Vol. IV,
Chap. XVI,
App. XXIV.

Adm./T.S.D./F.D.S.
X.237/48.

Fighter Command,
Form 'Y'

Fighter
Command,
Form 'Y'.

'R.A.F. in
Maritime War',
Vol. IV,
Chap. XVI,
App. XXIV.

Fighter
Command,
Form 'Y'.

'R.A.F. in
Maritime War'
Vol. IV,
Chap. XVI,
App. XXIV.
Ibid.

A.D.G.B.
Form 'Y'

the East Coast. During the full moon periods Whirlwinds and Typhoon bombers of Fighter Command went into action against E-and R-Boats whenever the weather was favourable but no claims they made were allowed. Although only one E-boat had been sunk at sea in this period, the Senior Officer E-boats was disturbed over the effect that air attacks were having on E-boat operations. He bemoaned the lack of air support for his craft which was not forthcoming and the fact that darkness and bad visibility no longer concealed the E-boats as Allied aircraft used radar to locate them. In the first five months of 1943 E-boats sank two merchant ships (6,600 gross tons) and four small Naval vessels (3,203 gross tons).

(ii) Air Operations against E-Boats June to December 1943

In the short summer nights from June to August only occasional sorties were made by E-boats and those were confined to the central Channel area. For the most part these craft were engaged on laying mines. Attacks by Fighter Command Whirlwinds supported by Spitfires continued. On 11 August Whirlwinds of No.263 Squadron attacked and sunk with bombs E-boat S.121 in a strike against naval craft in L'Aberwrach Harbour in Brittany.

In September the number of sorties (118) flown by Fighter Command against E-boats was the highest for the year and resulted in 14 attacks. There were also 21 chance encounters with E-boats. But no claims for serious damage could be confirmed. Albacores of No.841 Squadron were also active in the first week of September. October passed uneventfully with only one vessel of the Royal Navy (235 tons) sunk in home waters by E-boat attack. In November E-boats sank four merchant ships (8,538 gross tons). It was the first time any merchant ships had been sunk for seven months. Bad weather forbade torpedo attacks on Allied shipping for the remainder of the year. There were no R.A.F. attacks on E-boats in December but 123 sorties against E-boats were flown.

A total of 513 sorties were flown by Fighter Command/A.D.G.B. in connection with anti-E-boat operations from June to December 1943 of which 53 aircraft attacked. The E-boat effort amounted to 112 (78) torpedo sorties and 148 (794) minelaying sorties. They sank 8,538 gross tons of merchant shipping and four naval vessels (1,183 gross tons). In 1943 Fighter Command accounted for one of the two E-boats sunk by direct air attack. Two were sunk in bombing raids, one by Fighter Command and the other by the VIIIth U.S. Bomber Command in a raid on Kiel.

(iii) Air Operations against E-Boats, January to May 1944

In January and February of 1944 E-boats continued to harass English shipping. They sank in January 6,420 gross tons of merchant shipping and two minesweepers (1,090 gross tons). Bad weather impeded air operations. On 20/21 January two Beaufighters of No.406 Squadron attacked a group of three E-boats in Lyme Bay but did not inflict any serious damage. In March there was a lull in E-boat activity: no ship was molested and no mines were laid. From April to May minelaying increased, especially off the south coast but direct attacks on shipping were rare.

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'R.A.F. in
Maritime War',
Vol. IV,
Chap. XVI,
App. XXIV.

In the first five months of 1944 E-boats sank 8,505 gross tons of merchant shipping and four ships of the Royal Navy (2058 gross tons). In addition, two U.S. L.S.T.s engaged in an invasion exercise off the Dorset coast were sunk by an E-boat. Air Defence Great Britain did not claim any of the seven E-boats sunk by air and sea forces. Only one was sunk at sea by air attack (by Fleet Air Arm Swordfish under control of Headquarters Coastal Command) and two were sunk in IJmuiden harbour by the U.S. IXth Bomber Command.

Summary

Fighter Command had, in eighteen months, sunk two E-boats, one by cannon fire and one by bombs. The sum total for all the air forces engaged upon the hunting of E-boats were three E-boats destroyed at sea by direct air attack and five in port during air raids. Seven other E-boats were destroyed either by surface forces, by mines or as a result of accident. E-boats were as difficult to sink as they had been prior to 1943 but the great improvement in low-looking radio location made it easier for aircraft to seek out and attack them. There is authoritative evidence from the German side that Allied air superiority made E-boat operations extremely hazardous and they felt acutely the lack of support from the G.A.F. The losses suffered by E-boats in 1943 were the heaviest since E-boat operations began in 1940.

Air Attack on Allied Shipping - German Air Forces Available

'R.A.F. in
Maritime War',
Vol. IV,
Chap. XVI,
Part II.

At the beginning of 1943 the G.A.F. specialist anti-shipping force stood at the lowest level of strength and efficiency which had yet been reached. Fliegerkorps Atlantic, for example, in February 1943 could only boast a strength of 68 fighter, reconnaissance and bomber aircraft, of which 44 were serviceable. Fliegerkorps IX added a further 176 aircraft (111 serviceable) of which only 98 were bombers (64 serviceable). It has already been seen that some German torpedo-bomber units had been transferred to Norway for action against Allied convoys to and from Russia while others were despatched to the Mediterranean theatre of operations. The remaining bomber units in the west were expended on reprisal raids against British cities. As a result Allied shipping in coastal waters became virtually immune from direct air attack and comparatively free from the hazards of aerial mines.

A.H.B.6
Trans.
No.VII/17.

Proposals by the German Navy to intensify minelaying operations in the summer of 1943 to offset the paucity of sinkings by U-boats were grudgingly accepted by the German Air Staff and in September 1943 a directive was issued to Fliegerfuhrer Atlantic containing detailed orders for the attack of merchant shipping in the Atlantic in co-operation with the Commander-in-Chief U-boat Fleet. Of even greater importance was the enemy's need to prepare against an imminent invasion of western Europe. It has been shown how Fliegerkorps IX under General Peltz was reinforced by bomber units from Italy in the second half of 1944. Two other important measures were taken as a precaution against Allied landings. First, the anti-shipping force was expanded and new weapons, such as the FX radio-controlled bomb, were introduced. It was hoped that by June 1944 there would be a balanced force of some five Gruppen of torpedo-bombers and a similar number of units with radio-controlled missiles. In the early months of 1944 the ground and command organization was overhauled in anticipation of Allied landings. Finally, in mid-March 1944 the G.A.F. anti-shipping command was

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absorbed into Fliegerkorps X which had recently returned from the Mediterranean theatre to north-west Europe. By April 1944 the German anti-shipping force numbered approximately 200 to 250 aircraft, about one half of the total force originally planned for anti-invasion operations.

(i) Reduction of Fighter Protection for Allied Shipping

11G/S.500/5/
Ops.,
Encl. 44A.

Measures were taken to reduce the number of Fighter Command aircraft required to cover convoys in the Channel. From 15 July 1943 three degrees of cover for shipping were authorised:

- (i) Fighter Escort. Aircraft giving direct protection by flying in the vicinity of the shipping to be protected.
- (ii) Fighter Cover. Aircraft on defensive patrols or defensive sweeps maintaining air superiority over a given area.
- (iii) Fighter Watch. Aircraft at readiness on the ground, able to take off immediately on warning of attack or on a call for help being received.

After 10 June 1943 it was no longer necessary to maintain fighter cover over shipping passing through the Straits of Dover because of the abandonment by the enemy of direct air attacks on shipping and because of the improved low looking R.D.F. cover in that area. Convoys were to be protected instead by aircraft in the Fighter Watch category, i.e. at readiness on the ground.

H.Q. F.C.
Operational
Instruction
No.61/1942.
A.H.B./IIM/
A2/3A.

Night sorties over friendly shipping were drastically cut down; this was not so much due to the reduced threat of air attack but because it was difficult for ship's A.A. gun defences to distinguish between hostile and friendly aircraft. Fighter aircraft, however, were on the 'qui vive' at dusk as this was a favourite time for the attentions of hostile bombers.

(ii) G.A.F. Anti-Shipping Activity and Countermeasures by Fighter Command, January to June 1943

'R.A.F. in
Maritime War',
Vol. IV,
Chap. XVI,
App. XXV.

The G.A.F. despatched in this period 2,505 aircraft to attack or reconnoitre Allied shipping at sea by day; 484 aircraft were despatched in the hours of darkness; out of this total 17 aircraft attacked by day and three by night. There were nine attacks on merchant ships between March and June which were the only air attacks on shipping in the year. All of them were abortive. The total number of German aircraft laying mines in home waters was estimated to be 398. According to the War Diary of S.K.L., there were 753 night sorties, including those which were abortive. Minelaying took place on the east and south-east coast, including the Thames and Humber estuaries and the Great Yarmouth and Dover areas. The peak of activity was reached in April when 229 sorties were flown mainly over the Thames estuary. However, there was no significant increase in Allied shipping losses in home waters recorded at this time.

Enemy Doc.
A.H.B.6
Trans.

Fighter Cmd.
Form 'Y'.

Fighter Command's contribution to the protection of shipping came to 6,386 sorties by day and ten by night. Fighter Command, together with Coastal Command, claimed to have destroyed four enemy aircraft and possibly destroyed

Enemy Doc.
A.H.B.6
Trans.

three. Ships' guns claimed to have destroyed 13 aircraft and possibly destroyed two. According to German records, 40 aircraft were destroyed by Allied action in attacks on shipping, while ten aircraft were lost through causes other than by Allied action.

There are three points worthy of note appertaining to these activities. First, there was a considerable increase in enemy day and night reconnaissance in March. Second, minelaying which increased in April took place mainly on the east coast but the effort declined by June. Finally, from April onwards the number of sorties flown by Fighter Command for the protection of shipping was substantially reduced.

(iii) G.A.F. Anti-shipping Activity and Countermeasures by Fighter Command, July to December 1943

R.A.F. Narrative 'R.A.F. in Maritime War', Vol. IV, App. XXV.

Fighter Cmd. Form 'Y'.

Enemy Doc.
A.H.B.6
Trans.

The G.A.F. despatched an estimated total of 2,633 aircraft to reconnoitre and attack shipping at sea by day and 598 by night. Only one of these aircraft actually attacked a ship - but without success. The estimated number of mine-layers was 425 but according to the S.K.L. Diary, 292. The greatest activity was in September (236 sorties) over the Thames estuary and in the vicinity of the Isle of Wight. Fighter Command/Air Defence Great Britain flew 2,053 sorties against the G.A.F. anti-shipping effort by day and 12 sorties by night. One aircraft was lost through enemy action. No claims were made by British aircraft for the destruction of enemy raiders but ships' guns claimed five aircraft destroyed and two possibly destroyed. Enemy records assign 50 aircraft to destruction by Allied air or gunnery action and 11 were lost through other causes.

(iv) G.A.F. Anti-shipping Activity and Countermeasures by Air Defence Great Britain, January to May 1944

R.A.F. Narrative 'R.A.F. in Maritime War', Vol. IV, Chap. XVI, Part II.

Ibid, App. 25.
A.D.G.B. Form 'Y'

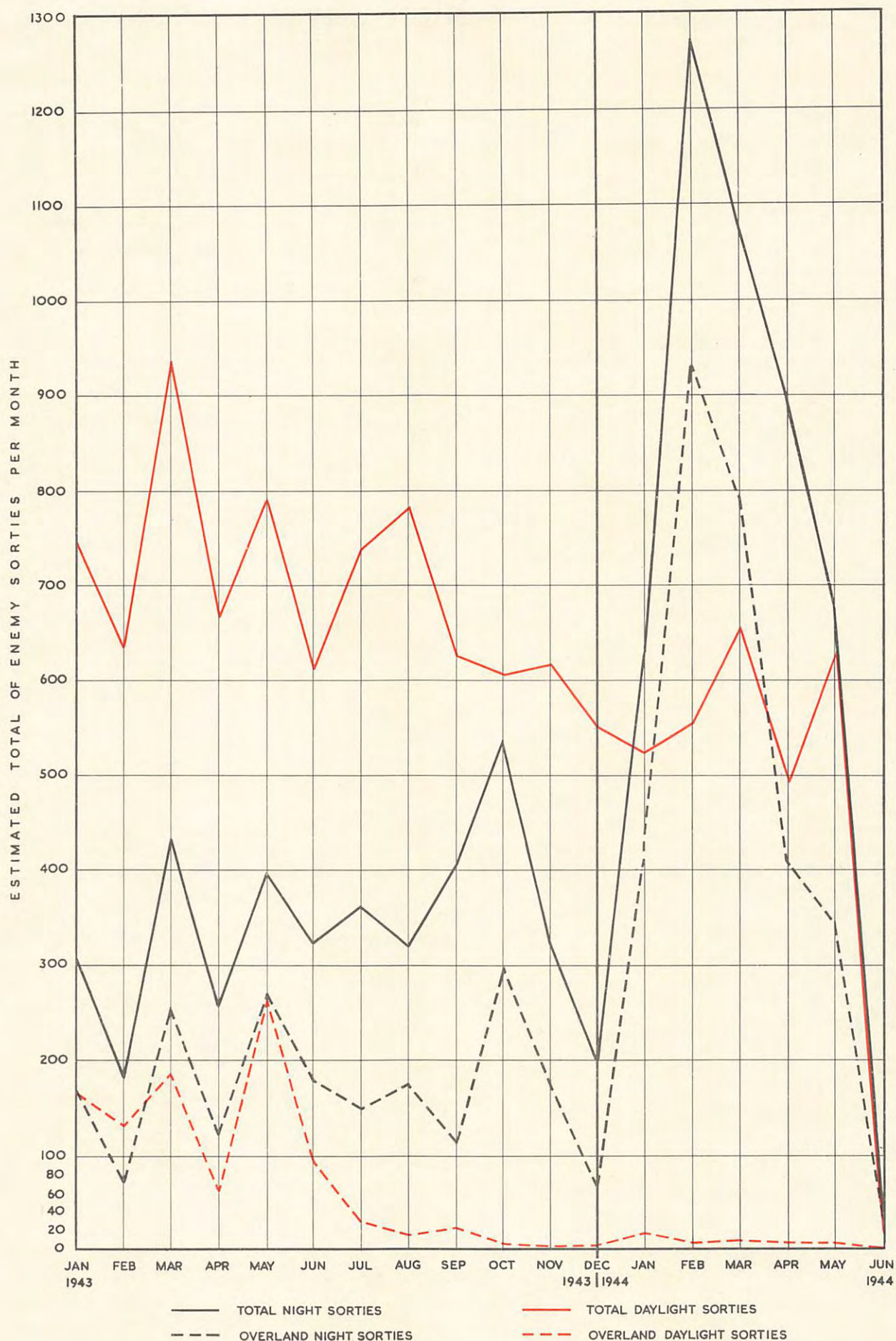
During the first quarter of 1944, there was an increase in enemy reconnaissance but no attempts were made to attack Allied shipping. Nor did a single Allied ship strike a mine in this quarter. This state of affairs continued right through to the end of the period. It was not until the end of April that shipping concentrations for Operation Overlord were attacked and those attacks were frustrated by British radio countermeasures. In the five-month period the G.A.F. flew 2,328 sorties by day and 220 sorties by night mainly in shipping reconnaissance; 145 aircraft laid mines. Air Defence Great Britain flew 1,589 sorties by day and eight by night, losing two aircraft by enemy action. Fighter and Coastal Commands claimed to have destroyed five enemy aircraft and ships' guns destroyed or possibly destroyed seven and a half. In this period also, Air Defence Great Britain flew 6,380 special defensive sorties on behalf of forces engaged on pre-Overlord exercises.

Conclusion

The story of the air defence of shipping in home waters in 1943/1944 is the story of the ascendancy of British air power which by the end of 1943, had been extended well over the fringes of German-occupied Europe. Enough has been said already of the enemy's failure to get wind of information about the timing and strength of Allied aircraft on the Continent. The German High Command derived little benefit from an increased reconnaissance effort over home waters in the early spring of 1944 and this was perhaps sufficient to justify the inordinately large effort of Air Defence Great Britain expended in purely defensive operations.

See App. No.25.

GERMAN OFFENSIVE SORTIES AGAINST THE UNITED KINGDOM AND SHIPPING IN HOME WATERS JANUARY 1943 – JUNE 1944.



AUTHORITIES: A.W.A. REPORT No BC/28 TABLE I A.H.B II B/47/3
 " " " BC/35 TABLE I A.H.B II B/47/3
 A.M.W.R. SUMMARY OF OPS. FIGHTER CMD. 1943/1944 A.H.B II H/89

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PART IV
OFFENSIVE OPERATIONS JANUARY 1943 TO
JUNE 1944

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CHAPTER 14.

REORGANIZATION OF THE METROPOLITAN AIR FORCEFOR CROSS CHANNEL OPERATIONSIntroduction

It is intended to show in this chapter firstly how the air support group which was designed to cover the landings on the continent in the early summer of 1944 developed from, and was nourished by, R.A.F. Fighter Command, and, secondly, how it was found necessary to convince the General Staff that the need for winning air superiority was more important than the development of a specialised Army support group under Army control. The delegation of responsibility for the planning of cross-channel operations, the development of Army Co-operation Command into a Tactical Air Force, the formation of mobile composite groups and the formation of the Allied Expeditionary Air Force will be traced without going into close detail. The planning for Overlord (the landings on the continent in 1944) and the part played by A.E.A.F. does not concern this narrative and the reader who wishes to pursue the story from that angle will find that the R.A.F. Narrative 'The Liberation of North West Europe' Volumes I and II and the R.A.F. Monograph on Air Support will provide the necessary information.

Planning for Cross Channel Operations in 1942

In April of 1942 the British and American governments decided that landings on the continent known as Round Up should take place in 1943. During the spring and early summer tentative planning began in London for a return to the continent and discussions took place among the Chiefs of Staff Committee as to what form an air support group for the landings should take. By June, General Eisenhower, accompanied by a small staff, had arrived in London to represent American participation in the planning of operations. But by the end of July, the Combined Chiefs of Staff had agreed that landings should be made in north-west Africa (Torch), thus postponing the Round Up operation - apart from Sledgehammer, a return to the continent in the face of German resistance disintegrating. It was nevertheless desirable to launch some kind of attack on the continent in order to relieve pressure on the Russian front, and also to gain experience in amphibious operations, and to test the defences of the Western Wall. These proposals became crystallised in the Dieppe Raid (Operation Jubilee) of which an account has been related in an earlier chapter.

See Part II,
Chap. 7.

A.H.B./IIS/
110/14/5,
Encl. 3A.

Ibid,
Encl. 7A.

On 8 April 1942 the British Chiefs of Staff delegated to the Commander-in-Chief Home Forces, General Sir Bernard Paget, the Air Officer Commanding-in-Chief Fighter Command, Air Marshal Sir Sholto Douglas and the Chief of Combined Operations, Admiral Lord Louis Mountbatten the responsibility for planning Round Up. The Chief of Naval Staff was to be available for close consultation. During May the Joint Planning Staff submitted a paper which dealt with the command and planning of operations on the continent to the Chiefs of Staff. It was during discussion of that paper, that Sir Sholto Douglas, supported by the Chief of Air Staff, Sir Charles Portal, proposed that Fighter Command as a whole should be the basis for the formation of an Air

Striking Force for continental operations. This organization having won air superiority, without which a landing would be impossible, would spread across the Channel on to captured airfields and advanced landing grounds when a firm foothold had been gained in France. It would be impossible to divest the Commander-in-Chief Fighter Command of the responsibility for the defence of the United Kingdom, especially for southern England which would become a vast concentration area for troops, equipment and aircraft, and for the southern ports whence the troops would debouch across the Channel. When the Air Striking Force moved over, a subordinate commander would assume responsibility for purely defensive operations over Great Britain. This proposition was to be the core of Air Staff thinking throughout the prickly disputes with the General Staff over the Army Support Group, or Tactical Air Force as it was to become known, in the summer of 1943.

Ibid.

At the end of May 1942 the British Chiefs of Staff reached three important conclusions. The primary role of the land and air forces in Great Britain should be to prepare for the offensive against occupied Europe. Agreement was to be reached with the American Chiefs of Staff on a system of command and the creation of a new Air Striking Command under a British Air Officer Commanding-in-Chief was to be considered by the Air Staff.

A.H.B./IIS/
110/14/4,
Encls. 14A-
15A and
A.H.B./IIS/
110/14/5,
Encl. 13A.

The general idea of Round Up, as then conceived, was that there should be simultaneous assaults on the Pas de Calais and on both sides of the Seine estuary, the capture of ports and airfields being the principal objectives. It was clear that the location of the assault areas must to a large extent be dictated by the range of fighter cover which would maintain air superiority above them. For this reason the Pas de Calais was a highly suitable area.

On 22 August Sir Charles Portal stated that Torch rendered Round Up impracticable in 1943 and that as far as operations in Europe were concerned, they would have to remain on the defensive except for air operations (i.e. the strategic bomber offensive) and the naval blockade. There could only be landings in the face of a general deterioration of the strength of the enemy.

Creation of an Air Support Group -

(i) Formation of Army Co-operation Command

Before dealing with the controversy over an air striking force, it is essential to review briefly earlier developments in air support. After the fall of France in June 1940 it was clear that, while the R.A.F. had effectively performed tasks against overwhelming odds, the co-operation between air and ground forces left much to be desired. The German technique of close support of their armoured divisions by tactical bombers had won respect both with the Army and with the general public. There was a feeling of resentment on the part of the Army, which was evident, even at the Chiefs of Staff Committee level, that the R.A.F. had somehow 'let down' the ground forces, merely because few aircraft had been available for close support or had been employed to greater profit (according to the R.A.F.) elsewhere.

During the summer and autumn of 1940 the formation of an Army support group was a bone of contention between the two staffs. There were two reasons for the creation of this

A.M. File
S.6461.

force. It was necessary, firstly, to build a cohesive air-ground force as part of the defence against invasion of the British Isles, at that time imminent; secondly, it was important that the training of air forces, which would be required for future continental operations, should go forward together with the training of the Armies being assembled in England. The General Staff wanted an Army Co-operation Command comparable in status to the other R.A.F. home commands with an air officer in command whose chief of staff would be an Army officer, together with a staff which would be composed of Army and R.A.F. officers in roughly equal proportions. This force would specialize in training with the ground forces and would have no extraneous responsibilities.

The Air Staff, on the other hand, were convinced that the winning of air superiority was the essential prerequisite for successful land operations and that no army could take the field anywhere with success except under conditions of relative air superiority. Until that was achieved they could not afford to divert the bulk of their forces to other purposes. They believed that in the event of an invasion of the British Isles, the main support could be provided by Bomber, Fighter and Coastal Commands acting in their own spheres.

Ibid.

Army Co-operation Command was formed on 17 November 1940 under Air Marshal Sir Arthur Barratt who had commanded the British Air Forces in France. It was on the whole a useful compromise between the opposing ideas of the General and Air Staffs. On the one hand a specifically Army-Air Force, like the Fleet Air Arm, had not been created and, on the other hand, a formation was available for working out a system of close support in the light of experience learned in the Battle of France. It was composed of two new formations, Nos. 70 and 71 Groups. No. 70 Group was responsible for training, in particular for the Army Co-operation schools, the Central Landing Establishment, the Air Observation Post Flight and the Anti-Aircraft and Searchlight Co-operation Units. No. 71 Group was operational and consisted of all the Army Co-operation squadrons in Great Britain and was under the operational control of G.H.Q. Home Forces. The Air Officer Commanding-in-Chief Army Co-operation Command was held responsible for advising the Air Staff on all Army-Air Co-operation methods; he was to supervise all air training in co-operation with the Army and he was instructed to develop the tactics and techniques of Army Co-operation with special regard to close support.

As the threat of invasion receded and the offensive power of the Metropolitan Air Force increased, the Army Co-operation Wings, equipped with Spitfire and Mustang squadrons, took their share in offensive operations such as rhubarbs, nickelling and reconnaissance tasks, over northern France.

Meanwhile Fighter Command had already begun training in an Army support role, in connection with anti-invasion tasks, and by September 1942 all the day-fighter squadrons had received some air support training and 40 squadrons had been trained with an Army Air Support Control (A.A.S.C.).

See Chap. 2.
p. 8 and
R.A.F. Mono-
graph: 'Air
Support in
World War II',
Chap. 3.

(ii) Controversy between the General Staff and the Air Staff
over the Formation of an Air Support Group 21
July 1942-11 February 1943

A.H.B./ID3/
1745B.

It has already been observed that when landings on the continent began, the Metropolitan Air Force would be engaged in Army support on the widest scale. In July 1942 the plan for the system of command and the composition of the R.A.F. in Round Up was modelled to a close degree upon the German system of the Luftflotte, comprising a number of Fliegerkorps with fighters, light bombers, close support and reconnaissance aircraft all under centralised control. It had four important characteristics. It was to be flexible, so that the force could be switched from one part of the front to the other; speed in executing close support tasks was essential; the selection of objectives for attack and the weight of attack was to be in the hands of the army commander; the co-ordination of all air operations was to be the responsibility of an air force commander. Fighter Command as it was then, was inadequately prepared for this role.

There were to be two Tactical Air Forces (Luftflotte) in support of the assault under an Air Commander-in-Chief, himself under the orders of a Supreme Allied Commander. The Eastern Air Force was to support the British field force and the Western or American Air Force was to support the American armies.⁽¹⁾ The Eastern Air Force was to be based on the static, highly organized communication system of No.11 Group which controlled fighter operations over south-east England. It was to be organized in three groups (fliegerkorps) based on the Kenley, Biggin Hill and Hornchurch sectors. A light bomber group, and strategic and tactical reconnaissance units were to be attached. The Western Air Force of similar composition would occupy No.10 Group area and the Tangmere sector. Bomber Command, and on occasion U.S. heavy bomber formations were to come under direct operational control of the Air Officer Commanding-in-Chief. He would also control the air defences of Great Britain, but Nos.9, 12, 13, 14 and 82 Fighter Groups would be under a deputy for ordinary air defence operations. Both these Groups and the fighter squadrons of the Eastern Air Force were to remain as part of Fighter Command. The governing principle was, as suggested by Sir Sholto Douglas, that this organization should project itself over the continent. In the initial stages squadrons would be based in England, using advanced landing grounds in France. Servicing Commandos would maintain and service all types of aircraft, each commando being operationally controlled by an advanced headquarters. Groups and their headquarters would eventually be based on the continent.

The operational control of support and reconnaissance units was organized on the following lines. The Army commander would obtain all air support through the Army Support Wing (the old Army Co-operation Wing) which would exercise control over fighter, light bomber, army support and reconnaissance aircraft. This control would be exercised through the Army Air Support Control suitably extended. Each Group would correspond approximately with a Corps (at first) and

(1) Their nomenclature was influenced by the supposition that in an assault across the Channel the British would be on the left and the Americans on the right.

later with an Army area, the Group Commander working on the same level as the Army Commander. The Air Support Wing Headquarters would, in effect, become the advanced headquarters of the Group concerned, and would control operations of all supporting squadrons. There would be no place in such a flexible organization for an Air Component headquarters but liaison and co-ordination of Air Support Wings would be the responsibility of an Air adviser of suitable rank attached to G.H.Q.

Ibid.

The Chief of Air Staff proposed the four following measures. The provision of necessary equipment and training of personnel, for mobile operations was to go ahead; No.2 Group squadrons were to be trained in appropriate sectors of No.11 Group; 12 army air support squadrons were to be formed in No.11 Group; no Army-Air Support Group was to be formed as yet, but an air officer, responsible for supervision of training in Army Air support, both for support squadrons and for other types of aircraft that would ultimately be included in the Eastern Air Force, was to be appointed at once.

Ibid.

The old argument between the General Staff and the Air Staff over the organization for Army-Air Support flared up again. The General Staff made three criticisms of the Air Staff's views. The latter's proposals were too narrow and based on one particular operation and the organization was therefore too static; second, the R.A.F. commander of the army air support organization, together with his headquarters staff was not in direct contact with G.H.Q. during all stages of the operation; There was no R.A.F. Command whose sole task was the study of Army requirements and the supervision and organization of training in Army Air support. The General Staff put forward four proposals: the immediate formation of an Army Air Support Group initially to consist of 12 squadrons; No.2 Group was to be built up to 20 squadrons and to be made available for training and operations with the Army; at least 15 fighter squadrons were to remain under Fighter Command, but were to be specially trained in Army support work; the formation of an R.A.F. headquarters which would eventually proceed overseas with G.H.Q. and which would have supreme control over all Air Forces allotted either temporarily or permanently in the field. This organization was to be analagous to the Western Desert Air Force.

Ibid.

The Chief of Air Staff replied that the Round Up organisation would have to be postponed because of Torch and the unlikelihood of continental operations in 1943. The threat of large scale enemy air action against Great Britain was still present and 17 out of 75 fighter squadrons were due to be despatched to North Africa; it would be impossible to get back to the minimum strength of 75 day fighter squadrons for Fighter Command until the spring of 1943. He could not, therefore, complete the formation of the 12 Army Support squadrons (six Typhoon, two Hurricane Bomber and 4 Hurricane IID (Tank Buster)) so soon. The best he could do was to form two Typhoon bomber squadrons at once and one a month from November onwards. It was most important that the best organization for the Army Support squadrons should be agreed upon in the light of these conditions. He proposed two alternatives: the first being that either they should be formed in Army Co-operation Command, in which case they would specialize exclusively in Army co-operation and when landings became imminent, they would be absorbed into three composite

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groups of the E.A.F. Alternatively, the squadrons might be formed within the corpus of Fighter Command to be trained by a special Air Officer from Fighter Command in Army support work. But in addition to their specialized training they were to retain certain Fighter Command responsibilities; they would take part in 'Channel Stop' operations and normal fighter defence duties. When Fighter Command had been built up to its former strength of 75 squadrons by the end of the summer of 1943 these latter conditions could be waived. The Chief of Air Staff made it quite clear that the second alternative was the one which he preferred.

Ibid.

Sir Alan Brooke's view of the Chief of Air Staff's proposals was that the Army Support Group would be tied too closely to air defence duties; that the air commander instead of concentrating on the problems of the battlefield, would always be looking over his shoulder to the defence of southern England. It was not surprising that he chose the first alternative presented by Sir Charles Portal. He was also incensed because he held that it was he and not the Chief of Air Staff who should indicate what squadrons were desirable for an army support role and what type of aircraft was most suitable. He disagreed flatly with the system of command proposed by the Air Staff, that the Commander of the Army Support group should go to G.H.Q. as the Commander-in-Chief Expeditionary Air Force. Such strongly divergent views brought on a deadlock.

Ibid.

On 5 October 1942 the Prime Minister presided over a Chiefs of Staff meeting to thrash out these differences of opinion. He held that there were three phases in the problem and if each was solved separately, working from the third backwards to the first, a solution would be found without too much heart burning. The three phases were:

- (i) Training in Army Co-operation before continental operations took place.
- (ii) The move across the Channel.
- (iii) The establishment of a front in France.

He instructed that agreement should be reached on the third phase and that the principles of air support in the western desert which had proved so successful should be applied to European conditions.⁽¹⁾ In the meantime the 12 Army Support squadrons should begin to form in Army Co-operation Command as the two staffs had reached agreement on this point.

Ibid.

It was not difficult to reach agreement over this phase. But cross-channel operations differed from desert warfare in

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- (1) There were seven characteristics of the Desert Air Force.
- (1) The sole responsibility of the Desert Air Force Commander was the support of the Eighth Army.
 - (2) The organization was capable of expansion.
 - (3) It was mobile.
 - (4) It was a composite force.
 - (5) The Air Officer Commanding controlled all Air Forces employed in support of land forces.
 - (6) There was centralised control of light bombers and fighter groups.
 - (7) Control of air support was exercised from a joint advanced air and ground H.Q.

two respects. First, the heavy bombers of the British and American Strategic Air Forces would be involved, and, second, there would be a Supreme Commander with an Air Commander-in-Chief under him responsible for strategic and tactical operations. These two distinctions were to provoke much controversy in the future. Meanwhile it was agreed that each Army would have a mobile composite group working with it and that the characteristics of the support group would be the same as those of the Desert Air Force.

Ibid.

The Chief of Air Staff considered that the second or transitional stage was the most complex and important. It was convenient to split this phase into two stages: first, the initial assault in which No.11 Group and the three sectors would be responsible for controlling air operations across the channel and, second, the transitional stage in which Groups would move across the Channel equipped with their own mobile operations rooms, R.D.F. stations and signals and an advanced headquarters which would be set up alongside the advanced Army headquarters.

The Chief of the Imperial General Staff revived his old criticisms of the organization. However, both he and Sir Charles Portal agreed that the mobile field organization should be tested under realistic conditions at this juncture and, when perfected, should be applied to the conditions of Phase II. An opportunity was provided in the G.H.Q. Exercise Spartan which was to be held in February and early March 1943. The Commander-in-Chief Fighter Command took the matter a stage further when he proposed that the mobile composite group (to be known as 'Z' Group) formed for Spartan should be retained on a mobile basis for training on conclusion of the exercise. It would be based on advanced landing grounds in southern England and squadrons were to be attached to it in turn, so as to ensure that the maximum number would receive army support training. A bomber wing, designed to give No.2 Group experience of their tasks on the battlefield, was also to be included in the organization.

(iii) Exercise Spartan, 1 February - 12 March 1943

A.M. File
S.18704.

Exercise Spartan was held in two parts. During the first ten days of February the preparation of appreciations by the two opposing commanders took place and the exercise with troops was held from 4 to 12 March. Briefly, the situation, not unlike that which had appertained in North Africa, was that British forces located on the continent had landed in semi-hostile Southland (approximately southern England, bounded roughly by the line of the Thames to the north, to the Severn estuary on the west and the environs of London to the east) and after overcoming slight opposition had formed a limited bridgehead. Eastland representing German occupied territory comprised East Anglia, Lincolnshire and Yorkshire with Huntingdon the capital. 'German' forces were expected to march into Southland as soon as the 'British' had made significant advances northwards. The intention of the 'British' was to cross the Thames, seize Huntingdon and to

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defeat in detail the German forces. The air situation was similar to that which existed in reality between the Allied Air Forces and the G.A.F. in the west and it was assumed that local air superiority had been achieved during the 'landings' by the British air force.

Fighter Cmd.
O.R.B.,
App. A.6,
Jan. 1943 and
App. A.6,
Feb. 1943.

Each side was to be equipped with a composite group but, because of the shortage of trained personnel and equipment, it was only possible to make the 'British' composite group fully mobile. The commanders of the opposing air forces were Air Vice-Marshal J. Whitworth Jones, who commanded the 'British' 'Z' Group, and Air Vice-Marshal J. O. Andrews commanded the 'German' 'X' Group. Eight Fighter and Army Co-operation Command squadrons were made mobile and were withdrawn from the line on 10 February until the completion of Spartan. The squadrons were to operate under conditions of mobile warfare and only retained key personnel for servicing and maintenance purposes. Non-mobile and mobile squadrons could be switched to real operations if a serious German air offensive developed in the course of the exercise. Air Marshal Barratt was to supervise air operations in the exercise but Air Marshal Leigh Mallory in his capacity of Air Commander of the R.A.F. Component in Round Up was closely concerned with events.

Fighter Cmd.
O.R.B.
Orders of Battle,
Mar. 1943.

A total of 21 squadrons from Fighter Command was engaged in Exercise Spartan. Of these, No. 9 Group provided one Typhoon and one Beaufighter (night fighter) squadron, No. 10 Group, five Spitfire and two Hurricane bomber squadrons, No. 11 Group, six Spitfire, one Hurricane and one Typhoon squadrons, No. 12 Group, two Spitfire, two Typhoon and one Mosquito (night fighter) squadrons. Army Co-operation Command provided 11 Mustang reconnaissance squadrons. No. 2 Group allocated six light bomber squadrons.

The order of battle of the 'opposing' forces is shown in the following table.

| 'British' 'Z' Mobile Composite Group | | 'German' 'X' Composite Group | |
|------------------------------------------------|-------------------------------------------------------|-----------------------------------|-----------------------------------------|
| Types and Totals | Squadrons | Types and Totals | Squadrons |
| <u>Day Fighter Sqns.</u> | | <u>Day Fighter Sqns.</u> | |
| 4 Mobile and 3 normal 6 Spitfire, 1 Typhoon | Nos. 19, 129, 132, 412, 504, 616, 247 (Typhoon) | 6 normal, all Spitfire | Nos. 124, 167, 303, 350, 411, 453 |
| <u>Night Fighter Sqn.</u> | | <u>Night Fighter Sqn.</u> | |
| 1 normal, Beaufighter | No. 96 | 1 normal, Mosquito | No. 151 |
| <u>Tactical Recce Sqn.</u> | | <u>Tactical Recce Sqn.</u> | |
| 2 mobile and 4 normal, all Mustang | Nos. 16, 26, 170, 239, 400, 414 | 5 normal, all Mustang | Nos. 2, 4, 169, 268, 613 |
| <u>Army Support Sqns.</u> | | <u>Army Support Sqns.</u> | |
| 4 mobile, 3 Hurricane, 1 Typhoon | Nos. 174, 175, 184, 182 (Typhoon) | 2 normal, both Typhoon | Nos. 181, 183 |
| <u>Light Bomber Sqns.</u> | | <u>Light Bomber Sqns.</u> | |
| 2 mobile, Mitchells | Nos. 88, 226 | 4 normal, Mitchell and Ventura | Nos. 21, 98, 464, 487 |
| <u>Air Field H.Q.</u> | | <u>Air Field H.Q.</u> | |
| All mobile | Nos. 121, 122, 123, 124 | Nil | |
| Total No. of Sqns. Mobile | 16 | Total No. of Sqns. Mobile | - |
| Total No. of Sqns. non mobile | 8 | Total No. of Sqns. non-mobile | 18 |
| Total No. of Sqns. | 24 | Total No. of Sqns. | 18 |

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Fighter Cmd.
O.R.B.,
App. A.6,
Jan. 1943.
A.H.B./IIM/
A2/4A.

The ground units operating on a mobile basis were 'Z' Group Headquarters, consisting of 'Z' Mobile Advanced Group Headquarters and a Rear Headquarters from the staff of No.11 Group supplemented by personnel borrowed temporarily from Fighter, Bomber and Army Co-operation Commands. Two Airfield Headquarters were formed from Fighter Command, one from No.2 Group and one from Army Co-operation Command. Other mobile units in 'Z' Group were:-

- 1 Mobile Sector Headquarters (including Mobile Operations Room Unit (M.O.R.U.))
- 1 Mobile Air Reporting Unit (M.A.R.U.)
- 2 Servicing Commandos
- 1 Advanced Landing Ground Signals Section
- 1 Mobile Signals Servicing Unit
- 8 Squadrons and 8 A.A. Flights R.A.F. Regiment
- 1 Repair and Salvage Unit
- 2 Air Stores Parks
- 1 Air Formation Signals Unit

The Middle Wallop and Tangmere Sector Operations Room did duty for the two M.O.R.U.'s which were lacking in 'Z' Group.

A.M. File
S.18704.

The exercise centered round the crossing of the Thames by the 'British' forces who captured a bridge intact at an early stage in the proceedings. The 'Germans' lost the opportunity of counter attacking and after 8 March the situation went strongly in favour of the 'British' forces, then established north of the Thames. The Air Forces on both sides carried out normal air support tasks such as tactical reconnaissances, attacks on tanks and vehicles and provided fighter cover. Two runways were built in the field and completed in two days and were used by fighter aircraft.

At the conclusion of the exercise it was clear that in general a more thorough understanding of the limitations and capabilities of the Air Force was required by Army officers while the R.A.F. required toughening and training in living under field service conditions. In particular it was evident that the combined service unit known as the Army Air Support Control was too cumbersome an arrangement. Air Marshal Leigh Mallory proposed that it was the Army's responsibility both to transmit requests for close support to the joint Army/R.A.F. headquarters at Army or Corps level and to arrange such requests in order of priority according to the battle situation. Thereafter it was the R.A.F.'s responsibility both to fulfil requests and to provide the necessary communications for the control of the aircraft carrying out the supporting task. Other points arose affecting the basic organization of a composite group, the arrangement of an advanced air headquarters vis à vis the Army, the size of intelligence staffs at Group Headquarters and other matters. All these problems had been solved by the end of May 1943.

Ibid.

Air Marshal Sir Arthur Barratt wrote a report on Spartan. Without going into detail, his main criticisms were that 'Z' Group was organized for Phase II (the transitional stage) of the operation whereas the situation in Spartan dealt with Phase III (the expansion from the beachhead). Difficulties were encountered in that staffs were unfamiliar with each other and equipment and personnel were limited. He made the following proposals:

- (i) The planning of the Air Expeditionary Force as it will be in Phase III of operations on a functional basis within composite groups, and the laying down of the structure and organisation, at any rate in outline, of this force.
 - (ii) The acceptance of a modified form of such a force to meet the special but temporary conditions of Phase II of the operations.
 - (iii) The placing of the Composite Group in close contact with the Army and Corps with which it will operate, and the working out between the Group and the Army of the problems to which attention had been drawn.
 - (iv) The recognition of the difference in tempo between land and air action, especially on the higher headquarters level, and the need for so organizing the Joint Army/Air structure that the inherent capacity for flexible and speedy action of air forces is not cramped by the necessary combination of headquarters on Army and Corps level.
 - (v) The necessity for giving all parts of the future expeditionary force full experience in field conditions.
 - (vi) The need for ensuring that reconnaissance resources can be centralised or decentralised to meet the needs of the users.
- (iv) Formation of No.83 Mobile Composite Group and of a Tactical Air Force

A.H.B./ID3/
1745B and
A.H.B./ID3/
1745C.

After the conclusion of Exercise Spartan plans for an Air Support Group went apace. On 23 March the Chief of Air Staff informed the Chiefs of Staff Committee that even if they did not embark on an amphibious operation in 1943 there was always a possibility of a Rankin taking place.⁽¹⁾ A composite group headquarters was therefore to be established with the object of exercising ground units under active service conditions and providing a nucleus for continental operations.

As a result of Air Marshal Leigh Mallory's suggestion made before Spartan 'Z' Mobile Composite Group became No.83 Mobile Composite Group under Fighter Command on 19 March, with its headquarters at Gatton Park near Redhill, Surrey; later it was planned to move to Oxford, the headquarters of Second British Army, the formation which it was intended to support. It was composed of four day-fighter squadrons, four Army support squadrons and two Tactical Reconnaissance squadrons controlled by Nos.121, 122, 123, 124 Airfield Headquarters. Its first Air Officer Commanding was Air Vice-Marshal W. F. Dickson. For the time being the Group was non-operational, but it was soon to take part in offensive operations on the continent. These measures were approved by the Chiefs of Staff Committee.

Meanwhile Air Marshal Leigh Mallory visited the North African theatre of operations, with the object of studying the system of command and organization and its application to north-west European conditions and also methods of tactical

(1) An unopposed landing on the continent.

control which could be applied to the organization of a composite group. The two features which impressed him most during his visit were, first, the intimate contact between Army and R.A.F. operational staffs, with the result that air and ground forces were directed and employed in a common plan, and, secondly, the close integration of British and American air staffs in which an American air officer was deputy if there was a British Air Officer Commanding and vice versa. The outcome of his experiences gained in North Africa was that important re-adjustments were made to the structure of the composite groups. It was the composite group which would be the principal air unit in the battle and the group would define the general conduct of operations delegating responsibility for their details to fighter formation headquarters.

Ibid.

The next stage was the formation of the Eastern, or, as it was to become known, Tactical Air Force. On 17 April Air Chief Marshal Sir Edgar Ludlow Hewitt, Inspector General of the R.A.F., who had been in close consultation with Air Marshal Leigh Mallory, sent the Chief of Air Staff a paper expounding his views on the transformation of Army Co-operation Command into an Expeditionary Air Force. He proposed that a Deputy to the Commander-in-Chief Fighter Command should be appointed who would concern himself both with matters relating to air-ground support and with the air aspect of Round Up. He suggested that the organization of Army Co-operation Command was inadequate, as it then stood, to deal with the planning of continental operations. He proposed, therefore, the formation of an Headquarters Expeditionary Air Force which would, firstly, be responsible for operational and administrative planning for cross channel operations, and, secondly, would take over command of No.83 Group and a second Mobile Composite Group (to work with the other Army in the British Expeditionary Force) and the light bomber and reconnaissance elements. The headquarters was to draw liberally from the staff of Army Co-operation Command so that the force would be leavened with officers experienced in working with the Army and acquainted with its problems.

A.H.B./ID7/
136(B) and
A.H.B./ID3/
1745(C).

On 19 April the Chief of Air Staff announced the formation of a Headquarters British Expeditionary Air Force. Composite Groups were to be organized on the level of the British Armies and the relations between the Army and Air Commanders were modelled on the relations of the Air Officer Commanding Western Desert Air Force with the General Officer Commanding the Eighth Army. The Air Officer Commanding the E.A.F., together with his American counterpart, were to be subordinate to the Commander-in-Chief Allied Air Forces, who would also control 'through appropriate channels the strategic bombing forces the formations concerned with the air defence of Great Britain, the air element of the airborne forces, all transport aircraft and such P.R.U. and Coastal Command squadrons as might be allotted to him for the purpose of the operation'.

Ibid.

A start was to be made by forming the headquarters of E.A.F. on the lines suggested in Sir Edgar Ludlow-Hewitt's memorandum. The training formations of Army Co-operation Command were also to be retained and the training of fighter pilots and light bomber crews were to be extended to embody the latest lessons of combined Army-Air operations. Headquarters Expeditionary Air Force was to form initially as a subordinate formation of Fighter Command, transferring to the

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control of Allied Air Headquarters on the appointment of the Allied Air Commander-in-Chief. All this was approved by the Chiefs of Staff Committee on 1 May. The Chief of Air Staff had at last won his case for an independent air support group.

Ibid.

These proposals took effect on 1 June 1943 when the Expeditionary Air Force became known as the Tactical Air Force, (1) commanded by Air Vice Marshal D'Albiac. The following changes took place:

- (i) No.2 Group was transferred from Bomber Command and allocated to Fighter Command under the Tactical Air Force.
- (ii) No.83 Group (then directly under Fighter Command) was allocated to the Tactical Air Force (T.A.F.)
- (iii) No.38 Wing (air element airborne forces) then in Army Co-operation Command was transferred to T.A.F.
- (iv) No.140 P.R. Squadron came directly under T.A.F. on transfer from Army Co-operation Command.

The headquarters of T.A.F. was to form at Bracknell, the old headquarters of Army Co-operation Command, but it was visualised that it would soon move alongside the British-Canadian Army Group (at that date not formed) which was to be responsible for ground operations on the continent. Headquarters T.A.F. was in general to study the problems of continental operations and the air aspect of airborne operations to train the composite groups and light bomber squadrons, to exercise with Army Group Headquarters, and to meet all requirements for strategical reconnaissance for continental operations.

Ibid and
F.C./S.33145.

As from 1 June Army Co-operation Command was dissolved (2) No.72 Group was transferred to Technical Training Command. No.70 Group was transferred to Fighter Command and, while retaining its normal functions was, in addition, to take over the Light Bomber O.T.U. and A.A. Co-operation Units. Army Co-operation wings were to retain their identity and location but were to be allotted to appropriately situated fighter groups. It was also decided to stress the significance of the new system of air-ground operations by abolishing the term Army Co-operation and replacing it by the term Air Support. The term Army Co-operation Wing was replaced by Fighter Reconnaissance Wing, Army Support Squadrons became fighter bomber Squadrons; No.38 Wing became No.38 (Airborne) Wing.

Ibid.

All that was lacking at this point was the Allied Air Commander and his staff. Until their appointment, therefore, the R.A.F. staff in Norfolk House (pre-occupied with the planning of Round Up operations) were to fulfil the dual function of providing the R.A.F. element of the Combined Staff of COSSAC and also the planning staff of the future Air Commander-in-Chief.

Ibid.

On 10 June the Secretaries of State for War and for Air reported to the Prime Minister that agreement on the re-organization of the R.A.F. for continental operations had been reached.

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- (1) It was believed that the word Expeditionary would arouse undesirable speculation on an imminent opening of the Second Front.
 - (2) Air Marshal Barratt was subsequently appointed Air Officer Commanding Technical Training Command.

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(v) Formation of No.84 Mobile Composite Group

A.H.B./ID7/
136B and
F.C./S.32279
and 33275
(R.A.F.
Narrative:
'Liberation'
of N.W.
Europe, Vol.I,
Apps. I/7-
I/9)

Soon after the formation of No.83 Group the Commander-in-Chief Home Forces, General Sir Bernard Paget, began to press for a second mobile composite group which would work with the other army of the proposed British Expeditionary Force. It had been agreed that No.83 Group should co-operate with the Second British Army and the Vice Chief of Air Staff suggested that the new composite group should be mainly composed of Canadian squadrons to support the First Canadian Army, as seven Canadian tactical reconnaissance and fighter squadrons were already in existence. Air Marshal Leigh Mallory was faced with the problem of satisfying both British and Canadian claims for supporting air forces, added to which No.83 Group had been severely depleted in personnel and equipment due to demands by the forces engaged in North Africa. Both he and General Paget agreed that the Canadians were to have facilities for operating with the advanced headquarters of No.83 Group until the formation of No.84 Group proper. However by 30 May, Canadian demands had become so insistent that they decided that No.83 Group should support the Canadian Army and the Canadian squadrons together with the Canadian fighter-bomber squadrons which were to form later in 1943, were transferred to No.83 Group.(1)

Meanwhile the nucleus of No.84 Group was formed under its future Senior Air Staff Officer, Air Commodore T. M. Mc Evoy, at Cowley Barracks, Oxford where it was alongside the headquarters of Second British Army. It was proposed that the squadrons for this Group were to be formed from the existing resources of No.11 Group and Air Marshal Leigh Mallory intended that the Air Officer Commanding No.11 Group should control both his own and No.84 Group's activities. The Air Staff were not in favour of this arrangement; while they admitted the vital part which No.11 Group would play in the assault stage, they believed that a separate commander should be appointed to train the new group in its army support duties. No.84 Group was formally authorised on 22 July 1943 and Air Vice-Marshal Whitworth Jones was appointed as Air Officer Commanding.

Development of the Tactical Air Force 1943

A.H.B./ID7/
136(B).

On 12 June Air Marshal Leigh Mallory issued his first directive to T.A.F. He stated that until preparatory operations for the assault across the channel began, the Tactical Air Force must play its part together with the rest of Fighter Command in the battle for air supremacy over the Channel. For the time being, he would himself control these offensive operations which were directed by the static fighter group organization (No.11 Group). At the same time composite group commanders would be given opportunities to exercise their formations in actual operations. While he was temporarily relieved of the responsibility for planning operations, the main task of the commander of T.A.F. and his staff was to build up and train the new command. Later, when T.A.F. moved

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- (1) This arrangement was altered in January 1944 when it was decided that Second British Army and not First Canadian Army should lead the assault. No.83 Group being at full strength and farthest advanced in training was therefore transferred to support Second Army.

to Uxbridge, where it would be alongside Twenty First Army Group, the commander would be charged with the responsibility for the planning and direction of all offensive operations carried out from No.11 Group area. These offensive operations would be conducted under the direction of the T.A.F. commanders by the Air Officer Commanding No.11 Group, or by one or both of the commanders of the composite groups. The role of T.A.F. in the immediate future was to train for the approaching invasion and to perfect its technique of close support in conjunction with the Army. In order that the T.A.F. staff might not be deflected from these duties, the responsibilities for the administration of the Tactical Air Force was to be borne by Headquarters Fighter Command.

Reorganisation of Air Defence Great Britain for
Operation Overlord

(i) Responsibilities of the Air Commander-in-Chief, Allied Expeditionary Air Force and the Air Marshal Commanding Air Defence Great Britain

On 20 August Air Marshal Leigh-Mallory, who had become increasingly absorbed in the preparation and planning of the air operations for the invasion of the Continent, was appointed as Allied Air Commander-in-Chief. He had long been considered for this appointment and his name had already been approved in principle by the British Chiefs of Staff, but for the next three months interminable discussions between the British and Americans concerning the responsibilities of the Air Commander-in-Chief, the amount of control he was to exercise over the strategic bomber forces and other issues, the details of which are not relevant to this narrative, were to ensue.⁽¹⁾

The Allied Expeditionary Air Force formed on 15 November 1943 under Air Marshal Leigh-Mallory with his Headquarters at Starmore. It consisted of the Tactical Air Force and its administrative units, Fighter Command, which now became known as Air Defence Great Britain, and the Ninth U.S. Air Force (the American equivalent of the British Tactical Air Force). The latter was to pass under Air Marshal Leigh-Mallory's command on 15 December 1943. On 17 November Air Marshal Leigh-Mallory issued his first directive to his Command and instructed them to prepare without delay for 'operations in support of two British and two U.S. Field Armies in the invasion of the Continent early in 1944'. The air plan for the support of these operations was to be evolved by Headquarters Allied Expeditionary Air Force (largely derived from the R.A.F./U.S.A.A.F. staff at Norfolk House which had been working together since the appointment of C.O.S.S.A.C.).

Air Marshal R. M. Hill, who had been Air Officer Commanding No.12 Group since July 1943, was appointed Air Marshal Commanding Air Defence Great Britain. According to a directive issued to him on 17 November, his duties were as follows:-

(1) See R.A.F. Narrative; 'Liberation of N.W. Europe', Vol.I.

A.E.A.F./
S13020 in
App. I/18
R.A.F. Narr.
'Lib. of N.W.
Europe,
Vol.I.

- (i) To be responsible for the air defence of Great Britain and Northern Ireland.
- (ii) To command the following formations:

Nos. 9, 10, 11, 12, 13 Fighter Groups, R.A.F. N.I. (operational control of fighters), No.60 Signals Group, and No.70 (Training) Group.
- (iii) To control operational activities of A.A. Command, the Royal Observer Corps, Balloon Command and other static elements of air defence controlled operationally by Fighter Command.
- (iv) To conduct defensive and offensive operations which involved the use of squadrons of both A.D.G.B. and T.A.F. until further notice.
- (v) To develop air interception methods and apparatus for eventual use in A.D.G.B. and other theatres.

Air Marshal Hill was at once placed in an unusual position as a commander vis-à-vis Air Marshal Leigh-Mallory. The latter had been made responsible to the British Chiefs of Staff for the air defence of Great Britain although new arrangements were to be made when his headquarters moved over to the Continent once the assault was over. But Air Marshal Leigh-Mallory was preoccupied with the planning of preparatory operations for Overlord and had no time to spare for purely defensive matters. Air Marshal Hill in coping with these responsibilities frequently had to deal directly with the Air Staff and the Chiefs of Staff but as Air Marshal Leigh-Mallory was theoretically in command, his subordinate did not possess the status which usually accompanied such responsibilities. As has been seen, Air Marshal Hill was also responsible for the operational control of guns and search-lights but, since the General Officer Commanding A.A. Command, General Pile, was his senior, his appointment again created difficulties. However, the tact and resourcefulness of the new commander together with his renown as a skilled pilot did much to redress these handicaps.

Air Marshal Hill had also been charged with the conduct of offensive operations of Air Defence Great Britain and the Tactical Air Force squadrons. This was designed to free the Commander of the Tactical Air Force and his staff for their major task of preparing for the landings. In practice, Air Marshal Leigh-Mallory supervised offensive operations until, in March 1944, the new Commander of the Tactical Air Force, Air Marshal Coningham, took over the task. As already noted, the Air Officer Commanding No.11 Group was responsible for the tactical direction of air operations across the Channel until the time came for this task to be assumed by the Commander of the Tactical Air Force.

(ii) Role of A.D.G.B. in Overlord and Formation of No.85 Group

Two plans were prepared by Air Marshal Hill for the protection of Great Britain during the Overlord period, the first to meet any threat of orthodox air attacks (entitled the A.D.G.B. Overlord Plan and dated 7 February 1944), the second to include measures to be taken in the event of attacks by

See Chap. 12.

German flying bombs (known as the Overlord/Diver Plan).⁽¹⁾ The disposition of aircraft and the arrangement for their operational control were the same in both plans. The use of flying bombs by the enemy would necessitate a redeployment of guns, searchlights and balloons. But the condition of the G.A.F. as revealed in its latest attacks on London and other centres in the spring of 1944 made it unlikely that the air and ground defences would be unable to deal effectively with any orthodox attacks by the enemy.

A.E.A.F.
Overall Air
Plan Pt. III,
Sec. 1.

Although it does not concern this narrative, it is as well to note briefly the functions of Air Defence Great Britain in the assault phase of Operation Overlord. It was responsible for the day and night air defence (in conjunction with A.A. Command) of concentration and marshalling areas, airfields, embarkation ports and the contiguous coastal waterways. By night Air Defence Great Britain was additionally responsible for the protection of all the battle area including the beaches, the shipping routes and the embarkation ports. It was responsible for air/sea rescue in the Channel, for the protection of Coastal Command aircraft engaged on certain U-boat patrols and shipping strikes, for the operation of intruder aircraft over the Continent and for providing cover to those bombing and airborne operations which formed a part of the general plan of the assault. It was additionally responsible for discouraging enemy air activity and coastwise shipping in the Brittany and Pas de Calais areas.

Air Defence Great Britain also had to provide six day fighter and six night fighter squadrons for a new Group (No. 85) whose role was the defence of the base and lines of communication of the Allied Expeditionary Force when established in France. No. 85 Group was formed on 17 December 1943 at Uxbridge and came under the command of Air Vice-Marshal J. B. Cole-Hamilton on 13 February 1944. Until the Group moved overseas the operational control of its aircraft was assigned to the Air Officer Commanding No. 11 Group. The latter was responsible to the Tactical Air Force for air operations in the tactical area and to Air Defence Great Britain for home defence and for offensive operations other than those in Normandy. This arrangement enabled the Commander of the Tactical Air Force to devote his whole time to offensive operations. In practice all fighter resources were used as far as possible on tasks for which they were best suited with the result that both day and night fighter squadrons of No. 85 Group continued to be identified with Air Defence Great Britain during the initial phase of Overlord.

(iii) Forces Available for the Air Defence of Great Britain

As a result of the reorganisation in November ten day-fighter squadrons of Air Defence Great Britain were reserved specifically for home defence duties. Fifteen day-fighter squadrons were placed under the operational control of the Tactical Air Force for use in Overlord. But they would revert to home defence at once in an emergency. The six day-fighter squadrons of No. 85 Group were also available for home defence.⁽²⁾

A.E.A.F.
Overall Air
Plan. App. H.

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- (1) Issued on 4 March 1944 and known as the A.D.G.B. Provisional Concurrent Air Defence Plan for Operation Overlord and Diver (A.D.G.B./MS. 3661/Ops. 5B).
 - (2) For numbers of squadrons attached to No. 85 Group see App. No. 16, Order of Battle A.D.G.B. for 25 May 1944.

Three squadrons based at Hartford Bridge, West Malling and Bradwell Bay were to be employed on the important task of intercepting enemy high flying reconnaissance aircraft over southern England. The other three squadrons based at Newchurch (Romney) were to be used on shipping reconnaissance and anti shipping strikes. Seventeen night-fighter squadrons were available for night defence, including the six squadrons of No.85 Group. The latter, while primarily intended for defence of the beach head could be used by Air Marshal Hill until they moved over to the Continent. The night fighters like the day fighter squadrons were mostly deployed south of the Thames and Bristol Channel.(1)

Air Marshal Hill could therefore call on 48 squadrons, including the 15 day-fighter squadrons he could use only in an emergency. This was less than half the strength assigned to home defence at the end of 1941, when most of the G.A.F. was on the Eastern Front. The Chiefs of Staff agreed that if a serious situation should arise at home during the preparatory and early stages of Overlord all uncommitted fighter squadrons in south-east England (other than U.S. squadrons) would be diverted to home defence.

(iv) Reorganisation of Groups and Sectors for Operation Overlord

Changes in the ground organisation of Fighter Command became necessary for three reasons: firstly, because of the greatly reduced threat of air attack from 1943 onwards and the necessity to economise in manpower; secondly, in order to concentrate the air defences in the south of England which had become the spring-board for the assault; thirdly, to make room for the American Air Forces which began to increase rapidly in numbers from the summer of 1943.

In January 1943 plans were made to reduce the existing six groups and 28 sectors of Fighter Command. First, it was decided to put Scotland under No.13 Group and to disband No.14 Group, then responsible for Scotland, the latter headquarters closing down on 15 July 1943. Headquarters No.13 Group moved to Inverness on that date taking over the vacant Operations and Filter Rooms of No.14 Group. No.12 Group took over the Ouston and Catterick Sectors formerly under control of No.13 Group. The advantages accruing from the move were a considerable economy in personnel, better liaison with the naval and military commands in Scotland and the placing of group headquarters in a better position to give air support in the event of a surprise raid on Scapa Flow by air-borne forces. On 7 April 1944 the operations Room of No.13 Group closed down.(2) While the Air Officer Commanding No.13 Group continued to be responsible for policy for the air defence of Scotland, the conduct of operations such as the detailing and the tactical control of fighters devolved upon the Commanders of Kirkwall, Peterhead and Turnhouse Sectors.(3)

A.M. File
C.S.2110/Pt.II,
Encls. 87A,
90A and A.H.B./
IIM/A2/5,
App. D4,
28 Jan. 1943.

No.13 Group
O.R.B.

A.H.B./IIM/
A2/4, Entry
28 Dec. 1943.

- (1) See App. No.16, Order of Battle A.D.G.B. for 25 May 1944.
- (2) H.Q. No.13 Group then began to plan for a proposed landing in Norway.
- (3) Peterhead Sector was absorbed in Kirkwall and Turnhouse Sectors on 20 June 1944.

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They also controlled the A.A. and balloon defences with the exception of Kirkwall which came under the operational control of the Admiral Commanding Orkneys and Shetlands. Meanwhile Stormont, Northern Ireland became the Combined Group Operations Sector for Royal Air Force Northern Ireland and the Operations Rooms at Ballyhalbert and Eglinton closed down.

No.9 Group
O.R.B.,
1 Nov. 1943.

Reductions next took place in north-west England which had now little to fear from enemy air attack. By 1 November 1943 No.9 Group had been cut down from four to two sectors, namely, Woodvale, which absorbed the Andreas Sector, and Honiley. Defensive responsibilities continued to be assumed by this Group until they were taken over by No.12 Group in August 1944.

A.H.B./IIM/
A2/4
Entry
24 July 1943.

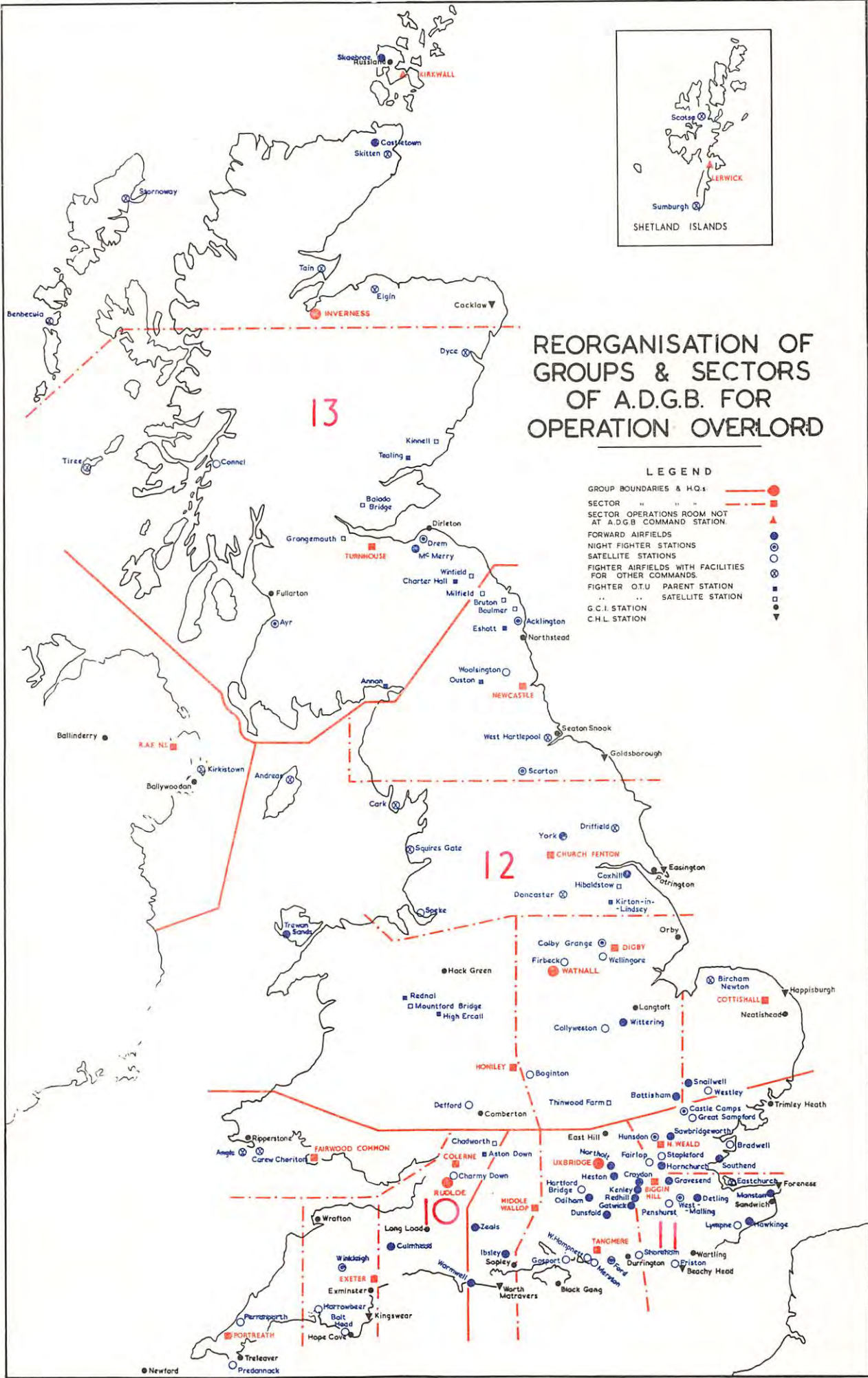
No.12 Group was reduced from six to four sectors. The Operations Rooms at Wittering and Duxford were handed over to the VIIIth U.S. Fighter Command in August 1943 leaving Coltishall, Digby, Church Fenton and Newcastle Sectors. The old Wittering and Duxford Sectors were absorbed into Digby Sector, Kirton-in-Lindsey into Church Fenton Sector, where a new Operations Room was set up at Grimston Park, and the Ouston and Catterick Sectors (formerly contained by No.13 Group) were absorbed in the Newcastle Sector.

A.H.B./IIS/
110/5/125.

The assembly of the forces required in Overlord had transformed southern England into a vast camp, the air defence of which was of cardinal importance. Great responsibilities were placed upon Headquarters No.11 Group which not only was to become Combined Control Centre for all air operations covering the assault but was also charged with the defence of the area where the invasion forces were gathered. The Middle Wallop and Colerne Sectors, then in No.10 Group, covered the assembly and embarkation areas of Southampton, Portsmouth and Portland and the Operations Staff of Fighter Command were in favour of amalgamating the two sectors and transferring them to No.11 Group for defensive as well as for offensive purposes. An amalgamation had been under consideration for some time and the clearing of the enemy from the French coast would to a large extent obviate the necessity for No.10 Group's existence. Apart from the benefits of centralised control, the link up of telephone communications arising from the fusion of the sectors would, it was believed, be of great assistance to the Post Office engineers working on the A.E.A.F. telephone network.

The amalgamation of Colerne with the Middle Wallop Sector was opposed by the Air Officer Commanding No.10 Group and the commanders of the local A.A. defences on the grounds that the Colerne Sector was an integral part of the air defences, not only of the Portsmouth and Weymouth areas, but also of the Bristol Channel ports and the industrial area of south Wales which, as it happened, were still on the target list of the enemy. The transfer of Colerne Sector to No.11 Group would lead to division in the control of guns and searchlights in south-west England, for example, the guns protecting Bristol and the south Wales area would be controlled from two headquarters instead of from one, and the searchlights defending Bristol and Weymouth would be controlled through No.11 Group rather than by the closer No.10 Group. Moreover, they stated that the retention of Colerne Sector would, on the contrary, ease the burden placed on the G.P.O. engineers and enable Middle Wallop Sector to make use of telephone cable which would otherwise have been reserved for No.10 Group.

At a conference held at Air Ministry on 29 February 1944 it was learned that the telephone communications for Overlord



could not be completed if Colerne was transferred to No.11 Group owing to the increased requirements of Middle Wallop and it was agreed to postpone the amalgamation of the two sectors until after the establishment of Allied forces on the Continent. On 15 March 1944 the Middle Wallop Sector only was transferred to No.11 Group, the western boundary of the former becoming the boundary between Nos.10 and 11 Groups; Longload G.C.I. Station and the searchlight batteries associated with Colerne remained within No.10 Group. Fairwood, Portreath and Exeter also continued to function as sectors within No.10 Group until the latter was reduced to a semi-operational basis in September 1944.

A.H.B./IIM/
A2/4, Entry
24 July 1943.

Other amalgamations of sectors in No.11 Group were as follows: Debden was taken over by VIIIth U.S. Fighter Command in August 1943, that sector being absorbed by North Weald. Kenley was absorbed into the Biggin Hill Sector on 6 March 1944. Prior to this Hornchurch merged into North Weald Sector. Kenley and Hornchurch became forward airfields for the Tactical Air Force. Biggin Hill and Tangmere controlled all the day-fighter squadrons for Overlord while North Weald and Middle Wallop Sectors retained night fighter and air/sea rescue duties.⁽¹⁾

Meanwhile, the Tactical Air Force had been designated 2nd T.A.F., and on 21 January Air Marshal Sir Arthur Coningham, late Commander of the Desert Air Force, relieved Air Marshal D'Albiac of his command. By 2 February 2nd T.A.F. Headquarters had moved to Uxbridge and at the end of May had taken over the responsibility for the Operations Room of No.11 Group which now became the Combined Control Centre for all fighters operating in the tactical area for the assault together with the static control facilities, as had been anticipated in the early stages of planning. The immediate task of No.11 Group in conjunction with the IXth U.S. Fighter Command was to plan and issue the executive orders for fighter operations in the assault. At the same time the No.11 Group Controller was also charged with the responsibility of maintaining states in squadrons sufficient to meet any air attacks on No.11 Group area.

Hitherto little reference has been made to the appointments of Group Commanders. The following table is designed

(1) The reduction of operational sectors during the period under review is illustrated below:

| <u>Operational Sectors</u> | | |
|----------------------------|-----------------------|----------------------|
| | <u>7 January 1943</u> | <u>20 April 1944</u> |
| No.9 Group | 4 | 2 |
| No.10 Group | 5 | 4 |
| No.11 Group | 7 | 4 |
| No.12 Group | 6 | 4 |
| No.13 Group | 4 | 3 |
| No.14 Group | 2 | - |
| R.A.F. Northern Ireland | 1 | 1 |

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to show the changes made in the Air Officers Commanding Groups in Fighter Command between January 1943 and May 1944:-

| <u>Group</u> | | <u>Date of Appointment</u> |
|-------------------------------|----------------------------------------|----------------------------------------------------|
| No.9 | Air Vice-Marshal J. Whitworth Jones | 10 November 1942 |
| | Air Vice-Marshal L. N. Hollinghurst | 5 July 1943 |
| | Air Vice-Marshal D. F. Stevenson | 7 December 1943 |
| No.10 | Air Vice-Marshal W. F. Dickson | 4 November 1942 |
| | Air Vice-Marshal C. R. Steele | 5 May 1943 |
| No.11 | Air Vice-Marshal H. W. L. Saunders | 8 November 1942 |
| No.12 | Air Vice-Marshal J. O. Andrews | 29 November 1942 |
| | Air Vice-Marshal R. M. Hill | 26 July 1943 |
| | Air Vice-Marshal M. Henderson | 15 November 1943 |
| No.13 | Air Vice-Marshal M. Henderson | 27 November 1942 |
| | Air Commodore S. F. Vincent | 18 November 1943 |
| | Air Commodore J. A. Boret | 31 January 1944 |
| No.14 | Air Vice-Marshal R. Collishaw | Group Amalgamated with No.13 Group 15 July 1943 |
| R.A.F. Northern Ireland | Air Vice-Marshal A. T. Cole | 7 September 1942 |
| | Air Vice-Marshal D. F. Stevenson | 14 March 1943 |
| | Air Commodore W. H. Primrose | 7 December 1943 |

Conclusion

By the spring of 1944, the Metropolitan Air Force had been placed on an offensive footing for continental operations. A Tactical Air Force had been formed out of Fighter Command, the component groups of which had been trained to work in conjunction with the Army. The ground defensive organisation of Fighter Command had been transformed into an offensive instrument for the cover and support of cross-Channel operations and the strength of the Command had been concentrated into four Groups for the most part based in southern and south-eastern England. The U.S. Tactical Air Force had taken up position alongside the R.A.F. without undue dislocation. The Allied Tactical Air Headquarters which was a model of close co-operation between the R.A.F. and U.S.A.A.F. was preparing for the assault under the former Air Officer Commanding Fighter Command, Air Chief Marshal Leigh-Mallory. On the whole, the organisation which had now been deployed closely resembled the conception of the planners at Norfolk House, who had begun work in 1942, and the smoothness with which it was to work during the coming battle fully justified the long months of planning which preceded it.

CHAPTER 15

THE DAY FIGHTER OFFENSIVE: ACHIEVEMENT OF AIR SUPERIORITY.Introduction

See Pt.II,
Chap. 7.

It has been shown that in 1942 the policy for the cross Channel fighter offensive was to pin down the largest possible proportion of the German fighter force in the west and for Fighter Command to engage and shoot down enemy fighters in the most favourable conditions to itself. The results had fallen greatly short of expectations, though that was not realised at the time, and so far from destroying one enemy fighter for one British fighter, Fighter Command had in fact lost on an average more than two and three quarter times the number of aircraft lost by the enemy. There were various reasons for this shortcoming, the principal one being that although the German fighter force based in France and the Low Countries was numerically inferior to the R.A.F., its chief fighter aircraft, the F.W.190, was superior on performance to the type of Spitfire then available for operations.⁽¹⁾

This chapter will attempt to show how in 1943 Fighter Command began slowly to redress the balance and how by the spring of 1944 the Allies had won air superiority in the west. It will deal with the modification of policy due to the Point-blank Directive which was issued in June 1943 and describe the first of the pre-Overlord preparatory operations - Operation Starkey which took place in September: it will trace the development of co-operation with the VIIIth U.S. Air Force which grew in strength and extended its operations into Germany early in this year. The chapter will end with the merging of operations by Fighter Command in the A.E.A.F. plan for operations immediately preparatory to Overlord.

Comparison of Strength of Fighter Command and German Fighter Force: January 1943

Fighter Cmd.
O.R.B., App.C,
Jan. 1943.
A.H.B./IIM/A2/
4A.
A.H.B./ID8/103.

On 7 January there were 37 Spitfire VB squadrons (including 12 long range squadrons), two Spitfire VI Squadrons (including one long range squadron) ten Spitfire IX and eleven Typhoon squadrons. The Commander-in-Chief Fighter Command continued to be dissatisfied with the small number of long range fighter squadrons made available for him. In his opinion nothing less up-to-date than Spitfires IX should be coming off the production line instead of Spitfires V. Although faster and longer-ranged Spitfires such as the Mark XII and Mark XIV were on the way, he considered that the fighter industry as a whole was not sufficiently resilient to maintain production of standard types and at the same time begin work on more advanced types of fighter aircraft.

FC/S.31231.

However, the Spitfire IX was, by January 1943, taking part in cross-channel air operations in fair strength. Typhoons were also operating on Rhubarbs, Ramrods and Circuses. The performance of the Typhoon which was intended to out-manoeuvre the F.W.190 was considered to be unsatisfactory. Apart from

(1) App. No.33 gives the names of pilots accredited with more than 12 victories. Although these claims cannot be absolutely accurate it is of interest to have the names of the leading fighter pilots on record.

the difficulties then being experienced with its Sabre engine, Fighter Command was of the opinion that the Typhoon had a poor rate of climb and manoeuvrability compared with the Spitfire VIII and IX and that it was unsuitable for employment in a fighter versus fighter role. Compared with the Spitfire it was higher in initial cost; it required more skilled maintenance than a Spitfire while its Sabre engine had a low rate of serviceability. But as there were no major air operations during the first half of 1943 deficiencies in fighter aircraft did not constitute an urgent problem.

There was as yet no substantial force of American fighters in the United Kingdom but three Spitfire Eagle squadrons based at Debden under No. 11 Group were operational. They were shortly to change over to Thunderbolts (P.47's). Early in April the VIIIth U.S. Fighter Command was formed as part of the Eighth Air Force and operated in conjunction with the R.A.F. on offensive operations.

In contrast to the growing offensive power of the R.A.F., the prospects for the G.A.F. at the beginning of 1943 were grim. In November of the previous year the Battle of Alamein had reversed the fortunes of the German forces in North Africa and by the beginning of the new year their eviction from that continent had become a certainty. Next they were thrown back on the defensive in the East. On 31 January 1943 the German Army at Stalingrad was forced to capitulate. Hitherto the G.A.F., in spite of defeat in the Battle of Britain had always been in a position to act offensively. Until approximately the summer of 1942, it had been able to meet its opponents one by one and had been able to concentrate its forces by denuding quiet fronts and quiet sectors and could therefore achieve local air superiority. From now onwards pressure was to be exerted on the German land forces on the Eastern and on the Mediterranean fronts. From the west the pressure came in the form of increasing Allied air power. On 27 January the Americans opened their daylight bombing offensive against Germany while R.A.F. Bomber Command made its first night raid against Berlin since November 1941. In February the Anglo-American policy of bombing 'round the clock' was inaugurated.

The G.A.F. was thus compelled to fashion a defensive in place of an offensive policy. But the architects of the Luftwaffe had originally planned for a series of Blitzkriegs of short duration and in spite of reverses had clung obstinately to a belief in a rapid victory even as late as the second half of 1942. By the end of that year its operational strength had sunk to some 4,000 aircraft and its initial reserves had dwindled away to nothing; it had failed to bring its equipment up to date by the introduction of new aircraft. The German High Command refused to face the possibility of a defensive war in the air so long as Germany retained the strategic initiative. The situation in 1943 demanded a thorough overhaul of air policy. Instead the G.A.F. tried to deal with its problems piecemeal, with the result that it was unable to resolve the immediate crisis or to provide safeguards for the future.

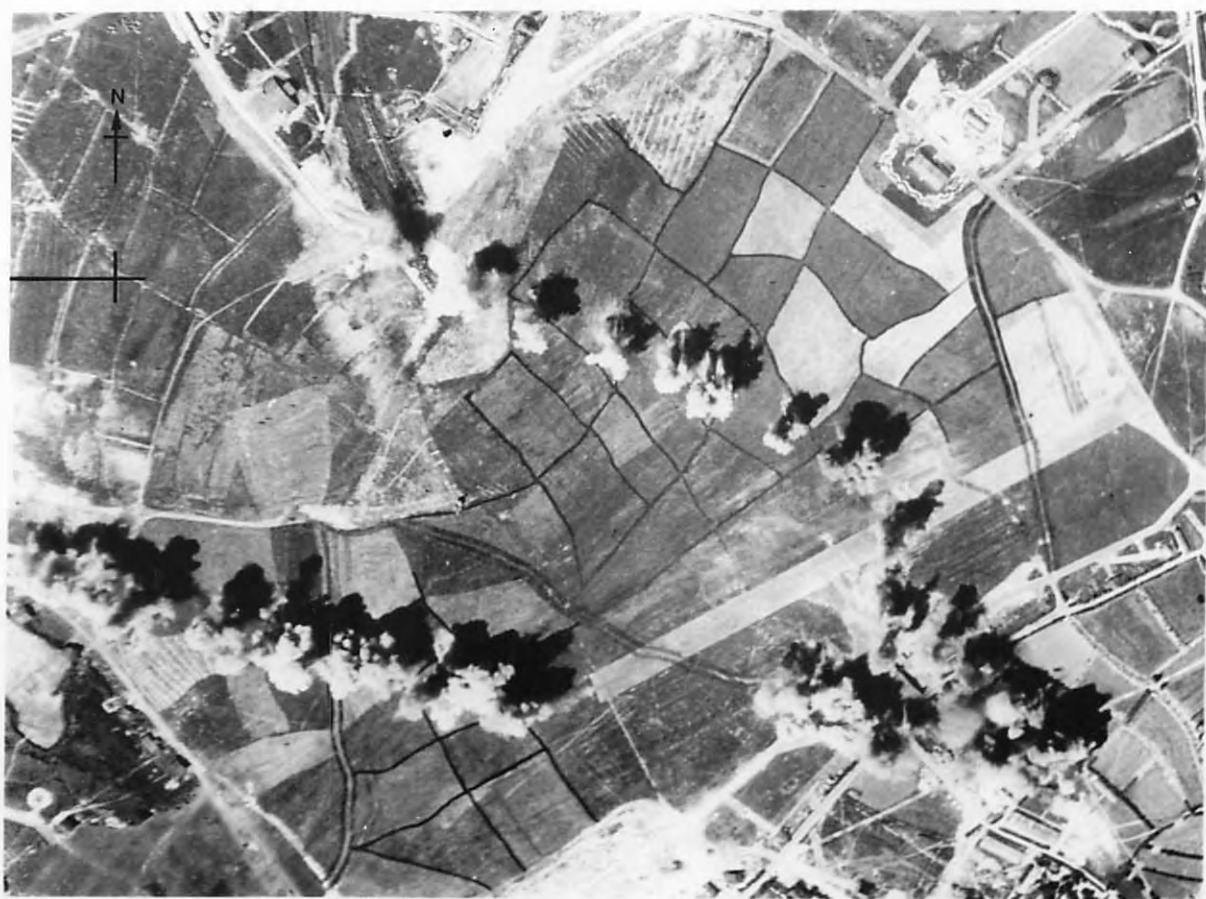
There was, nevertheless, a substantial and efficient fighter force in the west in 1943 which had changed little in strength since August 1942 and for the first quarter of the year a fourth of Germany's total fighter strength was located in Germany or on the Western Front. On 10 January the single-engined fighter strength in Luftflotte 3 amounted to 294 F.W.190's of which 180 were serviceable. They were drawn from

A.M. Pamphlet
No. 248, 'Rise
and Fall of the
G.A.F., Chap.9,
pp. 201-203.

Enemy Doc.
A.H.B.6 Trans.



Spitfire IX



Mitchells bombing airfield
Brest/Guipavas

SECRET

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Stab I, III and 10/JG.2., Stab. I, II and II/JG.26 and 10/JG.54. In addition there were 185 single-engined fighters in Luftflotte Reich, of which 137 were serviceable. They were all contained in J.G.1 and with the exception of 43 Me.109G's, consisted of F.W.190's. The Me.109G had a better performance than other types of Me.109, particularly at high altitudes.

Policy and Operations: January to June 1943

(i) Directive for Spring of 1943.

Allied strategic bombing operations in daylight in the first half of 1943 continued to be devoted to a large extent to the attack of the U-boat menace and took the shape of raids against the U-boat bases on the west coast of France. The light bombers of No.2 Group which continued to take part in Circus and Ramrod operations attacked engine sheds, docks, airfields, torpedo and steel works. Meanwhile operations of the VIIIth Air Force remained on an experimental level; it was not until March that a force of more than 100 bombers could be put in the air with some consistency. But most of their priority targets lay beyond the range of the Spitfires which were then the only fighters available in strength for offensive operations. They were only able to accompany the bombers part of the way in towards the target area and they provided withdrawal support on the way out. In addition they provided large diversionary sweeps to confuse the enemy's R.D.F.

A.M. File
C.S.12253,
Encls. 22-24A.

Air Marshal Leigh Mallory wanted to attack industrial targets in the Lille-Lens-Bethune area and industrial objectives in Holland and Belgium. On 8 March he requested the Air Staff to grant him control over the light bombers of No. 2 Group (then operating under Bomber Command). He claimed that they were capable of inflicting serious damage to the enemy's war effort. This would not only bring German fighters into action in conditions which were more favourable to Fighter Command but would compel the enemy to maintain a large number of fighters on the Western Front. The Air Ministry replied that transportation targets should be attacked in the following order of priority: marshalling yards, engine repair sheds, rolling stock and locomotives. No. 2 Group was to pass under control of the Commander-in-Chief Fighter Command on the conclusion of experiments with a Mobile Composite Group.

See Chap. 14.

FC/S 26678,
Encl. 14OA

The first directive to Fighter Command on the subject of offensive operations was issued by Air Marshal Leigh Mallory on 21 April. It stated that the primary aim was still, firstly, the destruction of German aircraft and, secondly, the pinning down of the maximum number of German aircraft in the west. As in the past, only targets which it was thought the enemy was likely to consider worth protecting were to be attacked and operations were to be planned in conjunction with British and American bomber forces. The order of priority was one, transportation targets, two, airfields and, three, industrial objectives. Bombing was to be conducted from a height which would be tactically advantageous to the fighters; a height of 10,000 feet was advised. Spitfires VII and IX were to provide high cover while Typhoons, Spitfires V and XII were not normally to operate over 15,000 feet.

Typhoons were to be used whenever possible for offensive operations and routine defensive patrols were to be abandoned in the event of major offensive operations. Fighter bombers

accompanied by fighters operating at low and medium level were to operate more frequently than hitherto.

(ii) Rhubarbs

Fighter Cmd.
O.R.S. Rept.
No. 501.

As in the first quarter of 1942 Rhubarbs were, largely because of the indifferent weather, the most common type of offensive operation for the first three months of 1943. Aircraft operated as usual in pairs under cover of cloud, attacking goods trains, locomotives, tugs, barges, lock gates, parties of troops and gun positions. The sum total of Rhubarbs in the first half of 1943 came to 233 but over 25 per cent of the sorties were abortive due to unfavourable weather conditions. The casualty rate of Rhubarbs was much higher than for any other type of offensive operation: 43 pilots were lost. An analysis made by Fighter Command O.R.S. revealed that for every hundred aircraft despatched nine aircraft became Category E and five aircraft Category B. The report went on to claim that eight per cent of casualties were due to flak. Enemy anti-aircraft weapons were especially numerous around stations, goods and marshalling yards; trains in open country were less dangerous to attack. The report estimated that some two-fifths of casualties were incurred when aircraft were crossing or re-crossing the coastline. Spitfires V suffered rather more heavily than other types of aircraft.

Fighter Command O.R.S. believed that casualties would be reduced to seven-tenths of the number incurred in the first half of 1943 if each target were attacked once only.⁽¹⁾ The delays to enemy transport caused by the need to tow damaged locomotives, tugs, lorries etc., into repair sheds would be as great as they were previously, though the time spent on actual repairs would be less than that spent in the past. Pairs of aircraft should, it was believed, concentrate on areas where targets were known to be fruitful and while only single attacks would be made an equally large number of targets would be attacked as before and with less risk to aircrew.

The damage inflicted on surface targets by Rhubarb patrols could only be assessed roughly. Fighter Command O.R.S. considering targets attacked in the period June to July claimed that 22 locomotives were destroyed, seven signal boxes were damaged, two railway bridges were out by direct bomb hits, four tugs and 16 barges were sunk or left sinking, three lock gates were put out of action by direct hits, five lorries were destroyed and five oil storage tanks were damaged. Like the low level tip and run raids against the English coast Rhubarb attacks may have had a certain nuisance value but the targets they attacked were in territory alien to the enemy who was not concerned over the morale of the French.

(iii) Circuses, Ramrods and Rodeos

Fighter Cmd.,
Form 'Y',
Jan-June 1943.

In the first six months of 1943, 132 Circuses, 126 Rodeos and 85 Ramrods were flown. Principal targets were airfields, railway centres, docks and ships in harbours and certain industrial installations. Many of these targets were attacked

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- (1) The usual procedure was for the two aircraft of a section flying in line astern to attack the same target in succession with the result that the second aircraft was much more vulnerable to flak.

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repeatedly and it is not intended in this narrative to do more than pick out for description and analysis days on which operations were unusually intensive or when large claims were made for enemy aircraft destroyed.(1)

FC/S.25904,
Encls. 85A -
119A.

During this period plans were made to isolate the Brest peninsula which contained the important U-boat bases of Brest and Lorient from the rest of France by bombing bridges and viaducts. In particular, there was a plan to stop the transport of diesel fuel from the refineries at Wondelghem near Ghent to the U-boat bases on the Atlantic coast, but this was found to be impractical as the traffic involved the running of only one train a day throughout the whole route for which there were many alternatives. Another plan, intended for fighter and medium bombers which were to attack railway bridges in the Brest peninsula, was examined by No.10 Group as a possible target for Whirlwinds. All the proposed targets were however, either out of range or at practically maximum range. The enemy would, it was assumed, merely strengthen the outer aircraft defences of the targets, thus creating an additional risk. As Bomber Command decided not to participate, the plan was abandoned as its success depended on the co-operation of medium bombers. But a successful attack was made on the railway viaduct at Morlaix as will be seen.

January

Circus operations took place against St. Nazaire submarine base, Cherbourg, Flushing and IJmuiden docks, St.Omer/Fort Rouge, Tricqueville, Maupertus and Abbeville/Drucat airfields (this latter target was raided 24 times during the period), Lille locomotive works, Bruges, Abbeville and Morlaix railway centres and an oil installation at Ghent. Ramrods were flown against the ports of Cherbourg and Brest, the submarine base at Lorient and the railway viaduct at Morlaix. Five of these operations were abandoned because of poor weather.

Fighter Cmd.
Form 'Y'.

The greatest activity during the month took place on the 13th and 21st. On the first occasion three targets were attacked in Circus operations. The Fives Locomotive Works at Lille by Fortresses of the VIIIth Air Force (the culmination of a series of attacks which began on 9 October 1942); St. Omer/Fort Rouge and Abbeville/Drucat airfields by Bostons and Venturas of No. 2 Group, Bomber Command. Fighter Command flew a total of 360 offensive sorties and three enemy aircraft were claimed to have been destroyed by Spitfires IX of Nos. 340 and 611 Squadrons. The German record of fighter casualties for that day concurs with this claim. On the 21st, 401 fighters operating in a Circus supported light-bomber attacks on Tricqueville airfield and Flushing Harbour and a Ramrod on Cherbourg Docks. Spitfires IX of Nos. 122 and 306 (Polish) Squadrons claimed to have destroyed three F.W.190's and four were claimed probably destroyed by these squadrons together with No. 316 (Polish) Squadron. Enemy records assert that two fighters were destroyed and two damaged. On 22 January No. 11 Group claimed to have destroyed six enemy aircraft in Circus operations over Belgium but Luftflotte 3 records no losses for that day. On 29 January Bostons of No. 2 Group

FC/S.29715,
Encl. 33A.

(1) For details of day to day operations See App. No. 29.

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succeeded in hitting the Morlaix viaduct⁽¹⁾ but it was decided in future to reserve bridges in Brittany for attack by the VIIIth U.S. Air Force.

Fighter Cmd.
Form 'Y'.

Fighter Command claimed to have destroyed 26 enemy aircraft in January on offensive operations for the loss of 26 pilots and aircraft. According to German records fighter losses over Great Britain and over France and the Low Countries came to 27 aircraft destroyed and 17 damaged. Several of these fighters were destroyed while accompanying daylight raids over the London area and were therefore shot down by interception patrols.

February

Fighter Cmd.
Form 'Y'.

Large scale operations took place against St. Omer airfield, Abbeville railway centre, Boulogne, St. Malo and Dunkirk Harbours and Ijmuiden coke ovens. Nine bomber operations were abortive because of poor weather. The highest effort was made on 26 February in a series of attacks on an armed merchant vessel (Raider A.99) lying in Dunkirk Harbour. Venturas of Bomber Command flew 60 sorties and a total of 555 fighter sorties were flown that day mainly by No. 11 Group. Bomb bursts were seen to straddle Dunkirk docks and a near miss was claimed near the stern of the vessel. On the following day fighter cover provided by No. 10 Group to an attack by Fortresses and Liberators on Brest was so effective that all the bombers returned safely.

See also R.A.F.
Narrative:
'R.A.F. in
Maritime War',
Vol.III, Chap.
IX.

Fighter Cmd.,
Form 'Y'.
Enemy Doc.
A.H.B.6 Trans.
No. 144.4.

In February, 22 pilots were lost on Ramrods, eight on Rodeos and seven on Circus operations; 38 enemy aircraft were claimed to have been destroyed, over half of them on Ramrod operations. Actual German losses in action both sides of the Channel were 21 fighters destroyed and three damaged.

March

In this month Ramrods took precedence over Circus operations; 15 of the former and four of the latter were flown. Targets attacked were airfields at Abbeville/Drucat, St. Brieuc, Alkmaar, railway centres at Rouen, Rennes, Caen and Abbeville, shipping and dock installations at Brest and Rotterdam. American Fortresses and Liberators took part in seven Ramrods. In these operations Fighter Command claimed to have destroyed 45 enemy fighters for the loss of 18 pilots. German fighter losses in the west came to 21 aircraft destroyed and four damaged; 13 were destroyed and 12 damaged by causes which could not be ascribed to Allied action.

Enemy Doc.
A.H.B.6 Trans.
No. 144.4.

April

Fighter Cmd.,
Form 'Y'.

The weather in April was more propitious for offensive operations. Thunderbolts of the VIIIth U.S. Fighter Command⁽²⁾ began to take part in rodeos off the Pas de Calais and the

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- (1) The attack caused a large number of friendly civilian casualties but it was stated that the viaduct had been chosen because it adjoined the dock area and fitted in with Fighter Command's requirements (See FC/S.25904, Encl. 93A).
 - (2) Nine U.S. Squadrons were operational by 14 April though only 70 out of 206 aircraft were serviceable on that date.

Dutch coast and had their first brush with the enemy on 15 April in a Ramrod operation on Cherbourg and on the 29th in a Rodeo over the Pas de Calais. A larger number of industrial targets were raided including the Renault Works at Billancourt, the Ford Motor Works at Antwerp, Yainville Power Station, Ijmuiden and Caen steel works, the Zeebrugge Coke ovens and dock installations at Brest, Dieppe and Cherbourg.

'The Army Air
Forces in
World War II,
Vol.II, p.318.

On 4 April Fighter Command carried out four major offensive operations. Twenty squadrons of Spitfires provided escort and cover for 97 Fortresses of the VIIIth Air Force which bombed the Renault Works at Billancourt and for 25 Liberators which carried out diversionary sweeps. The motor works was temporarily put out of action and it was estimated that the enemy was denied some 3,075 motor vehicles. Twenty-four Venturas of Bomber Command attacked Caen airfield as part of this operation. Four Spitfire Squadrons supported 12 Venturas of Bomber Command in an attack on the marshalling yards of St. Brieuc and an attack against the Abbeville marshalling yards escorted by a Typhoon squadron and two squadrons of Spitfires IX. Eight enemy fighters were claimed to have been shot down by Spitfires IX of Nos. 403, 315, 331 and 332 Squadrons of No. 11 Group and three by Spitfires VB of Nos. 118, 317 (Polish) squadrons of No. 12 Group. According to enemy records five aircraft were lost that day and six damaged.

Fighter Cmd.
Form 'Y'.

The targets for 13 April were marshalling yards at Bruges, Abbeville and Caen and airfields at Guipavas, St. Omer/Longuenesse and Caen. Only two F.W.190's were claimed to have been destroyed despite a large force of 453 fighters penetrating into enemy occupied territory. The Germans actually lost one aircraft. Three more large scale circuses took place on 17 April against Abbeville and Caen railway yards and the Coke Ovens at Zeebrugge. A new feature, which was becoming increasingly prevalent, was the provision of cover by five Spitfire V squadrons for an American bomber force returning from an attack on a German target.

Enemy Doc.
A.H.B.6 Trans.
No. 144.4.

The score claimed by Fighter Command in April was 38 enemy aircraft destroyed and five possibly destroyed. The total German fighter losses in Luftflotte 3 were 38 aircraft destroyed and 12 damaged. In addition 22 aircraft were lost and 18 damaged through causes not due to Allied action. Once again some of the German fighters were shot down while escorting German bombers on daylight raids on southern England.

May

Fighter Cmd,
Form 'Y'.

Offensive operations were on a larger scale than before and 2,500 more sorties than in April were flown. There were 31 Circus operations as opposed to 17 Ramrods and 30 Rodeos. Airfields were the targets most frequently attacked including Caen, Tricqueville, Poix, Abbeville, Morlaix, Caen, St. Omer. In Circus operations types of target attacked were Boulogne and Abbeville railway yards, Zeebrugge coke ovens, Cherbourg and Flushing harbours and Rouen power station. There were 18 Ramrods against airfields and industrial targets.

'The Army Air
Forces in World
War II', Vol.III,
p. 336.

On 4 May the American Thunderbolts began to escort U.S. bombers up to a range of about 175 miles. On that day six squadrons of Thunderbolts joined six Fighter Command squadrons in an operation against the Ford and General Motors factories

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at Antwerp. They provided high cover and withdrawal support and shot down an F.W.190.

On 14 May there was a combined Allied air attack against the German war machine. Bomber Command had attacked targets in Berlin, the Ruhr and Czecho Slovakia on the previous night and the VIIIth Air Force struck in daylight at targets in Kiel, Ijmuiden, Antwerp and Courtrai. No. 11 Group escorted attacks on the latter two targets and claimed to have destroyed eight of the enemy while Thunderbolts claimed four. Only one Spitfire and pilot were lost. German aircraft lost amounted to 11 aircraft destroyed and 10 damaged. This success was followed up on the 17th in an operation against Caen airfield when Fighter Command shot down five of the enemy at the expense of one Spitfire and pilot. Altogether the enemy lost 12 aircraft that day (some of these may have been destroyed on the ground).

Fighter Cmd.
Form 'Y' and
Enemy Doc.
A.H.B.6 Trans.
No. 157.30.

Fighter Cmd,
Form 'Y'.

A description of a day's operations by Fighter Command at this time is characteristic of the cross-channel fighter offensive in the summer of 1943. On 13 May, a day with some cloud but with moderate to good visibility, three bombing operations took place. Two attacks were made by the light bombers of No. 2 Group and one by the American Fortresses.

Operations began with a Circus. Six Mitchells of No. 2 Group took off at 1110 hours to bomb Boulogne marshalling yards. Escort was provided by two Spitfire VB squadrons of the Tangmere Wing and Escort Cover by two Spitfire VB squadrons of the Kenley Wing. Rendezvous was made with the Mitchells over Newhaven at 500 feet, bombers and escort proceeded to the target area arriving at 1148 hours. They returned home after completion of the bombing. Meanwhile high cover had been provided by two Spitfire IX squadrons of the Hornchurch Wing at 20,000 feet. As there had been so far no sign of the enemy, the Hornchurch Wing flew towards Le Touquet where two German fighters were seen at a height of 15,000 feet. Later over 40 hostile fighters were sighted over the Berck area but no combats took place. Target support from 1115 hours was provided by a Typhoon squadron from Tangmere. The patrol was completed without incident.

Better fortune befell the four fighter echelons which took off at intervals from five to 25 minutes after the bombers. Their task was to bring the enemy fighters to combat. They consisted of eight Spitfire IX squadrons from the Biggin Hill, Kenley, Northolt and North Weald Wings flying at heights between 25,000 and 30,000 feet. Combats took place over St. Omer at 27,000 feet and four F.W.190's were claimed as destroyed and two as damaged. Later, a squadron of the fourth Fighter Echelon dived from 30,000 feet on to another enemy formation; two F.W.190's were claimed to have been destroyed for the loss of one Spitfire IX and pilot. Another pilot was seen to bale out earlier but this was not due to an attack by an enemy fighter. A total of 55 enemy aircraft operated against the Circus, 45 fighters appearing from the Lille-Courtrai area and ten from Abbeville.

The second light bomber attack was a Ramrod operation and began at 1800 hours when 12 Bostons set out to bomb Cherbourg Docks. Escort and Bouncing Wing were provided by five squadrons of Spitfires VB, VC and VI of the Ibsley Wing (No. 10 Group). As no enemy were encountered en route two squadrons left the main formation before the French coast and swept the

area from Barfleur to Maupertus at heights of 10,000 to 15,000 feet. They resumed position after the bombing had been completed. Again there was no enemy reaction to the operation.

Ninety-seven Fortresses supported by No. 11 Group sortied at 1600 hours, their task being to bomb the Potez aircraft factory at Meaulte (Ramrod). An hour earlier various manoeuvres were carried out by 72 Fortresses culminating in an attack on airfields at St. Omer supported by three Thunderbolt Groups from Horsham St. Faith, Debden and Duxford. Only one enemy fighter was encountered. Simultaneously with the attack on airfields the main bombing force swept at 22/25,000 feet from Beachy Head towards the Cherbourg peninsula and returned to Dungeness where they set course for Meaulte. Some 80 enemy aircraft reacted to the diversionary raid and 120 to the main attack. Three Fortresses were lost. Meanwhile six Spitfire IX squadrons of the Northolt, North Weald and Kenley Wings provided cover and were soon attacked by enemy formations. Combats occurred while the bombing was in progress and continued until the R.A.F. formations had left the French coast. The outcome of the series of dogfights over and around the target area was that six Me.109's and F.W.190's were claimed to have been destroyed, one probably destroyed and eight damaged for the loss of five Spitfires and pilots.

Another layer of fighters provided high cover at 30,000 feet composed of four Spitfire IX squadrons of the Hornchurch and Biggin Hill Wings; the former wing flew up sun of the bombers at 30,000 feet and turned several times to engage small groups of enemy fighters which were trying to intercept the bombers. An F.W.190 and an Me.109 were claimed to have been damaged. The other wing although broken by enemy fighters three times was never in a position to engage the enemy. Three Spitfire VB squadrons from Tangmere covered the bombers as they withdrew remaining up sun on their flank.

It was believed that a number of enemy fighters would refuel at Abbeville and accordingly 16 Typhoon bombers escorted by two Typhoon squadrons from Tangmere were despatched at 1640 hours, on a strike against the airfield. While the Typhoon bombers were diving over the airfield from heights of 10,000 to 5,000 feet to release their bombs, the escorting Typhoons swept inland at 12,000 feet. No opposition was met and the only casualty was a Typhoon which had to make a crash-landing and was destroyed; the pilot was unharmed.

Such were the day's offensive activities. Twelve enemy aircraft were claimed to have been destroyed, one probably destroyed and 12 damaged for the loss of seven Spitfires, one Typhoon bomber and seven pilots. According to German records eight fighters were lost. The chief points of interest that emerge from the above account are, firstly, that wherever enemy opposition was expected to be strongest or wherever the high cover was required, the Spitfire IX squadrons of No. 11 Group were employed. Apart from the superiority of this Mark of Spitfire, they were flown by the more experienced pilots. Secondly, the enemy fighter controllers had grown wary of Allied tactics and had become skilful in withholding their reserves which were put up in defence of the principal target of the bombers.

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Fighter Cmd,
Form 'Y' and
Enemy Doc.
A.H.B.6 Trans,
No. 144.4.

Altogether in May Fighter Command claimed to have destroyed 70 enemy aircraft on Circus, Ramrod and Rodeo operations and to have possibly destroyed 19 for the loss of 45 pilots.⁽¹⁾ German figures for fighter losses over the British Isles and over France and the low Countries were 89 aircraft destroyed (a few of these were shot down in attacks on Great Britain). It would appear that the Allied losses were approximately half of the losses suffered by the enemy: an achievement in a month of continuous activity. (There were only seven days in the month in which offensive sorties were not flown in strength)

June

Fighter Cmd,
Form 'Y'.

The fighter offensive was built up to 8,474 sorties in daylight, passing the total for the previous month by just under 1,000 sorties. It was the second month in succession when offensive sorties had exceeded defensive sorties. The newly formed Tactical Air Force was now operating and flew 719 sorties. Twenty-five Circuses and 21 Ramrod operations took place. Circuses were flown against airfields at Abbeville-Drucat, Brest/Guipavas, Maupertus, Poix, Caen/Carpique, Bernay, Morlaix, St. Omer, the railway centre at Eu, and power station at Gosnay, the Ford Motor Works at Antwerp and shipping at Amsterdam. Cover was provided to formations of the VIIIth Air Force withdrawing from targets in Germany. Ramrods were flown against airfields at Caen/Carpique, Bernay, Trioqueville, Villacoublay, Beaumont-le-Roger, aircraft factories at Meaulte, Gnome Rhone; power stations at Langebrugge, Yainville, Gosnay, Rouen, railway centres at Le Mans, St. Omer; viaducts at Meaugon and Brest; Rotterdam and Flushing shipyards, Zeebrugge Coke Ovens and engineering works at Flushing.

Fighter Cmd,
Form 'Y'.

Enemy fighters went into action in defence of Langebrugge power station near Ghent on 10 June. Spitfires VB of No. 302 Squadron claimed to have destroyed three F.W.190's and a Spitfire IX from No. 611 Squadron claimed to have destroyed another. Two Spitfires and their pilots were lost. There is no mention of these combats in German documents. On the 13th U.S. Thunderbolts claimed to have destroyed five F.W.190's and Fighter Command one F.W.190 in sweeps over the Pas de Calais and diversionary operations against Abbeville airfield. Two Spitfires and two Thunderbolts failed to return.

'The Army Air
Forces in
World War II',
Vol.II, p.671.

Further air combats occurred on 22 June when a force of U.S. heavy bombers went out unescorted to attack the synthetic rubber works at Huls near Krefeld. It was their first large scale penetration of the Ruhr in daylight and proved to have been most effective: the entire plant was closed for repairs lasting over a month. Escort, diversionary and covering operations were carried out by Spitfire and three Typhoon squadrons of Fighter Command as the bombers withdrew over Holland. Two diversions were carried out by No. 2 Group against the Wilton shipyard at Rotterdam and the second by U.S. Fortresses against the Ford Motor Works at Antwerp. About 60 enemy fighters reacted, about half of them from the Abbeville area. Two F.W.190's and two Me.109's were claimed to have been damaged for loss of three Spitfires and pilots. Thunderbolts of the VIIIth Fighter Command claimed to have destroyed seven enemy fighters in the diversionary operation

Fighter Cmd,
Form 'Y'

(1) Of these 10 were American.

Enemy Doc.
A.H.B.6 Trans.
No. 157.30.

against Antwerp. The enemy lost, according to German records, five aircraft and three were damaged.

Ibid.

Five fighters were lost by the enemy on the evening of 26 June when the G.A.F. made a vigorous effort (140 sorties) to intercept Fortress attacks on the airfield at Villacoublay and the marshalling yards at Le Mans supported by Spitfires and Thunderbolts. Six Allied pilots were lost.

Fighter Cmd,
and Enemy Doc.
A.H.B.6 Trans,
No. 144.4.

Although operations by Fighter Command in June were the most extensive since the beginning of the year the enemy retaliated with such vigour that fewer aircraft were destroyed than in the previous month and losses were heavier. The R.A.F. claimed to have destroyed 61 of the enemy on Rodeos, Ramrods and Circuses; over half were believed to have been shot down on Ramrods: 36 pilots were lost. German records claim that 49 aircraft were destroyed and 11 damaged in action while nine fighters were destroyed and 15 damaged when not in contact with Allied aircraft.

(iv) Comparison of performance of Spitfire V's and Spitfire IX's

Fighter Cmd.
O.R.S. Rept.
No.476.

Some information concerning the performance of the Spitfires V and IX emerged from offensive operations in the spring of 1943. Two factors governed the performance of these fighters: the height at which they were flying when engaged by hostile aircraft and, secondly, whether or not they were engaged in escorting a bomber force. With regard to the first it was a great advantage to the Spitfire IX to be above the enemy when an attack was initiated. This was shown in the loss ratio for combats with F.W.190's which was 9 : 1. The loss ratio for the Spitfire V in combat with the F.W.190, on the other hand, was only 1.6 : 1. Conversely when the enemy started above the British fighters the Spitfire IX did only about as well as the Spitfire V. When the height of operation was considered without regard to the relative heights of G.A.F. and R.A.F. the Spitfire IX did best between 20 and 25,000 feet (loss ratio 5.3 : 1) and almost as well between 10 and 19,000 feet (loss ratio 3.6 : 1). Spitfires V were not much less successful than Spitfires IX up to 19,000 feet. They had few combats above 20,000 feet but such results as were obtained were poor.

For all combats against F.W.190's, Spitfires protecting bombers did only slightly less well than those with no bombers to protect. It was the usual practice of the enemy to attack the bombers beneath the escorting fighters; in that case where Spitfires were initially above the enemy it was to their advantage to be with bombers. The practice of detaching a flight or section or aircraft to attack the enemy or of flying in small groups when escorting large bomber formations was successful. The best combat results were obtained by Spitfires IX operating in groups of four to nine aircraft.

(v) Operations against Enemy Shipping: January to June 1943

The policy for the operations of Fighter Command against enemy shipping did not change during the first half of 1943. Channel Stops and Roadstead operations were maintained as in 1942. (1) Such was the growing strength of the R.A.F. over the

(1) See also R.A.F. Narrative: 'The R.A.F. in Maritime War,' Vol.IV, Chapter IX.

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Channel that enemy ships rarely ventured abroad in anything but conditions of darkness.

Fighter Cmd,
Form 'Y'.

See p. 260

Fighter Cmd,
Form 'Y' and
R.A.F. Narra-
tive: 'R.A.F.
in Maritime
War', Vol.IV,
Chap. IX,
pp.259-263.

In January Fighter Command flew 244 sorties on Channel Stop operations: two attacks by Whirlwinds and Albacores were made on small craft but without result. Ten Roadsteads were flown but no enemy shipping was sighted. There were no movements of shipping through the Straits of Dover over 1,000 tons. No casualties were incurred this month by Fighter Command on anti-shipping operations. An attempt by an armed merchant vessel in February to penetrate eastward through the Straits of Dover into the Channel drew upon it the combined attacks of Fighter and Bomber Commands and after sheltering in Boulogne and Dunkirk the vessel was compelled to withdraw to a north German port. That month 202 sorties were flown on Channel Stop with no casualties to the aircraft engaged; there were four Roadstead operations in which four ships of 2,456 gross tons were destroyed. Eleven aircraft were lost by Fighter Command in these operations.

Meanwhile in March shipping activity in the Straits of Dover began to increase, in particular mine-sweeping operations, but attempts by two large merchant vessels to force the passage eastwards through the Straits did not meet with success and they were both sunk by coastal artillery and surface craft. Six Roadstead operations took place, on three of which enemy shipping was sighted, but good targets did not coincide with suitable flying conditions and although 28 attacks were made in the course of Channel Stop operations no sinkings were claimed. A total of 179 sorties on Channel Stop were flown.

Enemy shipping activity in the Channel in April continued on approximately the same scale as in the previous month but Fighter Command's effort on Channel Stop was increased to 723 sorties with 97 attacks and 16 aircraft lost. One German merchant vessel navigated eastwards through the Straits of Dover unscathed. Thirty Roadsteads were carried out in which enemy shipping were sighted on ten. Four small enemy vessels of 815 tons were sunk by Fighter Command and one of 889 tons was damaged. On 5 April Typhoons of No. 609 Squadron operating in a Fighter Roadstead over the Boulogne area were probably responsible for sinking an enemy auxiliary minesweeper. On the 27th in a Roadstead against a convoy southwest of Jersey and ten miles west of Corbiere Point two minesweepers were sunk by Whirlwind bombers of No 263 Squadron escorted by 22 Spitfires of No. 616 and 504 Squadrons. The convoy had been sighted earlier in the day by two Mustangs of Army Co-operation Command on shipping reconnaissance.

Fighter Command's anti-shipping sorties in May rose to 953 with 78 attacks and nine aircraft lost. There were 29 Roadstead or Fighter Roadstead operations. One enemy vessel, probably a Dutch sailing vessel, the Oost Vlandered, was sunk on 21/22 May by Whirlwinds of No. 263 Squadron, No. 10 Group off Cherbourg. On 13 nights of the month no shipping was detected moving in the Straits of Dover and this was probably due to the attacks of the Whirlwind bombers of No. 137 Squadron. A number of small vessels managed to slip through the Straits either by taking advantage of bad visibility or by hugging the coast. Four attacks by Whirlwinds were carried out during the first part of the light period. On 17/18 May ten Whirlwinds attacked a convoy of some twelve to fifteen vessels believed to be minesweepers west of Dunkirk over a period of two hours.

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One vessel was claimed sunk and seven damaged but these claims cannot be confirmed from post-war records. One Whirlwind was lost.

In June the number of sorties against shipping by Fighter Command rose to 1,078 with 127 attacks and 13 aircraft lost. A minesweeper of 750 tons was sunk on 15 June in a Roadstead operation by Whirlwinds of No. 263 Squadron. This was the only sinking of the month although shipping was sighted on 24 out of 50 Roadstead operations. It was noticeable that movements during the light period were few and far between. No. 841 (Albacore) Squadron maintained patrols in the Channel area whenever weather was suitable. No. 137 (Whirlwind) Squadron was relieved on 12 June by No. 3 (Typhoon Bomber) Squadron.

(vi) Patrols by No. 10 Group against enemy fighters west of Brest and protection of Anti U-boat patrols over the Bay of Biscay

R.A.F. Narrative:
'The R.A.F. in
Maritime War',
Vol. IV, Chap. III,
p. 100 et seq.

The G.A.F. began in July 1942 to send Ju.88's and Arado 196's to intercept the Beaufighters of Coastal Command on anti-U-boat patrols over the Bay of Biscay and from that date until the beginning of November inflicted heavy casualties on Coastal Command aircraft. As a counter measure against hostile fighters Coastal Command organized Beaufighter patrols to fly in support of the anti-U-boat aircraft; their task was to intercept the enemy on their outward or homeward tracks. By November the threat had temporarily subsided although Fliegerfuhrer Atlantio maintained a strength of some 30 Ju.88's and 20 Arado 196's and 20 long range reconnaissance aircraft (Ju.88's and F.W.200's) throughout the winter months.

No. 10 Group O.R.B.
Dec. 1943 and
A.H.B./11K/23/183.

Meanwhile from the first week in December onwards it became customary for No. 10 Group, whenever a large effort was being made over the Bay of Biscay by Coastal Command, to send out a mixed force of long-range Spitfires, Mustangs and later Mosquitos to intercept enemy Arado fighters flying out from Brest. On days when normal effort was being made by Coastal Command two sections of Spitfires would be sent out to patrol in the morning and two in the afternoon. These operations were known as Instep. By the end of December 1942 there had been only one encounter with the enemy in which a Spitfire of No. 234 Squadron had been lost. In the spring of 1943 patrols of Fighter Command Mosquitos and Mustangs usually led by a Coastal Command Beaufighter gave direct support to the anti-U-boat aircraft: the operation was also known as Instep but it should not be confused with the offensive patrols in the vicinity of Brest.

No. 10 Group O.R.B.
Dec. 1943
A.H.B./11M/B10/1.

During January and February 120 sorties were flown on offensive operations west of Brest by No. 10 Group principally with Mosquitos from No. 264 Squadron but enemy activity was slight and no claims were made nor were any losses suffered. In March 39 sorties were flown. No. 264 Squadron claimed to have shot down two Junkers 88's and two Beaufighters of No. 141 Squadron were lost. On 9 April No. 141 Beaufighter Squadron began the series of operations by Fighter Command in direct support of the anti-U-boat patrols.

By May the strength of the G.A.F. anti-shipping force had been increased to 40 Ju.88's, 18 Arado 196's and six F.W.190's. The Junkers were based at Kerlin/Bastard, Cognac and Bordeaux, the Arados at Brest/Lanveol and the F.W.190's at Brest/Guipavas. The Air Officer Commanding No. 19 Group

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A.H.B./IHK/23/183
and
A.H.B./IHK/24/288.

believed that his Beaufighters were no match for single-engined enemy fighters but were better employed patrolling west of 08° longitude as a counter to long range hostile aircraft while fighter type aircraft should cover the area east of that line. Accordingly by 14 May No. 264 Mosquito Squadron had been relieved of all night-fighter duties and was employed exclusively on Operation Instep. By the end of the month eighteen Ranger Mosquitos had been withdrawn from Nos. 25, 151, 256, 307, 410 and 456 Squadrons and located at Predannack for the same purpose. This force operated under the orders of the Air Officer Commanding No. 19 Group. In addition Nos. 414 and 613 (Mustang) Squadrons were located at Harrowbeer for patrols over the Brest peninsula to provide cover mainly against F.W.190 aircraft. They operated from Predannack in patrols of between six and twelve aircraft and were led by a Coastal Command Beaufighter. Patrols by Mustangs were limited on account of the fatigue factor to one hour in the patrol area. The Sector Commander Portreath was responsible for the organization and control of Instep operations in accordance with instructions issued by Headquarters, No. 19 Group.

No. 264 Squadron was responsible for carrying out Instep patrols in May, flying over 90 effective hours; six sorties were flown by Mustangs of No. 414 Squadron Army Co-operation Command. The only item of interest was on the 16th when a U-boat was sighted: it crash dived at once.

By June the anti-U-boat offensive in the Bay of Biscay was at its height. The Coastal Command anti-U-boat patrols once more began to be attacked in strength by enemy fighters and in the first week of the month were involved in five combats whereupon the Fighter Command patrols were immediately increased. Mosquitos and Mustangs flew a total of 939 effective hours, shot down four aircraft for certain and suffered the loss of five Mosquitos and two Mustangs. Nor were their activities confined exclusively to the air. On the 14th five U-boats were spotted by No. 307 Squadron and on the 21st a U-boat was sighted and attacked by aircraft of No. 456 and 151 Squadrons. On the same day two submarines half-submerged were sighted by Nos. 307 and 410 Squadrons. Altogether in June a total of 393 sorties was flown on the two types of Instep operations by Fighter Command.

Summary of Period January to June 1943

Fighter Command claimed to have destroyed 249 German fighter aircraft on offensive operations in the first half of 1943. Approximately 75 per cent of these casualties were inflicted on Circus or Ramrod operations. The total German fighter losses for that period according to German documents (which include losses suffered over Great Britain as well as over France and the Low Countries) were 235 fighter aircraft destroyed in action while a further 61 were lost through causes other than Allied air or ground action. The British claims tally closely with the German figures from January to April but when, with the advent of finer weather, heavier air fighting was recommenced, the inevitable tendency to exaggerate crept in - due largely to the difficulty of identifying a 'kill' in the general melee.

Fighter Command lost 274 aircraft of which the pilots of six were rescued. This was a heavy price to pay for operations which had such a limited effect against the German war machine. Forty-three pilots were lost on Rhubarb operations

No. 10 Group O.R.B.,
App. E. June 1943.
A.H.B./IIM/B10/1A.

Fighter Cmd.,
Form 'Y' and
R.A.F. Narrative:
'The R.A.F. in
Maritime War',
Vol. IV, Chap. IV,
p. 137.

Fighter Command,
Form 'Y'.

Enemy Doc. A.H.B. 6.
Trans. No. 1444

Fighter Cmd.,
Form 'Y'.

alone which, apart from a few locomotives destroyed or damaged, produced negligible results. The intention of the offensive was in any case to destroy German aircraft and these only rose to the defence of worthwhile targets - all in enemy occupied territory. The G.A.F. in the west was still a force to reckon with: in the air it was aggressive and skilfully led and fighter controllers were astute in retaining their reserves for the defence of the more important targets.

'The Army Air Forces in World War II', Vol. II, p. 335 and this Narr. App. No. 13.

The period is noteworthy because by June the American daylight bomber offensive was being felt in Germany. Without long-range fighters the R.A.F. could do little to assist except by diversions and by covering the withdrawal of the bombers. An American Thunderbolt Group (the 4th Fighter Group recently converted from Spitfires to P.47's) of nine operational squadrons had begun to operate in conjunction with the R.A.F. But for the remainder of 1943 the lack of long-range fighters was to rob the daylight offensive of much of its sting.

Policy and Operations, July to December 1943

Effect of the Pointblank Directive on the Daylight Offensive

FC/S.26678,
Encl. 151A.

The increased activity of the Allied heavy bombers by day and by night since the Spring of 1943 compelled the enemy to augment his home fighter defences. On 10 June the Air Staff issued the Pointblank Directive which stated that unless the strength of the G.A.F. was checked and reduced it would be impossible to attack and destroy German industrial targets as directed by the Combined Chiefs of Staff at Casablanca early that year. Henceforward first priority for the heavy bombers based in Great Britain was the attack of the German fighter force and the industry upon which it depended. When weather and tactical conditions prohibited attacks on G.A.F. targets, the maximum effort was to be devoted to the bombing of U-boat construction yards and operating bases. While the American heavy bombers were being built up to a strength to allow penetration into Germany, the medium and light bombers, the fighter bombers and fighters of Fighter Command and the VIIIth U.S. Air Support Command were to be directed against G.A.F. targets within range and they were to protect the heavy bombers as they passed through the enemy's defensive system. Co-ordination of the Allied Air Forces was to be 'ensured by frequent consultation between the commanders concerned', but this did not become effective until the formation of a combined operational planning committee.

Ibid,
Encl. 156A.

Air Marshal Leigh-Mallory's new directive on 21 June aligned the fighter offensive to Pointblank. The medium and light bombers of No. 2 Group, attached to the Tactical Air Force since 1 June and thus under command of the Commander-in-Chief Fighter Command,⁽¹⁾ were to attack G.A.F. targets within range of fighter support. Briefly, the tasks of Fighter Command were fivefold: the defence of the United Kingdom remained its primary commitment; as before objectives for attack by bombers were to be chosen with the object of provoking the G.A.F. into action; aircraft factories within fighter range were to be attacked; the heavy day bombers were to be supported through the enemy's defensive system with the minimum loss; bombing was to be conducted from a medium altitude of 12,000 feet, considered to be the most favourable

(1) See Chap. 14, p. 245.

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height for R.A.F. fighter cover. (In an amendment to the directive on 20 July the height was raised to 14,000 feet as No. 2 Group aircraft were too vulnerable to flak at lower altitudes. This made it impossible to use the Spitfire V (L.F.) for escort and escort cover and the Spitfire V (without cropped blowers) of No. 10 Group were used for this duty whenever available.) Spitfires VIII and IX were reserved for high cover roles. Typhoons and Spitfires XII were not to be used above 15,000 feet. Circus targets were to be chosen primarily with regard to the destruction of enemy fighter aircraft which would supplement the heavy bomber effort against the G.A.F.

Ibid,
Encl. 157A.

The heavier bomb tonnage falling on targets in enemy-occupied territory made it imperative that friendly civilian populations should be warned of imminent air attacks, particularly in regard to targets in built-up areas like Paris. On the night of 20/21 June, therefore, leaflets were dropped over France and on the next day the Air Ministry informed General Eaker of the VIIIth U.S. Air Force and the Commanders-in-Chief, R.A.F. Bomber and Fighter Commands that due warning both by radio and by propaganda leaflets had been given to the French and they were authorised to proceed with the precise attack by day of all targets enumerated in the Pointblank Directive. All possible measures were to be taken to restrict the risk of casualties to the civilian population to the minimum as far as was consistent with ensuring the effectiveness of the attacks. Similar warnings were issued to the Belgians and Dutch on 25 June.

Ibid, Encls.
165A and 180A.

Control and Co-ordination of Daylight Offensive Operations
and Formation of Combined Operational Planning Committee

Fighter Cmd.
O.R.B., App.
D5, July 1943.
A.H.B./
IIM/A2/4A.

On 19 July Air Marshal Leigh-Mallory instructed that No. 11 Group was to continue to be responsible for the conduct of offensive fighter operations over adjacent enemy-occupied territory as well as for the provision of fighter escort and cover to British and American bombers operating against the enemy. Later, when the Tactical Air Force Headquarters moved to Uxbridge the Air Officer Commanding Tactical Air Force would direct all offensive operations carried out by Nos. 11, 83 and 84 Groups under the control of No. 11 Group. The Air Officer Commanding No. 11 Group was authorised to call upon Nos. 83 and 84 Groups (the latter as yet unformed) to meet his requirements for offensive operations. Aircraft were to be provided after mutual discussion and as much warning as possible was to be given in advance.

Nos. 83 and 84 Groups were to practise their own control organisations from time to time and to plan and direct their own offensive operations at regular intervals.

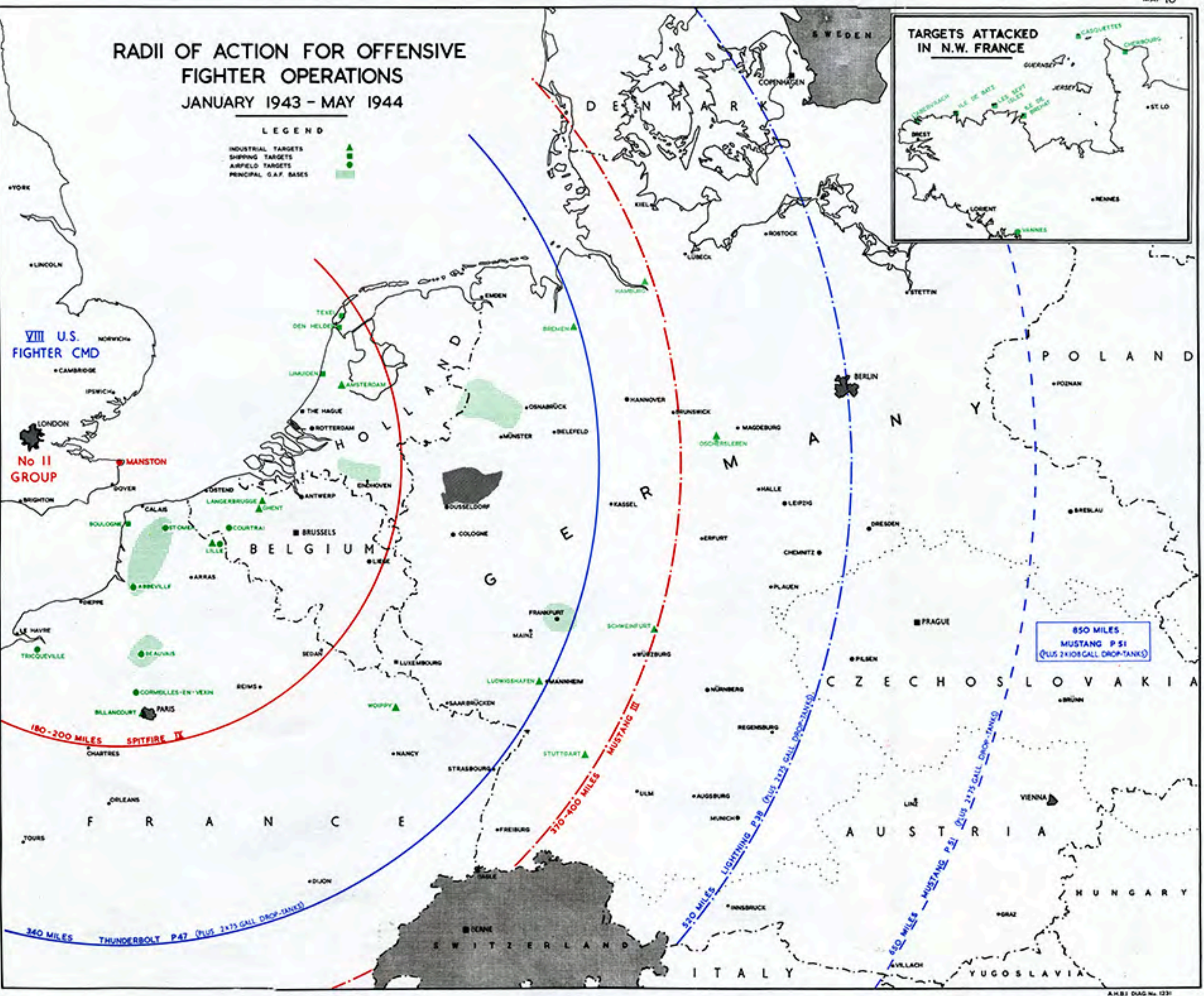
A.H.B./IIA/29/
1/1,
Encl. 32B.

Now that the American heavy bombers were operating on a more ambitious scale and, together with the medium and light bombers of the VIIIth Air Support Command and No. 2 Group, required cover and escort, Fighter Command was confronted with a fresh series of problems. Confusion inevitably arose in the planning of all these operations; thus it happened that Fighter Command might be briefed for an operation on the following day in support of No. 2 Group, whereupon it was learned that the Americans were also going to conduct an operation. New orders were issued which occasionally entailed the immediate transference of squadrons to advanced airfields. Since operations were usually arranged at very short notice, a certain amount of confusion, inefficiency and

RADII OF ACTION FOR OFFENSIVE FIGHTER OPERATIONS JANUARY 1943 - MAY 1944

LEGEND
INDUSTRIAL TARGETS
SHIPPING TARGETS
AIRFIELD TARGETS
PRINCIPAL G.A.F. BASES

TARGETS ATTACKED IN N.W. FRANCE



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unnecessary casualties were caused among R.A.F. fighters, as in some instances they were called upon to fly at night in order to take off with the American heavy bombers at dawn the next day.

A Combined Operational Planning Committee (C.O.P.C.) was therefore formed on 14 May, largely at the instigation of Air Marshal Leigh-Mallory, which played an invaluable part in the development of the Pointblank offensive. It began under the aegis of Fighter Command but it moved in June alongside the Headquarters of the VIIIth Bomber Command. Composed of R.A.F. and U.S.A.A.F. officers, its two major pre-occupations were to coordinate all plans for daylight offensive operations and to study the enemy's fighter defences.

A.H.B./IIA1/29/
1/3D, Encl. 9A.

At an important conference held on 31 July at Headquarters VIIIth Bomber Command, attended by all the principal air officers of Fighter Command and the Eighth Air Force concerned in the daylight offensive, it was agreed that the C.O.P.C. should plan and coordinate daylight strategic operations from this country. Afterwards Air Marshal Leigh-Mallory and the Air Officers Commanding Nos. 10, 11 and 12 Groups and the Commanding Generals of the VIIIth Bomber Command, VIIIth Air Support Command and VIIIth Fighter Command discussed problems which were common to them all. They agreed that it would be inadvisable to make the C.O.P.C. responsible for producing plans for the light and medium bomber operations in addition to their present function and that the planning of the medium bomber offensive should continue to be coordinated at Headquarters No. 11 Group by representatives of the VIII Air Support Command, VIIIth Fighter Command and No. 2 Group. Plans for Pointblank were to have first priority which entailed a close liaison between the C.O.P.C. and the planning staff at Headquarters No. 11 Group. The importance of continuing the medium bomber offensive against tactical targets in addition to their role in providing diversions for the strategic bombers was stressed.

The difficulties experienced by the fighter forces in assembling for the escort of heavy bomber missions were discussed in detail. General Anderson (Commanding General VIIIth Bomber Command) said that first and foremost it must be realised that his force could only operate in favourable weather which made it difficult to predict zero hour for the next day's operations. In the second place, he was unable to forecast the operational strength of his forces for the following day until reports of battle casualties sustained were available. It was agreed that the earliest possible warning should be given of impending operations. When forced to do so by weather considerations, the Commanding General VIIIth Bomber Command agreed to forego diversionary attacks and fighter support for the initial penetration. Every effort would be made to provide this support at a later stage in the operation. The C.O.P.C. was to aim at producing plans which would be sufficiently flexible to cater for certain contingencies such as weather and the reduction of effort due to battle casualties.

Ibid, Encl. 3A.

Eight weeks before, important decisions concerning planning of daylight operations, tactics, control and signal arrangements had been taken at a conference held at Headquarters No. 10 Group on 3 June, attended by senior representatives of the Eighth Air Force and Fighter Command and a number of junior officers, including the American Bomb

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Wing leaders and Wing Commanders Flying from Nos. 10 and 11 Groups. Amongst others, the following conclusions were reached. Detailed orders for operations were to specify the height at which fighters and bombers were to rendezvous both on the outward and return flights. Second, both medium and high fighter cover was to be provided when practicable. The Spitfire IX was not normally to be used below 18,000 feet (its best height for encountering the F.W.190 was between 25,000 and 30,000 feet) and the Spitfire V was not normally to be used above 18,000 feet. Third, fighter wings responsible for providing withdrawal cover to heavy bombers should be in position over the enemy coast in good time before the arrival of the bombers. Fourth, special care should be taken in protecting the bombers in that vulnerable period between the Initial Point (where they took up their bombing formations) and the Rally Point (where the bombers re-assembled into defensive formations after bombing). Fifth, on the outward flight to the target and until approaching the coast on the return flight, fighters were to provide the maximum protection from head-on attacks. Good rearguard cover was also to be provided. Fighter leaders were not to employ the whole of the high or medium cover fighters to engage enemy fighters forming up to attack the bombers.

Comparison of Strength of Fighter Command and Enemy Fighters:
July

Fighter Cmd.
Orders of
Battle. A.H.B./
IIM/A2/4A.

A.H.B./ID8/103.

See p.274
et seq.

On 1 July 1943 the strength of Fighter Command was as follows. There were 13 Spitfire VB, 12 Spitfire V (Long Range), three Spitfire VI, 10 Spitfire IX, three Spitfire XII and eleven Typhoon squadrons. Five Spitfire VB squadrons attached to No. 83 Group of the Tactical Air Force were also available. The nine U.S. Thunderbolt squadrons further increased its offensive power. These figures remained approximately constant throughout the summer months. It was estimated that Fighter Command would require a minimum of 45 fighter squadrons for Operation Starkey (an invasion rehearsal due to take place early in September and the principal offensive operation of Fighter Command for the summer) and efforts were made to bring squadrons up to full establishment in anticipation of the operation incurring large scale air battles. As far as individual aircraft were concerned, the Typhoon aircraft position had improved since the spring and the troubles with the Sabre engine had been rectified to a large extent; 110 complete aircraft together with some 40 to 70 engines were to be delivered in July and August. In regard to the latest types of Spitfire Air Marshal Leigh-Mallory wanted to convert two Spitfire V squadrons to the Spitfire Mark IX in readiness for intensive operations. Difficulties arising from the production of the Merlin engine caused the output of Spitfires Mark VIII and IX to be reduced and the additional Spitfires were not ready in time.

Enemy Doc.
A.H.B.6 Trans.

On 10 June the day fighter strength of Luftlotte 3 had not increased appreciably since January. There were 274 F.W.190's drawn from I, II, III/J.G.2, J.G.26 and 10/J.G.54 of which 239 were serviceable, and 43 Me.109G's held by 1/J.G.27 and 12/J.G.54 of which 41 were serviceable; there was also a mixed force of 14 F.W.190's and Me.109 G's held by 8/J.G.26 of which 12 were serviceable. Luftflotte Reich, on the other hand, had increased its day fighter strength to 342 F.W.190's and Me.109 G's of which 255 were serviceable, just over one hundred more aircraft than in January: an indication of the growth of the daylight bombing offensive.

Operations 1 July to 15 August

Fighter Cmd.,
Form 'Y',
July-August
1943.

Enemy Docs.
A.H.B. 6 Trans.
No. 157.30.

Fighter Cmd.,
Form 'Y'.

In this period 77 Fighter Protection⁽¹⁾ operations were flown, 33 Roadsteads, 12 Fighter Roadsteads, 27 Rodeos and 95 Rhubarbs. Weather was generally unfavourable during the early part of July, the only large scale operations taking place on the 9th and 14th. On the latter date a total of 414 sorties including 34 Bostons and Typhoon Bombers were flown by Fighter Command, mainly in covering and escorting 259 U.S. heavy bombers which bombed airfields and aircraft assembly works at Villacoublay and Le Bourget and a number of airfields in northern France. Three aircraft were claimed to have been destroyed in air combat by Fighter Command and three by U.S. Thunderbolts. However, according to German records 62 fighter aircraft were destroyed that day; 54 of them were destroyed on the ground by bombs at Villacoublay Airfield, one of the most successful attacks of the year. On the previous day two attacks were carried out by Fighter Command against Brest/Guipavas and Morlaix/Ploujean as a diversion for an R.A.F. Bomber Command raid on Turin.

The arrival of fine weather in the last week of July gave an opportunity for increased heavy bomber activity by day and by night. Bomber Command delivered a series of devastating night attacks against Hamburg which were sustained in daylight by the VIIIth U.S. Bomber Command. Diversionary raids by British and U.S. fighters and medium bombers were made on targets in northern France and the Low Countries, among them being the Fokker aircraft factory at Amsterdam, coke ovens at Zeebrugge and Ghent and the Yainville power station together with the complex of airfields in north-eastern France and the Netherlands.

On 28 July the VIIIth U.S. Bomber Command made its deepest penetration into Germany to that date in an attack on Oschersleben, 90 miles south west of Berlin. Casualties were heavy for 22 Fortresses failed to return but losses would undoubtedly have been higher but for the escort and cover of three Wings of Thunderbolts, equipped with jettisonable belly tanks, which patrolled as far as the Rhine, 260 miles from the English coast and ten squadrons of Spitfires IX of No. 11 Group which covered bombers over the Hague area and accompanied them home without incident. The Allied fighters shot down 19 and damaged three fighters of Luftflotte Reich. Further U.S. attacks on German aircraft production in central Germany took place on the 30th showing clearly to the enemy that their aircraft industry was too vulnerable and thereby stimulated plans for its dispersal. Apart from the bombing 21 enemy fighters were destroyed and six damaged. Twelve U.S. bombers were lost.

Enemy Doc.
A.H.B. 6 Trans.
No. VII/157.

Fighter Cmd.,
Form 'Y'.

On 15 August, 538 offensive sorties were flown by Fighter Command and 185 sorties by American fighters mainly against airfields in northern France and Belgium and railway facilities at Abbeville. The outcome of several air combats was that seven of the enemy were destroyed for the loss of five pilots of Fighter Command.

(1) As the strength of medium and heavy bombers had now increased considerably escort and cover was the main task of Fighter Command and Circus and Ramrods were designated as Fighter Protection operations from 1 June onwards.

Rhubarbs

Fighter Cmd.,
O.R.B.,
App. A1,
June 1943.
A.H.B./IIM/A2/
4A.

The number of these small scale operations declined with the broadening of the offensive in the summer months but importance continued to be ascribed to them. First priority targets were aircraft in the air and on the ground, locomotives, tugs and self-propelled barges. Every thing was done to impress upon pilots the necessity to avoid inflicting casualties on the civilian population in enemy-occupied countries, particularly in Holland where attacks on the canals were restricted to certain well-defined areas. Passenger trains and locomotives drawing passenger trains were not to be attacked in daylight and at night attacks on trains north of the Rivers Waal-Rhine were prohibited.

FC/S. 25904,
Encl. 158.

It is debatable whether these attacks, particularly on moving targets such as locomotives, were at all effective. But at a meeting of the Target Committee⁽¹⁾ held at the Air Ministry on 30 July it was considered that no respite should be given to the enemy's transport system in spite of complaints from the French railway men who had suffered casualties from strafing attacks. The economic gain had to be watched against any possible political loss and it was agreed that fighter attacks on moving locomotives should continue together with the bombing of locomotive and repair sheds in occupied western Europe whenever and where ever practicable, it being clearly understood that this effort was subsidiary to Operation Pointblank.

Summary

Enemy Doc.
A.H.B.6 Trans.
No. 157.30.

In the course of this period Fighter Command claimed to have destroyed 95 enemy aircraft for the loss of 101 fighters and light bombers from which the pilots or crews of seven were rescued. According to German records 133 fighter aircraft of Luftflotte 3 were destroyed, a large proportion being destroyed on the ground by bombs.

Operation Starkey: Feint Attack on Boulogne-Le Touquet Coastline, 9 September

(i) Outline of Plan

A.H.B./ID3/1982
A.H.B./ID/212/44
A.H.B./II/70/316
A.H.B./IIS/110/14/4
and
R.A.F. Narrative:
'Lib. of N.W.
Europe', Vol. I,
Chap. 3, pp. 55-58.

An elaborate camouflage and deception scheme known by the codename Cockade had been planned for the summer of 1943 with the aim of pinning the enemy in the west and keeping alive the expectation of large scale cross-channel operations. There were two purely deceptive operations to give the impression of projected landings in Brittany and Norway known as Wadham and Tindall respectively but no movements of troops or aircraft were involved. The third, Operation Starkey, was designed primarily to compel the G.A.F. in the west to engage in air battles over a prolonged period at times and places most advantageous to the Allied fighter forces, the object being to destroy the maximum number of aircraft in the air and on the ground and to build up sufficient air

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- (1) The Target Committee was presided over by the Director of Bomber Operations and was composed of representatives from Fighter, Bomber and Coastal Commands, the Admiralty and the Ministry of Economic Warfare, who met fortnightly to discuss possible targets for attack in enemy-occupied territory and with regard to the current strategic policy (FC/S.25904).

superiority over the G.A.F. to facilitate subsequent operations against occupied Europe. It was also a rehearsal for ultimate invasion. The Army and Naval aspects of it involved the movement of military formations into concentration areas, embarkation into assault craft, the assembly of naval craft and merchant shipping at various anchorages on the south coast culminating in the sailing of a naval assault force with the apparent object of landing in the Boulogne-Le Touquet area, but without committing the assault forces to an actual landing on the French coast.

FC/S.35771.

Air Marshal Leigh-Mallory was responsible for planning and controlling Operation Starkey in collaboration with General Baker of the Eighth U.S. Air Force and the three force commanders, namely, the Naval Force Commander (the Commodore Commanding Force 'J' located at Dover), the Army Force Commander who was the Commander-in-Chief Twenty First Army Group himself with his headquarters at Wentworth and the Air Force Commander, the Air Officer Commanding No. 11 Group at Uxbridge. The Air Force Commander, Air Vice-Marshal H. W. L. Saunders, was to control the air forces from Headquarters No. 11 Group, Uxbridge, under the general direction of Air Marshal Leigh-Mallory. Operational control of the American air forces was to be exercised through a senior representative of the Eighth Air Force located alongside the Air Force Commander at No. 11 Group. This proved to be the model for Operation Overlord in 1944.

The decision to carry out the various parts of the operation was to be made by Air Marshal Leigh-Mallory in consultation with the Commander-in-Chief, Portsmouth and the Force Commanders. Decisions on timing or postponement were to be signalled by Air Marshal Leigh-Mallory to the appropriate authorities. The day for the culmination of the operation was to be 8 September but allowance for postponement in the event of unfavourable weather would be made up to 14 September.

For the period of the operation No. 11 Group absorbed squadrons from Nos. 10, 12 and 13 Groups in the sector organization, as it was to do in 1944; it took over operational control of all squadrons in Nos. 83 and 84 Groups. Altogether a total of 72 day fighter squadrons was available for the operation. Five squadrons of medium bombers from No. 2 Group moved forward to operate from Dunsfold and Hartford Bridge. Three squadrons of Coastal Command Beaufighters at North Coates Fitties were placed at the disposal of the Air Force Commander.

The operation was divided into three phases. In the preliminary phase the reinforcement of No. 11 Group with squadrons from other Groups was to take place between 16 and 24 August while there was to be an intensification of the air offensive particularly over the Pas de Calais. In the second or preparatory phase attacks against airfields, military and industrial targets in the Pas de Calais were to be intensified as was aerial reconnaissance and the provision of cover for mine sweeping operations. Heavy bombing of gun positions, marshalling yards and other targets was to take place immediately before and on D-Day. Throughout D-Day the Air Forces were to attack targets in the Pas de Calais and maintain air cover over the seaborne convoys in the Channel and over the day bombers during their attacks on the enemy's coastal defences.

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A.H.B./ID3/1982.

It will be seen that Air Marshal Leigh-Mallory envisaged considerable heavy bomber support for Starkey and he considered that without it the operation would be unrealistic. But the Commanders of the Strategic Air Forces were by this time fully committed in the combined bomber offensive against industrial targets in Germany and both Air Chief Marshal Harris and General Eaker were adamant that Starkey, which they considered to be a mere 'sideshow', should not interfere with their plans. They were reassured by the Chief of Air Staff, on 10 July that the heavy bombers would not be diverted except in the 'most extraordinary combination of unexpected circumstances' and Sir Charles Portal instructed Air Marshal Leigh-Mallory that he must not press General Eaker for heavy bomber support.

General Eaker, however, agreed to provide 300 heavy bombers for the preparatory period and in the event of any interference with the main bombing programme against Germany he promised Air Marshal Leigh-Mallory all or a proportion of his heavy bombers. He also made 240 medium bombers of the VIIIth U.S. Air Support Command available for day operations. The tasks for the heavy bombers had, meanwhile, been reduced and it was proposed that the heavy day bombers should attack airfields and Bomber Command a number of long range coastal batteries.

As the date for D-Day of Starkey grew nearer General Morgan (COSSAC), responsible for the planning of cross-channel operations, requested the Chiefs of Staff to confirm the amount of heavy bomber support required. The commitment for the Eighth Air Force had already been agreed upon and for Bomber Command the requirement was for 200 to 300 sorties on the last two nights of the preparatory phase and a possible call of 50 sorties on any one night from 25/26 August to 5/6 September or up to 13/14 September if the culminating phase of the operation was postponed. The Air Staff conceded that heavy bomber support was essential if the operation was to be effective and that some diversion from Germany had to be accepted. But if Starkey did not succeed in absorbing the enemy fighter effort, the day bombers would lose heavily and in that event the operation should be abandoned.

The Chiefs of Staff approved the bombing proposals of COSSAC on 21 August and Bomber Command and the Eighth Air Force were informed accordingly. The time could not have been more inopportune; Bomber Command had just begun its offensive against Berlin and the resources of the Eighth Air Force were being heavily taxed in the bombing of German aircraft production. After vigorous protests by Air Chief Marshal Harris to the Air Ministry complaining of the unwarranted diversion caused by the attacks on unprofitable targets, the bombing programme was amended on 27 August. From that date up to 5/6 September Bomber Command was to provide up to 50 aircraft from O.T.U. resources and Wellington squadrons at not less than 24 hours notice. The effort against coastal batteries in the last two nights before D-Day were also to be provided by O.T.U. resources and Wellington and Stirling squadrons. On D-Day the medium bombers were to attack the coastal defences. General Morgan assured the Chiefs of Staff that the revised bombing programme would not interfere with the realism of Starkey but Air Marshal Leigh-Mallory believed that the sting had already been taken out of the operation.

(ii) Preliminary Phase, 16 to 24 August

A.H.B./II/70/
316.

In this phase the offensive was directed almost entirely against enemy airfields including the bombing of Le Bourget and Villacoublay by Fortresses on 16 and 24 August (during the latter raid 23 aircraft were destroyed on the ground by bombs), of Amiens/Glisy by Marauders on the 18th and of Poix by Marauders on the 16th and again by Mitchells on the 19th. Enemy reaction against these attacks was cautious. As happened frequently opposition was greatest when the heavy bombers were employed and even when they were not, enemy fighters frequently took up positions well to the rear, as if to meet a threat of deep penetration by the heavy bombers.

On 17 August the American heavy bombers penetrated still further into Germany when they made their first big attack on the two most important targets on their list, the ballbearing plants at Schweinfurt and the Messerschmidt aircraft works at Regensburg. Sixty heavy bombers were lost, 19 per cent of the attacking aircraft; very large numbers of enemy fighters were claimed to have been destroyed in air combats over Germany.⁽¹⁾ Spitfires of No. 11 Group provided protection to and from Antwerp and diversionary attacks were made by the Command on Belgian airfields. A total of 546 offensive sorties were flown; 14 enemy fighters were claimed to have been shot down and nine by Thunderbolts operating with Fighter Command; actual losses suffered by Luftflotte 3 were nine fighters destroyed over Belgium and the Netherlands.

Ibid.

Enemy fighters were reluctant to 'mix it' with Allied fighter escorts in this period but 45 enemy fighters were destroyed according to German records; 36 British pilots and aircraft failed to return; four U.S. Thunderbolt pilots were lost. Only one medium bomber (a Marauder) was shot down by enemy aircraft throughout the 741 medium bomber sorties flown under fighter escort. Six Fortresses were lost in attacks on targets in occupied territory, four of them in a raid on Le Bourget which was beyond the effective range of fighter escort, and two by flak.

(iii) Preparatory Phase 25 August to 8 September

Ibid.

Air operations were now stepped up against airfields, marshalling yards, certain industrial targets and selected military targets such as ammunition dumps, beach defences, camps etc. in and related to the Pas de Calais. Constant reconnaissance of enemy airfields in that vicinity was also maintained. This phase can conveniently be divided into two sub-periods respectively, the continuation of attacks on airfields and the switch of the offensive to marshalling yards.

In the first period 20 attacks were made on airfields including Beaumont-le-Roger, Tricqueville, Poix and Amiens. Deeper penetrations were made to Beauvais, Cambrai and Lille/Nord which were being used as fighter bases by the enemy.

On 27 August a target unconnected with Starkey was attacked, although lying in the Pas de Calais. It was a military construction of unorthodox design at Watten which was

Ibid and R.A.F.
Narrative: 'Air
Defence of Great
Britain', Vol. VII,
Chap. 1, pp. 7, 12.

(1) According to German records 17 fighters of Luftflotte Reich were destroyed and nine damaged (Enemy Doc. A.H.B.6 Trans. No. VII/157).

believed to be connected with rockets or flying bombs; it had been detected in July and Intelligence related it to the enemy rocket experiments known to be in progress at Peenemunde which had been successfully attacked by Bomber Command earlier that month. Nineteen direct hits were scored on the objective at Watten. Three days later a combined force of Marauders, Venturas and Mitchells bombed the Bois d'Eperlecques near Watten dropping incendiary bombs. A third attack was made on the Forest on 3 September by Mitchells and Venturas of No. 2 Group. A smaller attack by Fortresses on the constructional works at Watten was made on the 7th but poor weather prevented accurate bombing. On 2 September a dump also suspected of being connected with Crossbow activities in the Forêt de Hesdin was bombed, a Marauder formation of 72 strong being used for the first time; it was followed up by an incendiary attack by Marauders and Mitchells in which part of the dump was ignited and burned for 24 hours. Four night attacks by forces of 40 to 45 Bomber Command aircraft led by Pathfinder Mosquitos were also made during this period against similar targets in the Forêt d'Eperlecques, the Forêt de Mormal, the Forêt de Raismes and the Forêt de Hesdin.

R.A.F.
Narrative:
'R.A.F. in the
Bombing Offensive
Against
Germany', Vol. V,
Chap. 13.
A.H.B./ID/12/44.

But the large number of aircraft flying over the Pas de Calais did not cause the enemy to evince any great curiosity over the possibility of an amphibious operation. An aerial reconnaissance over the Deal-Dover area on 1 September, provoked by mine sweeping operations in the Channel, was the first overland air reconnaissance since 16 August. The absence of enemy reconnaissance continued to be a feature of Operation Starkey. Nor were there any signs, apart from small assemblies of naval craft at Boulogne and Le Havre, of any reinforcement of enemy forces. The enemy's chief preoccupation was with deep penetration raids by the Fortresses and during such raids fighters were deployed in defence of the Ruhr or the Paris industrial area.

Ibid.

On 4 September the air offensive was switched to marshalling yards in the vicinity of the proposed landings. Five railway centres were attacked that day and considerable damage was inflicted on all targets. The enemy's reaction to the bombing operations and a simultaneous sweep by Thunderbolts over south Holland was fairly strong over the Lille-Hazebrouck area; 19 aircraft were claimed to have been destroyed (six according to German records) for the loss of three Fighter Command pilots and aircraft. On the ensuing three days twelve more attacks were made and air reconnaissance revealed that severe damage had been caused particularly at Hazebrouck, St. Pol and Serqueux and to a lesser degree at Rouen/Sotteville, Lille/La Deliverance and Ghent/Meirebeke.

R.A.F.
Narrative:
'Lib. N.W.
Europe', Vol. I,
Chap. 3,
pp. 57-58.

At the end of the preparatory period, while there were grounds for believing that the enemy had taken precautionary defensive measures, there was no evidence to suggest that they appreciated the real scope of the operation or that it was likely to be a serious attempt at invasion. Operations had also been persistently dogged by bad weather; out of 42 major operations planned, 14 were cancelled entirely, eleven abandoned and three curtailed, leaving only 16 to be carried out as planned. A total of 39 German aircraft were destroyed for the loss of 43 British pilots in this period.

A.H.B./ID3/1982.

The situation was reviewed by the Chiefs of Staff on 4 September. Air Marshal Leigh-Mallory stated that in spite of the unfavourable reaction of the enemy he believed the operation should be completed. Valuable lessons had already

been learned in connection with jamming enemy radio location for coastal batteries and in regard to the protection of a convoy by a smoke screen laid by aircraft. The Americans who had put a big effort into their bombing operations would be disappointed if the operation was not completed and there was still a possibility of an air battle ensuing in the final phase. The Chiefs of Staff decided to go ahead with the operation.

(iv) Operation Starkey: 8/9 to 9 September

The main problem in the culminating phase was how to silence the long range coastal batteries with the limited amount of heavy bomber support available. Two batteries at Boulogne, the most likely to attack the Naval assault convoy, were attacked by 234 aircraft of Bomber Command with 650 tons of bombs on 8/9 September. Neither of the batteries was hit. During the night Fighter Command intruders harassed airfields known to be occupied by enemy day fighter squadrons.

Ibid.

Air cover on the 9th was provided by six fighter squadrons from firstlight onwards throughout the day to the various Groups of the Naval assault force in the Channel. At approximately 0700 hours the leading elements of this force set out from Dungeness following a route cleared of mines towards Le Touquet; the force turned about, two hours later under cover of smoke (supplemented by a smoke screen laid by Boston aircraft) and returned to Dungeness at 1100 hours. Direct V.H.F. communication was maintained between the Naval Force Commander in the Headquarters ship and the Air Force Commander at Uxbridge throughout the operation. By 1900 hours all groups had returned to base in the Portsmouth and Dungeness areas. After 110 hours the air cover was reduced as the enemy air effort, apart from a small reconnaissance effort over Selsey Bill, had been almost non-existent.⁽¹⁾

A.H.B./II/69/121.

In the attack against long range coastal batteries between 0730 and 0945 hours, 16 of the 20 planned attacks involving 264 unescorted medium bomber sorties were carried out and minor damage was inflicted. Whirlibombers of No. 263 Squadron and Bomphoons of No. 3 Squadron, suitably escorted, attacked beach defences. All these operations were unopposed by the enemy. A force of 378 Fortresses and Liberators escorted by Thunderbolts attacked seven airfields in the Pas de Calais from approximately 0730 hours. Bad weather in the afternoon curtailed the airfield programme. The operations against airfields were responsible for provoking the only serious G.A.F. reaction to Starkey: approximately 100 to 120 aircraft engaged the heavy bombers and their escorts on their way in to their targets and during their return. According to German records the G.A.F. lost four fighters in air combats and seven aircraft were destroyed and 16 damaged on the ground.

Enemy Doc.
A.H.B.6 Trans.
No. VII/148.

Fighter Cmd.,
Form 'Y'.

Fighter Command flew a total of 1755 sorties; three aircraft were lost, the pilot of one being saved. Thunderbolts flew 469 sorties and lost two pilots and their aircraft; the latter also claimed to have destroyed one enemy fighter aircraft.

(1) One German reconnaissance aircraft was shot down over Selsey Bill.

A.H.B./ID/12/44.

Operation Starkey provided valuable experience for all arms and much was learned about communications procedure, reconnaissance, administration etc. which proved of value in planning Overlord. Nevertheless the anticipated reaction of the enemy in the west, either on the ground or in the air, failed to materialise. The Germans undoubtedly appreciated that the Allies were not contemplating a serious attack. This might have been due to the repeated warnings issued to the French Resistance that it was not to regard Starkey as a signal to rise in open revolt, or it might have been due to the insufficient effort devoted by the Allies to night bombing, or to a knowledge that only meagre land and naval forces were participating in the operation, or even more likely to a firm conviction that there could be no serious possibility of invasion from the United Kingdom at that time. Under these circumstances the G.A.F. was instructed not to engage the Allied fighters over the Channel because if it did, it stood to gain nothing in the face of Allied fighter superiority (a lesson probably learned at Dieppe). Moreover, a policy of conservation had been imposed on the fighter force in order to meet the constant menace of attack by Fortresses over the Reich as has already been shown. In conclusion, precautionary measures were taken to reinforce fighters in the Beauvais and Lille areas by some 60 aircraft but it was evident that as far as possible fighter aircraft were to be retained for the defence of the Reich and that a mere threat of invasion was not going to lure them out of their main defensive positions.

Policy and Operations: 10 September to 31 December: Growth of U.S.A.A.F. Operations

(i) Operations 10 September to 30 September

Fighter Cmd.,
Form 'Y'.

Offensive fighter operations until the end of September were maintained at full strength. The principal task was the provision of cover and escort to medium and heavy bombers in attacks on airfields and marshalling yards, the former target predominating. Intensive activity took place on 23 and 24 September when 19 Fighter Protection operations to heavy and medium bombers were flown during which 19 enemy aircraft were destroyed. As foreseen casualties to the civilian population became inevitable in bombing attacks on built-up areas. For example on 15 September U.S. heavy bombers raided industrial targets in the Paris area including the Renault Works at Billancourt. The small size of the target and the inaccuracy of the bombing on that day caused a large number of bombs to fall outside the target areas and it was believed that 226 people were killed and 472 injured. There was naturally much resentment among the French people, (although warnings had been issued in June), which was exploited by the Germans. The British Air Staff considered, however, that if these targets were abandoned, the enemy would be able to make full use of all the aircraft and motor repair and manufacturing facilities in Paris.

A.H.B./ID/12/24.

From 10 to 30 September Luftflotte 3 lost 53 fighter aircraft in combats or as a result of air raids. Fighter Command lost 49 pilots and aircraft.

(ii) Operations in October

This pattern of operations remained the same up to the end of the year (excepting the introduction of attacks on Crossbow targets) in so far as deteriorating weather conditions permitted. But the German fighter force was

conserved⁽¹⁾ and used only against large heavy bomber formations and whenever possible avoided becoming embroiled with the fighter escort. It was only rarely that enemy fighters could be engaged at a point nearer than 40 miles inland from the enemy coast. Moreover, there were insufficient important targets near the coast to induce the G.A.F. to fight in their defence.

R.A.F.
Narrative:
'Lib. N.W.
Europe', Vol. I,
App. I/53 and
App. I/55 p. 2.

The inability of Fighter Command to inflict heavy casualties on the enemy led General Arnold and other senior American air officers to criticise the policy for Fighter Command at this time. The Americans felt that not enough had been done to destroy the G.A.F. in being, quite apart from the bombing of the aircraft industry. They favoured throwing in all available British fighters to make contact with the enemy, to destroy aircraft on the ground particularly at times when they were refuelling, preparatory to taking further part in an air battle, and they asked why, since they had equipped their Thunderbolts with long-range tanks enabling them to fly up to 200 miles from the United Kingdom, the Spitfire force as a whole had not yet been fitted with similar equipment.

Ibid.

Air Marshal Leigh-Mallory, replying to these criticisms, admitted that his fighters ought to be able to play a more useful role in the daylight offensive than they had done recently, but he emphasised the difficulty of reconciling the conflicting requirements for the escort of the U.S. heavy and medium bomber forces and noted that there was still disagreement about the relative merits of using British fighters in direct support of the heavy bombers, or as escorts to medium bombers in shorter range diversionary and subsidiary attacks. With a landing on the continent in mind the British fighter force had been designed purely to obtain local air superiority over northern France.⁽²⁾ Nor had there been a requirement for a long range fighter escort from the R.A.F. as originally it had been understood that the Fortresses would not require long range escort because of their heavy defensive armament.

The internal petrol capacity of the Spitfire was 85 gallons but an extra fuel tank would only increase the radius of action from 170 to 230 miles. The additional penetration of almost sixty miles could only be achieved if the fighters were not intercepted on the way in and forced to jettison their tanks before the full contents had been used. Escort over a maximum distance might therefore have to be given in relays of fighters. On the positive side measures had been taken to remedy the defect of range; 45 gallon drop tanks had been designed but the Fleet Air Arm had already staked a prior claim. Experiments with fitting a Hurricane fighter 45 gallon tank on the Spitfire were in progress and it was intended to bring this tank attachment into general production.

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- (1) There were 197 F.W.190's (152 serviceable) and 101 Me.109G's (78 serviceable) on 10 November in Luftflotte 3.
 - (2) It should also be remembered that the basic design of the R.A.F. fighter had been conditional upon defensive requirements, high speed, high rate of climb and manoeuvrability, all only obtainable at the expense of long range. The development of the U.S. fighter was not affected by these considerations.

Ibid.

Air Marshal Leigh-Mallory also drew attention to the difficulty of attacking well-dispersed aircraft on the ground unless carried out by a large force of heavy and medium bombers. Only Typhoons could be used for strafing airfields as the Spitfire was unable to carry both belly tanks and bombs. It was also impossible to throw in the entire British fighter force into one large-scale operation, as a number of these aircraft were required for the defence of vital points in the United Kingdom.

Fighter Cmd.,
Form 'Y'.

Prominent days for fighter operations in conjunction with medium bomber attacks in October were the 8th, when airfields were attacked in northern France and eleven fighters destroyed mainly over the region of Brest, the 18th in which 811 sorties were flown causing a reaction of approximately 260 enemy fighters (yet only one German fighter was lost), the 20th when 15 German fighters were destroyed in combats over Mons, Cambrai and Rouen; on the 24th eight German fighters were destroyed over Abbeville, Amiens and Lille. Total enemy fighter losses for October according to records of Luftflotte 3 were 51 destroyed; British casualties were 78 aircraft destroyed; five pilots were rescued.

Enemy Doc.
A.H.B.6 Trans.
No. VII/148.

'Army Air
Forces in World
War II', Vol.II,
Chap. 20,
p. 696.

Meanwhile important developments were taking place in the U.S. daylight offensive. From 9 to 14 October Fortresses and Liberators attacked objectives as far afield as Danzig, Gdynia, Mariendorf, and on the 14th, Schweinfurt. In a week the VIIIth Bomber Command had lost 148 bombers in the course of four attempts to break through the German fighter defences unescorted. The ensuing air battles made it clear that deep penetration into Germany by day could not be achieved without long range fighter escort. But the first U.S. Mustang (the most suitable long range fighter) escort to the U.S. heavy bombers did not occur until 5 December and for the time being escort was provided by Thunderbolts, which were fitted with a 108 gallon belly tank between August and September, increasing their range to approximately 300 miles, and a small number of Lightnings which by February 1944 could fly up to 580 miles equipped with two wing tanks containing 108 gallons each. Thus (quite apart from weather considerations) the Eighth Air Force was not in a position to attack the high priority Pointblank targets in the autumn and early winter of 1943/1944. After the Schweinfurt raid of 14 October the Americans expended their heavy bomber effort in attacks on targets of naval importance on the north German seaboard.

Enemy Doc.
A.H.B.6 Trans.
No. VII/157.

While the G.A.F. exacted a heavy toll from the U.S. bombers and, until the arrival of the long range fighter, preserved air superiority over the territories of the Reich, its own fighter losses were not inconsiderable (though much less than the number claimed by American aircrews). From 27 September to the end of October 174 single-engined and twin-engined fighters of Luftflotte Reich were lost or destroyed in combat and 55 were damaged, not counting 41 fighters destroyed and 51 damaged while flying on operations but whose loss cannot be attributed to Allied action. These figures were approximately three times greater than the casualties suffered by Luftflotte 3 in the West during the corresponding period. Intense air battles frequently occurred when the Americans chose targets on the north German seaboard - within range of Thunderbolt escort. On 27 September, for example, 29 Me.109's and F.W.190's were shot down during a raid on Emden. While defending Bremen on 8 October 20 single-engined and twin-engined fighters (Me.410's and 110's) armed with rocket mortars were destroyed.

In the Schweinfurt raid on the 14th German fighter casualties were calculated as being 36 destroyed and 16 damaged. In November and December 225 fighters of Luftflotte Reich were destroyed and 49 damaged and 86 were lost and 80 damaged in the course of operations. Losses were, however, rapidly replaced by new fighters for German fighter production was increasing by leaps and bounds (approximately 800 single-engined fighters were being produced per month at this time).

'Army Air Forces in World War II', Vol. II, Chap. 20.

The American Air Forces based in Great Britain were heavily reinforced in the second half of 1943. From October to the end of December the operational strength of the Eighth Air Force heavy bombers increased from 20 $\frac{3}{4}$ operational groups to 25 $\frac{3}{4}$. The rate of operations increased even more rapidly. On 3 November the VIIIth Bomber Command despatched 566 heavy bombers, the highest total to that date. On 24 December 722 aircraft were despatched, of which 670 pressed home their attack. The old VIIIth U.S. Air Support Command reached the peak of its activities in Operation Starkey and on 9 October flew on its last operation, an attack on Woensdrecht airfield. It began to operate under its new name of IXth Bomber Command on 22 October and was the first operational unit of the Ninth Air Force, the American component of A.E.A.F.

(iii) Operations in November

See this Narrative, Pt. III.

The Allied Expeditionary Air Force was formed under Air Marshal Sir Trafford Leigh-Mallory on 17 November who in his capacity of Air Commander-in-Chief became responsible for the planning and preparation of the air operations supporting the invasion of the continent.⁽¹⁾ Headquarters No. 11 Group which had been chiefly responsible for air offensive operations across the Channel was to continue to plan and coordinate operations of a tactical nature until the establishment of the Headquarters of 2nd T.A.F. and the Ninth Air Force at Uxbridge.

R.A.F. Narrative: 'Air Defence of Great Britain', Vol. VII, Chapter 2, pp. 31-34.

In the meantime three more suspicious constructions had been discovered on the Northern French coast at Wizernes, Martinvast and Mimoyecques, similar to those at Watten, which were believed to be connected with the enemy's plans for launching rockets or pilotless aircraft and the Air Staff decided that they should be attacked by fighter bombers of Fighter Command, Marauders of the IXth Bomber Command and Mitchells of No. 2 Group. Mimoyecques and Martinvast were the most heavily attacked targets and, later in December, Watten. Escort was provided mainly by No. 11 Group. The village of Audinghem, a headquarters of the Todt Organization, was also persistently bombed by fighter and medium bombers, including those of No. 2 Group. These operations began on 5 November and Crossbow targets were attacked on ten days during the remainder of the month and operations were increased in December.

A.D.G.B., Form 'Y'.

Ibid.

A.H.B./ID4/381A, 13 Nov. 1943.

Airfields still remained on the target lists although they no longer figured as prominently as in the summer months. Rhubarbs continued to be flown against transportation targets, although it was considered by the Ministry of Economic Warfare that the economic justification of the attacks were doubtful as the German railway position was improving. Losses in Rhubarb operations were still unduly large and attention was

(1) Fighter Command now became known as Air Defence of Great Britain (See Chap. 14).

Fighter Cmd.
O.R.B. Entry
20 Oct. 1943.

Enemy Doc. A.H.B.6
Trans. No. VII/148.

once again drawn by Headquarters Fighter Command to the importance of careful planning and briefing for these operations. Forty-six enemy fighters were destroyed in November for the loss of 52 Fighter Command aircraft, the pilots or crews of four being rescued.

(iv) Operations in December

R.A.F. Narrative:
'Lib. N.W. Europe',
Vol. I, App. VI/16/1.

By December there was no disguising the fact that the attacks on airfields had done the enemy little harm and had not provoked any appreciable defensive reaction. At a conference held by the Air Commander-in-Chief on 8 December attended by the principal air commanders in A.E.A.F. a new list of target priorities was drawn up. Diversionary operations in support of the VIIIth U.S. Bomber Command were to rank first and operations against Crossbow targets called for by the Air Ministry, second. Tactical operations which were to be directed against the enemy's 'already strained economic and industrial resources, in particular those in the Paris and the Lille-Lens-Bethune areas', including attacks designed to provoke the enemy's fighter defences to react in force, thereby offering an opportunity to destroy them, ranked third. (Attacks on airfields were to be abandoned until shortly before D-Day for Overlord when they were to be attacked intensively). All targets were to be attacked in such weight as to render second attack unnecessary.

The Planning Committee established at Headquarters No. 11 Group was to be responsible for the general coordination of A.E.A.F. tactical bombing operations which were to be extended to include the VIIIth Bomber Command operations when it was attacking tactical targets.

Ibid,
App. VI/16/2.

On 21 December higher priority was accorded to Crossbow targets and they were, until further notice, to take priority over all other types of operation (with the sole exception of those designed to assist the strategic operations of VIIIth Bomber Command). Two further target priorities were added to the revised list with the object of providing attacking formations with alternative Pointblank targets when weather or unforeseen circumstances prevented them from bombing primary objectives.

R.A.F. Narrative:
'Air Defence of
Great Britain',
Vol. VII, Chap. 2,
p. 31 et seq.

By the beginning of December sixty 'ski' launching sites had been identified on the Northern French coast and the medium bombers of 2nd T.A.F. and IXth Bomber Command were instructed to carry out attacks on them. It was also hoped that this type of target might at least provoke the G.A.F. into giving battle to the British and U.S. fighter escorts. The new series of medium bomber attacks began on 5 December and escort was provided by A.D.G.B. Bad weather caused the cancellation of a number of operations during the next seven days and further large scale attacks were not made until the third week in December. On the 20th and 21st about 200 enemy fighters came up to meet the attackers and A.D.G.B. and 2nd T.A.F. claimed to have destroyed 16 fighters in the two days' operations. Enemy casualties amounted to eight aircraft destroyed according to German records. Thereafter there was rarely any attempt on the part of enemy fighters to oppose attacks on 'ski' sites.

A.D.G.B.,
Form 'Y'.

As far as operations on other days were concerned, on 1 December A.D.G.B. escorting medium bomber raids against Belgian airfields was responsible for destroying ten aircraft in air combats and four more were destroyed on the ground by bombs. On 4 December Typhoons of No. 83 Group engaged in a

Enemy Doc.
A.H.B.6 Trans.
VII/48.

A.D.G.B.,
Form 'Y',
Enemy Doc.
A.H.B.6 Trans.
No. VII/148.

Fighter Cmd.,
Form 'Y' and
A.D.G.B./
S.31523.

Ibid.

Ibid.

Ibid.

Ibid.

sweep over the Netherlands destroyed five Do.217's. In the third week of December A.D.G.B. and 2nd T.A.F. flew an average of some 600 sorties per day. Thereafter the daily effort declined until the last two days of the month. The summary of losses and claims for December were 32 German fighters destroyed for the loss of 41 British aircraft lost (one pilot saved).

Operations against Enemy Shipping: July to December 1943⁽¹⁾

In July movements of enemy shipping were on a small scale especially during the moonlight periods. Fighter Command flew 1,185 sorties on anti-shipping operations which resulted in two Swedish merchant vessels being severely damaged in an attack by Typhoons and Bomphoons of No. 3 Squadron on a convoy off the Hook on 1 July. Three aircraft were lost. Two German torpedo boats passed through the Channel during the month. In August, when 849 sorties were flown for the whole month, three enemy vessels totalling 340 tons were sunk by Spitfires, Typhoons and Hurricanes.

In September Fighter Command flew 1,130 sorties and delivered 248 attacks for the loss of 13 aircraft. Five enemy vessels of small size totalling 537 tons and one fishing vessel of unknown tonnage were sunk. One vessel of 5,485 tons was damaged. All these attacks were made by Typhoon aircraft. There was considerable minelaying activity by E/R boats, probably due to the preparations in the Channel for Operation Starkey. Albacores of No. 841 Squadron attacked minelayers on three occasions. The rocket projectile (R.P.) Hurricanes of No. 137 Squadron found few targets in the light period. This was regarded as a sign of success in deterring movements of enemy shipping.

Fighter Command flew 1,133 sorties in October, made 112 attacks. Ten aircraft were lost. Two enemy vessels of 1,225 tons were sunk off the Dutch coast and one ex-blockade runner of 6,408 tons damaged. The cargo vessel and ex-blockade runner, Munsterland (6,408 tons) in Cherbourg Harbour was subjected to two major attacks by Nos. 2 and 10 Groups on 24 and 28 October. Whirlwind bombers of No. 263 Squadron and Bomphoons of No. 183 Squadron attacked at low level. Five bombers failed to return. Post war records confirm that the Munsterland was damaged as a result of these attacks. The second attack on 28 October was less successful in spite of further bombing by Mitchells, Whirlwinds and Typhoons.

Two merchant vessels passed through the Straits of Dover on the nights of 3/4 and 23/24 October but minor attacks by Albacore aircraft were ineffective. The Albacore Squadron (No. 841) maintained the usual anti-shipping patrols in mid-Channel whenever weather conditions permitted, bombing any vessel that ventured far enough from the enemy coast to make attack practicable. No target was found by Hurricanes of No. 137 Squadron which operated during the moonlight period.

In November Fighter Command/A.D.G.B. flew the record number of 1,226 sorties with 120 attacks and 13 aircraft lost. One enemy vessel, a dredger of 827 tons was sunk off Trouville

(1) See in greater detail R.A.F. Narrative: 'The R.A.F. in Maritime War', Vol. IV, Chap. IX, pp. 278-284 and pp. 292-295.

on 16 November. Twelve Typhoons of No. 486 Squadron attacked two 1,000-ton merchant vessels off Trouville on this date and claimed one sunk and the second seriously damaged. No enemy merchant vessels of appreciable size attempted the passage of the Straits. No. 415 (Albacore) Squadron took over from No. 841 Squadron during the month. The former made its first attack on shipping off the Somme on the night of 22/23 November. Hurricane R.P. aircraft, available during the moonlight period, once again suffered from lack of targets and unfavourable weather.

Ibid.

In December A.D.G.B. sorties dropped to 521 with 29 attacks and four aircraft lost. No enemy shipping was sunk or damaged. Two large merchant vessels passed eastwards through the Straits of Dover. Albacores of No. 415 Squadron patrols continued according to routine but targets were not numerous.

Fighter Cmd.,
Form 'Y'.

Operation Instep: July to December 1943

The Instep patrols over the Bay of Biscay continued to be carried out regularly until the end of the year although the monthly total of sorties declined in the autumn. In July 126 sorties were flown without any encounters with the enemy. In August 203 sorties were flown by Mosquitos of Nos. 264, 307 and 456 Squadrons from Predannack, from which one aircraft failed to return. Sorties were reduced in September to 134 but three Ju.88's were shot down (confirmed by German records), two by No. 307 Squadron on the 11th and 25th and one by No. 456 (Mosquito) Squadron on the 21st. One Mosquito of No. 307 Squadron failed to return. In October 92 sorties were flown uneventfully. In November the total was 88 sorties; one Ju.88 was destroyed for certain by No. 157 Squadron on the 20th. In December, 60 sorties were flown; the only combats took place on the 1st when one Ju.88 was shot down and one damaged (according to enemy records) by No. 157 Squadron.

Summary of Period July to December 1943

From June onwards the R.A.F. organization for Operation Overlord became apparent; Fighter Command became more concerned with the cover and escort of medium and heavy bombers while the Tactical Air Force became responsible for fighter and light bomber operations. In November A.E.A.F. was formed. In the six month period which began with the issue of the Pointblank Directive Fighter Command and the Tactical Air Force claimed to have destroyed 483 German aircraft on offensive operations for the loss of 403 aircraft (22 pilots or aircrew saved). The peak of the year's offensive operations was reached in September when 123 German aircraft were claimed to have been destroyed for the loss of 86. The VIIIth U.S. Fighter Command consisting of Thunderbolts and Lightnings claimed to have destroyed 312 aircraft; many of these aircraft were shot down over Germany by the former type of aircraft which could fly farther than the Spitfire.(1) A total of 149 American aircraft were lost, three pilots being rescued. According to the records of Luftflotte 3, 418 fighters(2) were destroyed in that period in

Fighter Cmd.,
Form 'Y'.

Enemy Doc. A.H.B.6
Trans. No. 157.30.

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- (1) And therefore did not appear on Luftflotte 3's record of casualties. A total of 232 fighters was destroyed while operating in Defence of the Reich during this period (A.H.B.6 Trans. VII/157).
 - (2) Included in this total were 245 F.W.190's and 142 Me.109's destroyed while 184 of the former and 58 of the latter were damaged.

air combat or on the ground in the west as a result of Allied action and 163 fighter aircraft were damaged. A number of other types of aircraft were destroyed on the ground in attacks on airfields including about 100 bombers and 23 miscellaneous aircraft destroyed. In addition 77 fighters were destroyed and 161 damaged on operations due to causes other than Allied action.

What did the day offensive over France and the Low Countries achieve in the second half of 1943? With Pointblank targets as top priority, the weight of operations in daylight was switched from targets in the Cherbourg Peninsula connected with U-boat bases to airfields in the Netherlands and north-eastern France and certain industrial targets in the Netherlands, Belgium and in the Paris area. The latter operations were supposed to distract the attention of the German fighters from the U.S. heavy bomber formations flying into Germany but as often as not this did not happen. The attack on G.A.F. airfields was to a large extent profitless with the exception of one or two raids, such as that on Villacoublay airfield on 14 July, in which heavy or medium bombers took part.

A.H.B./IIG/29,
pp. 33-47.

In the air the results were also disappointing. Up to the summer of 1943 German fighter pilots had fought aggressively and skilfully especially when they discovered that the American fighter escorts hugged the bombers and did not attempt to attack, but instructions from the German High Command were issued to the effect that they were to intercept the bombers and leave the fighters alone. Major General Galland (General der Jagdflieger) did not approve of this policy and attempted to inject more combative spirit into the fighter pilots but orders from operational formation headquarters laying stress on the importance of attacking the bombers, counteracted his influence. Fighter units, caught in the crossfire of high policy quarrels, developed their own techniques, some following Galland, some the others. A number of fighter unit leaders became obsessed by what Galland called 'Jagerschreck' (fear of fighters) and regarded the sighting of Mustangs and Thunderbolts as an interruption of their appointed task of shooting down bombers. German fighters, with the exception of well trained formations like JG.26 and JG.1, would frequently be surprised by Allied fighters, when blindly attempting to reach the bombers and if attacked would resort to evasion or detouring rather than staying to fight.⁽¹⁾

Ibid.

According to Galland the heaviest fighter losses in 1943 occurred on the Mediterranean front, next in defence of the Reich and third on the Western and Russian fronts. But what was more significant was that the American penetrations into

(1) Galland had prescribed two ways of attacking heavy bomber formations. First was the 'head-on' attack in which fighters flew parallel to and on one side of the heavy bombers until about five kilometres ahead of them, when they were to turn in by Schwärme and attack 'head on'. On this last stretch they were to fly level with the bombers for the last 1,500 yards, opening fire at the cabin of the target aircraft at about 900 yards, and then get away by flying flat over the bomber formation. Few pilots adhered to this rule and most did a 'Split S' and dived away many yards in front of the bombers so reducing their chances of scoring a victory. Secondly, as the defensive fire from the rear of the Fortress was strong rear attacks were made in force instead of by the individual dives which characterised most attacks on R.A.F. daylight raids. Fighters were to attack by Schwärme in rapid succession, from slightly high or low, and were to get away flat over the bomber formation. But most fighters broke off their attacks behind the bombers and dived or slipped away making slow targets for close range deflection shots from the bombers (A.H.B./IIG/29, pp. 35-36).

G.A.F. Orders
of Battle
A.H.B.6 Trans.

Germany had compelled the German Air Staff to build up heavily their fighter strength. An examination of German air orders of battle makes it clear that by the end of 1943 the number of single and twin-engined fighters (excluding night fighters) available for the defence of the Reich had increased more than fourfold since the beginning of the year (the strength early in January was 185 single-engined fighters and at the end of December 1943, 788 single and twin-engined fighters). Many of these aircraft were contained in a new day-fighter group, J.G.11, and twin-engined fighters carrying cannon and 21-centimetre rocket projectiles (Zerstorer) were employed against U.S. incursions until Allied long range fighters made operations by these aircraft to dangerous. A large number of fighters were transferred from the Eastern and other fronts to make up this total and fighter production was steadily increasing. On the Western Front, the number of fighter aircraft had remained remarkably static since early 1942 and it had been shown how, in effect, after August 1943 the only occasion on which these fighters operated in strength was when large heavy day bomber formations were heading for Germany.

Policy and Operations January to May 1944: Preparatory Operations for Overlord

(1) Operations in January

A.D.G.B.
Orders of
Battle A.H.B./
IIM/A2/5A.

In the first week of January A.D.G.B. was composed of nine Spitfire VB, 10 Spitfire (Long Range), two Spitfire VII, two Spitfire IXF and two Spitfire XII squadrons; there were also ten Typhoon squadrons and three Mustang fighter reconnaissance squadrons. In 2nd T.A.F. there were 15 Spitfire, two Typhoon fighter and four fighter-bomber squadrons and nine Mustang fighter reconnaissance squadrons. The onus of offensive operations had now passed to 2nd T.A.F. which concentrated entirely on offensive operations. In January, for example, A.D.G.B. flew 3,700 daylight offensive sorties and 2nd T.A.F. 5,430; in February the former flew 3,400 offensive sorties compared with the latter's 6,500; in March, 1,456 sorties compared with 4,950 sorties.

The enemy, in spite of the considerably heavier air attacks on France and the Low Countries then in progress, had withdrawn a large number of fighter aircraft from the Western Front since the summer of 1943. The average monthly total of single-engined and twin-engined day fighters of Luftflotte 3 from January to May 1944 was 286 of which 171 were serviceable. They were mainly F.W.190's. This was a much lower figure than the number of fighters at that time engaged on the Eastern Front where the average strength for those two types of aircraft during the same period was 639 with a serviceable strength of 408 fighter aircraft. The large number of fighters contained on the Eastern Front should not therefore be under-estimated at a time when the Allied invasion of the continent was weekly becoming a more distinct possibility. It was not until some days after the landing in Normandy that the fighter force in the West was reinforced with aircraft from Germany.

Meanwhile the strength of the German home defence fighters rapidly increased with accretions from other fronts and from the aircraft factories and it was this force that bore the brunt of the air fighting in the following months. On 31 December 1943 the strength of Luftflotte Reich in day fighters was 547 single-engined and 196 twin-engined fighters;

G.A.F. Orders
of Battle
A.H.B.6 Trans.
1943/12/31/20 to
1944/5/10/20

407 and 139 respectively were serviceable. By 10 May 1944 these figures had increased to 785 single-engined and 99 twin-engined fighters, 557 and 52 respectively being serviceable. Taking the number of day fighters in the Luftwaffe on all fronts, approximately 64 per cent was allocated to the Western Front and to Germany and Austria during this period as a defence against Allied long range penetrations by day.

A.H.B./ID4/381A
Mins of D.C.A.S.
Meetings
8 Oct. 1943,
11 Oct. 1943,
27, 29 Nov. 1943
and 8, 11 Dec.
1943.

The arrival in strength of the long-delayed Mustang (P.51)⁽¹⁾ was a turning point in the history of daylight air offensive operations. Since the early autumn of 1943 there had been constant demands from the R.A.F. as well as from the U.S.A.A.F. for a suitable fighter to escort long range bomber penetrations into Germany and to take advantage of air combats accruing from these raids. The Mustang had come to be regarded more favourably than the Lightning (P.38) as it was more manoeuvrable, possessed longer range and was less distinctive and therefore less vulnerable to attack.⁽²⁾ In September 1943 General Arnold (Commanding General U.S.A.A.F.) had requested that the Mustangs allocated to the R.A.F.⁽³⁾ should be reserved for operations with the Eighth Air Force until required for Overlord operations or alternatively that the Mustangs be used to equip U.S.A.A.F. squadrons and the R.A.F. should accept Thunderbolts in lieu. The Chief of Air Staff agreed to loan the first four Spitfire squadrons due for conversion to Mustangs to the Eighth Air Force for Pointblank operations until such time as they were required to operate in support of Overlord. He also decided to lend to the Americans all available Mustang fighter reconnaissance aircraft, provided it did not interfere with their training and general preparations for Overlord.

The first Mustang Group of the Ninth U.S. Air Force began to operate in the first week of December but until preparatory operations for Overlord were well under way, they remained under the control of the Eighth Air Force where they were used to escort the heavy bombers into Germany.⁽⁴⁾ In March they took over from No. 11 Group the task of escorting the IXth Bomber Command. But the Commanding General U.S.ST.A.F., General Spaatz, insisted on retaining the Mustangs for Pointblank operations, arguing that Operation Pointblank ranked as top priority until the Supreme Allied Commander took over control of the Strategic Air Forces for Overlord. Air Marshal Leigh Mallory, on the other hand, wanted the full complement of the Ninth Air Force to engage in preparatory operations for Overlord. Fighter cover for the extensive Crossbow and Overlord operations had to be sacrificed and a heavy burden was placed on

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- (1) Technical difficulties had been holding up the arrival of the Mustangs, in particular a change of compass; the standard A.E.A.F. camouflage had to replace the U.S. camouflage.
 - (2) The P.38 had a double tail.
 - (3) Originally the R.A.F. had been offered 900 Mustangs, for the first half of 1944.
 - (4) Five Mustang Groups of the Ninth Air Force were taken over by the Eighth Air Force in January 1944 in exchange for a Thunderbolt Group. See in greater detail R.A.F. Narrative: 'Liberation of N.W. Europe', Vol. I, Chap. 1, pp. 16-20.

A.D.G.B., in particular on No. 11 Group, whose Spitfires were frequently obliged to fly two operational sorties a day, one squadron being responsible for a formation of 54 Marauders.

The winter of 1943/1944 was particularly bad for the daylight strategic offensive because of the high incidence of mist and haze; (1) between 14 October 1943 and 20 February 1944, VIIIth U.S. Bomber Command was only able to conduct two visual bombing operations over Germany, one on 11 January against aircraft production targets in central Germany, which had to be abandoned because of poor visibility, and the other, on 4 February, when factories in Frankfurt were raided. Several attacks were made on Kiel and Emden, but they were subsidiary to the high priority Pointblank targets. A special operation (Argument) had in the meantime been devised by the C.O.P.C. in which the heavy day bombers were to make a concerted attack on German fighter production. All that was required was favourable weather.

The Allied Expeditionary Air Force proceeded with the attack of Crossbow targets and the harassing of enemy shipping. In January A.D.G.B. and 2nd T.A.F. flew on 98 Fighter Protection operations, the majority against Crossbow targets, but partial cover was also provided for the VIIIth Bomber Command attacking Ludwigshafen, Brunswick, Frankfurt, Munster and Kiel. The only significant reaction was on 4 January when about 100 aircraft opposed attacks on Crossbow targets. After 10 January there was barely any reaction from Luftflotte 3. A total of 87 German fighters in Luftflotte 3 were destroyed in January, at least 18 of them while countering attacks against Crossbow targets. Seventy R.A.F. fighters were destroyed (2 pilots were rescued).

(ii) Operations in February: The 'Big Week'

Ninety-two Fighter Protection operations were flown by the R.A.F. in February. Up to 20 February partial protection was provided by A.D.G.B. and 2nd T.A.F. to U.S. ST.A.F. raids on Wilhelmshaven, Frankfurt, Amiens and Villacoublay air fields, Tergnier marshalling yards and Crossbow targets. On 20 February the opportunity to launch Operation Argument came at last. Leipzig, Gotha and Brunswick were the targets. The attack was two-pronged. One heavy bomber force approached across the North Sea and made towards Berlin, while the second force, heavily escorted by Thunderbolts, Mustangs and Lightnings, was timed so as to approach central Germany when the defending fighters had taken off to intercept the northern force. Fourteen Spitfire IX squadrons of A.D.G.B. and 2nd T.A.F. and two Mustang Squadrons (Nos. 19 and 65 of the 2nd Tactical Air Force) gave support to the northern force. The Bombing proved to be extremely effective and the tactics of the operation had been worked out so thoroughly that only 21 out of 1,000 bombers despatched failed to return. Thirty-eight enemy fighters were shot down.

For the next six days the attack continued and Bomber Command inflicted very great damage on the same objectives by night. (2) On the 22nd withdrawal cover to raids on central German targets was given by ten Spitfire IX squadrons. On

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- (1) But good use was made of H2X to assist non-visual bombing.
 (2) For a full account of the American operations, see 'The Army Air Forces in World War II', Vol. III, Chap. 2.

A.D.G.B.
Form Y.

Enemy Doc.
A.H.B.6 Trans.
No. VII/135.
A.D.G.B.,
Form 'Y'.

A.D.G.B.,
Form 'Y'.

The Army Air
Forces in World
War II; Vol. III,
Chap. 2.

Enemy Doc.
A.H.B.6 Trans.
Nos. VII/138
and VII/135.

the 24th Schweinfurt was raided. Eight Spitfire IX and two Mustang squadrons gave support and a diversionary operation over the Netherlands was carried out by two Typhoon squadrons. The final operation of what became known as the 'Big Week' took place on 25 February. It has been estimated that approximately 90 per cent of the total production of German fighter aircraft was destroyed. Equally important was the attrition in air combat of the G.A.F. in being. From 20 to 25 February Luftflotte Reich was losing an average of some 32 fighters a day on the western borders of the Reich in air fights alone.⁽¹⁾ About 32 fighters of Luftflotte 3 were destroyed by American fighters in that period.

The enemy was now compelled to overhaul completely his organization for aircraft production while the G.A.F. had to concede the fact of air superiority by day to the Allies. From March onwards there was no longer any full scale opposition to the daylight bombing offensive against Germany. Token resistance would be offered to some attacks while against others, where some chance of success was evident, large forces would be concentrated. The policy of conservation of strength which had been evident in the west for the past six months was now adopted by the home defences.

A.D.G.B.,
Form 'Y'.
Enemy Doc.
A.H.B.6 Trans.
No. VII/135.

In February A.D.G.B. and 2nd T.A.F. lost 52 aircraft on offensive sweeps and escort operations. Altogether 90 aircraft of Luftflotte 3 were destroyed including an increasing number bombed while on the ground. But the German fighter reaction continued to be negligible. By this time the plans for Overlord were reaching fruition and preparatory operations had begun. On 9 February the IXth Bomber Command raided Tergnier marshalling yards, the first of a series of attacks on railway centres before D-Day carried out by medium and heavy bombers. Close escort and cover was provided by seven squadrons of 2nd T.A.F.

(iii) Operations in March

A.D.G.B.,
Form 'Y'.

These attacks continued through March, Tergnier, Chaumy, Hirson, Aulnoye, Creil, Haine St. Pierre being raided. As already described, A.D.G.B. and 2nd T.A.F. were fully engaged in escort duties, because the American Thunderbolts and Mustangs, by virtue of their longer range were required to escort Eighth Air Force missions into Germany. Crossbow targets also remained on high priority for the A.E.A.F. Medium bomber attacks were made on airfields at Amlens/Glisy, Rosiere-en-Santerre, Juvincourt, Beauvais and Conches. In March 68 Fighter Protection operations and 37 Rodeos were flown; 43 pilots were lost. A.D.G.B. and 2nd T.A.F. claimed no more than 38 enemy fighters. In fact Luftflotte 3 lost 86 fighter aircraft in air combat largely to American formations, all save two over enemy-occupied territory.

Enemy Doc.
A.H.B.6 Trans.
No. VII/135.

(iv) Operations in April and May

A.D.G.B.,
Form 'Y' and
A.H.B./IIM/A49/
ID.

In April the defensive commitments of A.D.G.B. were more absorbing than those of the offensive. Fighter cover was required for large-scale invasion exercises on the south coast. Meanwhile 2nd T.A.F. and the IXth U.S. Air Force redoubled their efforts against targets in France and the Low Countries. Attacks continued to be made on 'V' weapon launching sites

(1) For details see Appendix No. 29.

SECRET

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with medium and fighter bombers but Overlord targets took on an increasingly higher priority. The attack of railway facilities behind the projected battle area by the heavy bombers continued to be supplemented by medium and fighter bomber attacks. As the number of weeks to D-Day lessened more attention was paid to targets east and west of the Seine such as railways, trains and bridges. (1) On 22 April 2nd T.A.F. began a bridge-cutting programme with a fighter-bomber attack on Mirville railway viaduct just north-east of Rouen. Road and rail bridges on the Seine, over rivers in north-east France and Belgium, as well as in the Cherbourg peninsula were bombed, the IXth U.S. Air Force joining in the campaign on 7 May when Thunderbolts cut a railway bridge over the Seine at Vernon. Medium and heavy bombers also took part.

On 7 May, 2nd T.A.F. started the first of a comprehensive series of attacks against radar, coastal ship-watching, aircraft - reporting and W.T. stations on the coast stretching from the Cherbourg peninsula to Ostend. The first target was the W.T. station at Cap du Hode near Le Havre. Such was the success of the operations that 2nd T.A.F. began to specialize in attacks on this type of target.

On 21 May the first of a series of widespread fighter sweeps against the railway system of north France, which were intended to be the sequel to the attacks on rail centres, began. A large number of locomotives and trains was claimed to have been destroyed or damaged. One result of the low flying attacks was that heavier casualties were inflicted on Allied fighter aircraft than on any other day during the two months, 16 Spitfires and a Typhoon being lost by 2nd T.A.F., six fighters by A.D.G.B. and nine by the Ninth Air Force. Nearly all the losses were due to A.A. gun fire.

The reaction of the G.A.F. to these widespread and intensive operations was meagre in the extreme. In April Luftflotte 3 flew 1,439 'scramble' sorties and 38 interception and routine patrols by day and claimed to have destroyed 15 Allied fighters, 14 twin-engined aircraft and 80 - four-engined bombers. German A.A. defences claimed to have destroyed 55 fighter aircraft, 40 twin-engined aircraft and 69 four-engined bombers making a total of 124 aircraft destroyed in the air or by fire from the ground. The losses of A.D.G.B. on offensive operations were, in fact, four fighters (the pilot of one being rescued). Of 2nd T.A.F., 31 fighters and three light or medium bombers, of the IXth Air Force, 54 fighters and 22 bombers were lost - a total of 114 aircraft for A.E.A.F. (2)

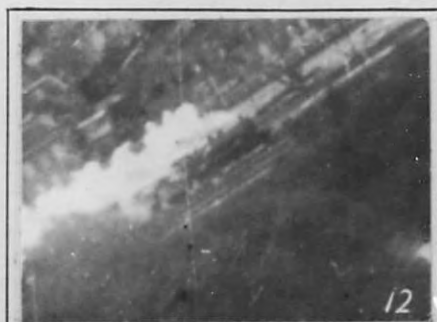
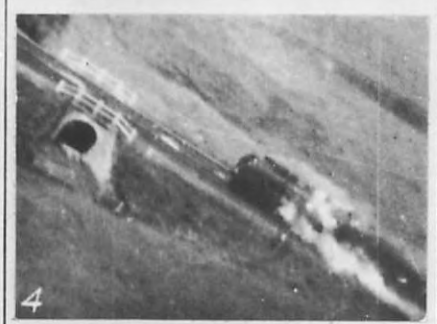
According to German records losses suffered by fighters of Luftflotte 3 in April due to air combat amounted to 62 and 114 aircraft of various types were destroyed by bombs or machine gun or cannon fire on the ground. However, the real attrition of the G.A.F. was taking place farther afield, over

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- (1) For details see Appendix No. 29.
(2) It should be borne in mind that VIIIth U.S. Fighter Command also operated over France and the Low Countries and that its casualties are not included here. They were 24 Mustangs or Thunderbolts for April and 51 for May. The operations of VIIIth Fighter Command for April and May are summarized in Appendix No. 29.

Enemy Doc.
A.H.B. 6 Trans.
No. 172.7.

A.D.G.B.,
Form 'Y' and
A.H.B./IIM/A49/
ID.

Enemy Doc.
A.H.B. Trans.
No. VII/135.



Mustang attacking transport
and airfield targets in
Northern France.

Ibid, Trans,
No. VII/138.

A.D.G.B.,
Form 'Y'.

Enemy Doc.
A.H.B.6 Trans.,
No. VII/133.
A.H.B./IIM/A49/
ID.

Enemy Doc.
A.H.B.6 Trans.
No. VII/134.

A.D.G.B.,
Form 'Y' and
A.D.G.B./S.31523.

See p. 285

Germany. A total of 343 single-engined or twin-engined day fighters of Luftflotte Reich was destroyed mainly by the VIIIth and IXth U.S. Fighter Commands while escorting Fortresses and Liberators on their way to bomb industrial targets. Prominent days were 8 April when 65 fighters were shot down while defending Brunswick and airfields in north-west Germany. On 24 April, 53 fighters were shot down when the VIIIth Air Force attacked Friedrichshafen.

Offensive operations by A.D.G.B. increased again in May. Seventy Fighter Protection operations were flown in support of medium bomber attacks on railway targets such as Valenciennes, Blanc Misseron, Tourcoing, Douai, Monceau-Sur Sambre; coastal batteries on the northern French coast; Crossbow targets; airfields at Luxeuil, Chievres, Dinard/Fleurbaey, Lille/Vendeville, Cormeilles en Vexin. Twenty fighters were lost, one pilot was rescued.

The 2nd T.A.F. and the IXth Air Force bore the burden of preparatory operations for Overlord, now drawing to their climax, with attacks on transportation, bridges and coastal defences. The VIIIth U.S. Fighter Command also operated on 20 days providing fighter sweeps and attacking bridges, airfields and transportation. The great air activity still did not provoke any significant reaction from the G.A.F. and the casualty figures for enemy aircraft available indicate the sparseness of their effort - 52 fighters were lost in air combat and 124 miscellaneous aircraft were destroyed on the ground. 2nd T.A.F. lost 73 fighters or fighter bombers and two medium bombers; the IXth Air Force lost 87 of the former and 33 of the latter. As in April double the amount of destruction was inflicted on the G.A.F. over Germany; 413 fighter aircraft of Luftwaffe Reich were destroyed by the American Air Forces. In the first heavy attack on the German oil industry on 12 May the VIIIth Air Force shot down 68 fighters and on 19 May, 56 fighters were destroyed, the second highest total for the month, over Berlin and Brunswick.

Offensive Operations against Shipping: January to May 1944⁽¹⁾

A.D.G.B. flew 627 sorties on anti-shipping operations in January 1944 and lost three aircraft. No enemy shipping was sunk or damaged.

The Munsterland (6,408 tons) which had been attacked late in October in Cherbourg Harbour entered Boulogne Harbour from the west early on 1 January and Nos. 11 and 83 Groups attacked her twice on that day, first with two rocket projectile squadrons of No. 198 Squadron escorted by Typhoons of Nos. 198 and 609 Squadrons and secondly by eight rocket Projectile Typhoons of No. 181 Squadron (No. 83 Group) escorted by two fighter Typhoons of the squadron. A further eight rocket projectile Typhoons of No. 181 Squadron took off to attack, but sighted the vessel in the inner harbour and, therefore, no attack was made. The Munsterland attempted to leave Boulogne that evening but turned back on encountering surface striking forces which had sailed to intercept her. On 20 January the Munsterland escorted by small craft made a final attempt to break through into the North Sea. The vessel was engaged and sunk by fire from coastal batteries.

(1) See also in greater detail R.A.F. Narrative: 'The R.A.F. in Maritime War', Vol. IV, Chap. XV, pp. 506-511 and pp. 520-522.

A Sperrbrecher and two torpedo boats heading westwards passed through the Straits during the month and were unsuccessfully attacked by Albacores of No. 415 Squadron.

Ibid.

In February sorties of A.D.G.B. dropped to 495 with 95 attacks and six aircraft missing. Two enemy vessels of 802 tons were sunk. One, a minesweeper was sunk by Typhoons of No. 266 Squadron on 6 February in the Abervrach estuary north of Landeda on 6 February. A Typhoon bomber was lost. An air/sea rescue launch was possibly sunk by Typhoons of Nos. 198 and 3 Squadrons off the Dutch coast on 24 February. Three medium sized vessels passed through the Straits of Dover and attacks were made by Albacores but without success. A large tanker (Rekum 5,540 tons) entered Boulogne Harbour on 28 February and two attacks were made against her by Typhoon bombers, but no damage can be traced in post-war records.

Ibid.

A.D.G.B. flew 541 sorties in March, made 33 attacks and lost one aircraft. No enemy vessels were sunk but a vessel of 4,404 tons was damaged. The tanker Rekum, after making two attempts, finally left Boulogne Harbour and was sunk by coastal batteries off Boulogne on 20 March. Damage was inflicted by Albacores of No. 415 Squadron on 24 March on the Italian vessel Atlanta (4,401 tons) off Gravelines in conjunction with attacks by surface craft. Two attacks were pressed home entirely unobserved and were considered to be of the greatest value as diversions for the naval craft. Albacores also carried out the routine anti-shipping patrols and attacked patrol boats and minesweepers. It had become most unusual for enemy shipping to move in the Straits during the period immediately preceding and subsequent to full moon. The volume of small coastal traffic during the dark period was normal, most movement being westerly. Mine sweeping operations were intensified.

Ibid.

In April A.D.G.B. flew 533 sorties, made 50 attacks and lost four aircraft. On 29 April two German torpedo boats which had beached themselves eastward of the Ile de Vierge after sustaining damage from ships of the Royal Navy, were attacked three times by Typhoon bombers (No. 263 Squadron) escorted by Spitfires. On the following day No. 263 Squadron returned to Lezardrieux and probably sunk the two vessels which German records state as having occurred on this day off Lezardrieux. Only one vessel of appreciable size attempted the passage of the Straits and succeeded in escaping to Flushing. Albacore and Typhoon patrols were uneventful. Movements of coastal shipping were on a normal scale but the predominance of movement to the westward was again most marked.

Ibid.

In May A.D.G.B. flew 893 sorties, made 122 attacks and lost six aircraft. Three enemy vessels were sunk by aircraft operating under A.D.G.B. control. Typhoons of No. 263 Squadron re-attacked on 3 May one of the two beached torpedo boats mentioned above. On 23 May attacks were made by the same squadron against merchant shipping in the Lezardrieux estuary. A minesweeping trawler was sunk. A torpedo boat (the Greif) was sunk in Seine Bay on 24 May, presumably by an Albacore of No. 415 Squadron which reported attacks on several scattered vessels in the Channel.

Operation Instep January to April 1944

Instep patrols, flown mainly by No. 157 Mosquito Squadron, continued until the end of April 1944. Forty sorties were

A.D.G.B.,
Form 'Y'.

flown in January and on the 7th No. 157 Squadron shot down one Ju. 88 for one Mosquito destroyed. The following month 62 sorties were flown in 15 days and No. 157 Squadron accounted for the destruction of two enemy aircraft, an F.W.200 on the 12th and a Ju.290 used for long range reconnaissance on the 19th. In March 72 sorties were flown and one Ju.88 was destroyed by No. 157 Squadron on the 10th. On 11 April, No. 151 Mosquito Squadron destroyed three Ju's 88; 64 sorties were flown this month, and two aircraft failed to return.

Summary of Period January to May 1944

A.D.G.B.
Form 'Y' and
AEAF Int/Ops
Summaries
(A.H.B./IIM/A49/
ID).
Enemy Docs.
A.H.B.6 Trans.
Nos. VII/135 and
133.

From January to May A.D.G.B. and 2nd T.A.F. lost 299 aircraft (4 pilots saved) on offensive operations and claimed to have destroyed 291 German aircraft. The VIIIth and IXth U.S. Fighter Commands lost 463 aircraft and claimed to have destroyed 1,226 enemy aircraft over France and the Low Countries. From a study of German records it is estimated that about 338 fighters were destroyed in aerial combat in the West. The records also show a significant rise in the number of aircraft destroyed on the ground by bombs or by machine gun or cannon fire. In April 114 and in May 124 miscellaneous types of aircraft were destroyed in this manner. The attacks on airfields with the increased weight of bombing had at last become effective. Altogether Luftflotte 3 lost 676 aircraft of various types in the air and on the ground between January and May through Allied action. It had also to pay heavily for the inexperience of its aircrew in the large number of non-operational losses. In the same period 407 aircraft were destroyed and 840 damaged on non-operational flights.

Ibid, Trans.
Nos. VII/138
and 134.

But the achievement of Allied air superiority in this period can be discerned by studying the steady rise in the number of day fighter casualties in Luftflotte Reich. Casualties had been increasing since November and in December they were almost double those of Luftflotte 3. The daylight incursions of the American heavy bombers and escorting long range fighters provoked large scale air battles. In February, the month of the 'Big Week', 225 day fighters were lost, in March 236, in April 343 and in May, with the start of attacks on oil production, 413.⁽¹⁾ These heavy losses to the G.A.F. in being together with the destruction of aircraft production plant by bombing insured Allied air superiority and although the German aircraft industry was to recover and redouble its efforts, due to these heavy attacks and to the bombing of the oil industry, it was never able to regain the initiative.

Meanwhile the Allied Expeditionary Air Force had provided the main weight of attack in preparatory operations for Overlord. Air Defence Great Britain and 2nd T.A.F. (principally Nos. 11 and 83 Groups) bore the brunt of escort and cover duties in these tactical operations in the first quarter of the year, for the Mustangs and Thunderbolts of the IXth U.S. Air Force were committed to Pointblank operations. Crossbow targets also stood at high priority during this time.

(1) Heavy non-operational losses were also experienced - 814 aircraft being destroyed and 1,069 damaged in the five month period.

In March medium bomber attacks on railway centres increased; in April the bridge-cutting programme began followed closely by attacks on radar stations and coastal defences and attacks on transportation in northern France.

Conclusion

In the period 1943/1944 the outstanding feature of daylight operations had been the increased weight of the bombing effort, achieved largely by the American Marauders, Fortresses and Liberators, though the light bombers of No. 2 Group played a conspicuous part under the command of Air Vice-Marshal B.E. Embry. In 1943 and the first quarter of 1944 the targets chosen for attack were largely those connected with Pointblank or the destruction of the German aircraft industry. But it was not until early in 1944 that an adequate long range fighter force was available to escort deep penetrations into Germany. The R.A.F. fighters were not designed for long-range purposes but to support a cross-channel operation and thus could only give partial protection to these operations.

Pointblank was an essential preliminary to Overlord but the softening of the defences in the West, the enormous amount of aerial reconnaissance required, in addition to the destruction of enemy fighters, assumed great importance in the summer of 1943 when plans for a landing were reaching maturity with the fixing of a date for invasion in the early summer of 1944. In this respect the cross-channel offensive in 1943 acquired a different aspect from that of 1942 when the major air battles were fought in the Mediterranean theatre.⁽¹⁾ The losses suffered (766 British and American pilots or aircrew) in this year were more justifiable. But the objectives of the offensive were not achieved. It hardly served as a distraction to the German fighters which rigidly adhered to their instructions to engage only the heavy bombers penetrating into Germany. The attrition of enemy fighter aircraft in the West was not on a large scale (indeed by the end of the year the destruction of fighters while defending the Reich was becoming more significant) and the damage due to bombing of industrial targets in the occupied countries was negligible. The deception operations in 1943 (Cockade) did not have the effect of pinning down the G.A.F. in the West. From another point of view, although these offensive operations achieved little materially, the R.A.F. fighter forces based in Great Britain acquired a skill in low level attacks, in the precise manoeuvres required for escorting and supporting bomber formations and a knowledge of the terrain over which they were to operate in 1944. The concentration upon Crossbow targets in the last quarter of 1943 was an unwelcome but necessary distraction. While the primary commitment of Fighter Command was the air defence of Great Britain, its organization had been geared to the offensive and a Tactical Air Force was operating in strength across the Channel. In contrast, the G.A.F. in the West deteriorated in quality. It suffered from lack of direction and disputes over policy at high level sapped its operational efficiency.

- (1) The number of daylight offensive sorties flown in 1943 by Fighter Command was almost double that of 1942.
 1942: 43,300 offensive sorties.
 1943: 80,300 plus 3,590 light bomber sorties and 1,500 photo recces.

Fighter Cmd/
 A.D.G.B.,
 Form 'Y'.

A.D.G.B.,
Form 'Y' and
A.H.B./IIM/A49/
ID.
Enemy Docs.
A.H.B.6 Trans.
Nos. VII/133,
134, 135 and
138,

In 1944 Pointblank operations reached their culmination in February. From then onwards until the beginning of June the emphasis shifted from Pointblank and Crossbow to Overlord targets. Considering the great air effort made between January and the end of May entailing over 117,000 offensive sorties by the Allied Expeditionary Air Force the price paid, 299 R.A.F. and 463 U.S.A.A.F. aircraft, (1) was not large. In comparison the German losses in the West (676 aircraft of various descriptions) were heavy, particularly on the ground, and bearing in mind that their attempts to counter the Allied air attacks were feeble. The fighter losses suffered over Germany (1,333 fighters) were more spectacular and more than justified General Spaatz's policy of destroying the G.A.F. in being by attacking its sources of production.

Until a late stage in the preparatory operations for Overlord the Air Commanders responsible anticipated a great air battle on the launching of Overlord on the scale of that which ensued over Dieppe in 1942. It was largely because of the steady building-up of offensive fighter and bomber operations over enemy-occupied territory over the past three years, ending in the assumption of air superiority and the remarkable results achieved by the combined bomber offensive, that the German Air Force failed to oppose the landing during its early, vulnerable stages.

By June 10 1944, exactly three and a half years after the first 'Circus' operation, in which nine Spitfire and Hurricane Squadrons escorted six Blenheims of No. 2 Group to bomb targets in the Forêt de Guines in North France, fighter aircraft of 2nd T.A.F. were operating from advanced landing grounds in Normandy, thereby ending the fighter offensive from Great Britain as understood in its original terms. Air superiority, which in those days seemed barely attainable, had been gained and held and for the past six months offensive fighter sorties beyond the Channel ranging in strength from one thousand to three thousand aircraft in one day had become a commonplace and the G.A.F. had been forced into a position from which it could no longer exercise any influence on the battle. In 1941 R.A.F. Fighter Command was only able, at the most, to exercise a very temporary superiority in the air over a limited area across the Channel which was dependent upon the short range of the fighter aircraft then employed, whereas in 1944 the position was entirely reversed; all the operational and training flights of the G.A.F. by day extending over France and the Low Countries to Germany itself were subject to interference by Allied aircraft, while the major fighter actions of this period were fought, not over the Channel or France, but over German soil in the vicinity of cities as centrally placed as Berlin and Leipzig. While it cannot be claimed that the daylight fighter offensive had exerted

(1) This total consists of sorties flown by the VIIIth and IXth U.S. Fighter Commands for the most part in the cross-channel fighter offensive and in connection with Overlord. An additional 369 fighters were lost by VIIIth Fighter Command from March to May inclusive over Germany.

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any influence on the war strategically, such as diverting German air forces from the eastern to the western fronts, the passing over of Fighter Command from the defensive to the offensive was a moral factor of no little importance and it undoubtedly forestalled more ambitious enemy daylight attacks upon Great Britain than were in fact, made, and its importance in relation to Overlord had already been stressed above. It was also in a minor way complementary to the night offensive of Bomber Command and it made possible the early, tentative experiments in daylight bombing of the VIIIth U.S. Bomber Command which was later, together with its attendant Fighter Command, to harry and to destroy the German day fighter force.

CHAPTER 16

OFFENSIVE OPERATIONS BY NIGHTIntroduction

The slackening of the German night bomber offensive against the United Kingdom in 1942 made it possible for Fighter Command to pay more attention to offensive operations over enemy-occupied territory by night, and the character of these operations began to change from one of waiting upon the initiative of the enemy to sustained attacks on the continent which were carried out whenever weather permitted. But by the end of 1942 the number of sorties flown was limited. Although a centralised system of control for intruders was operating and aircraft were being equipped with suitable navigational aids, there were but three full time night intruder squadrons and of these one, the only squadron equipped with Mosquitos, was despatched at the end of the year to Malta.

See this Vol.,
Part II,
Chap. 8.

N.A.D. (43) 1,
paras. 30-35.

Early in 1943 it was decided to enlarge the scope of the night-fighter offensive by reinforcing the original intruder squadrons which had largely been used in a defensive/offensive role (i.e. intercepting bombers returning from raids over the United Kingdom and attacking their bases) with night-fighter bombers and especial attention was to be paid to the problem of bomber support and the interception of enemy night fighters attacking R.A.F. night bombers over the continent. The two main requirements were that intruders should be equipped with Mosquitos to give them adequate range to penetrate deeply into enemy territory and, secondly, that they should be able to carry bombs against enemy night-fighter bases. On the other hand, it had to be borne in mind that the primary role of the night-fighter squadrons was defence and undue emphasis could not as yet be placed on offensive operations.

The length of this chapter may appear to be disproportionate to the amount of effort involved in night offensive operations (the day fighters flew more than 20 times the number of offensive sorties flown by the night fighters (3,856 sorties) in 1943) but several interesting techniques in night fighting were initiated which were to influence the course of R.A.F. Bomber Command's bomber support operations in 1943/1944. They will be described in some detail below.

Policy for Intruder and Bomber Support Operations:
January to June 1943

(i) Intruders

Nos. 605 and
418 Sqdn.
O.R.Bs. 1943.

Nos. 418 (R.C.A.F.) and 605 Squadrons provided the only full time intruder aircraft in January 1943 and were under command of No. 11 Group and based at Bradwell Bay, Essex and Tangmere, Sussex respectively. In March No. 605 Squadron moved to Castle Camps in Cambridgeshire where it could strike more advantageously at German-occupied air bases in Holland and later in the year moved to Bradwell Bay, No. 418 Squadron being withdrawn to Ford. Both squadrons were then equipped with Bostons III but were due to be re-equipped with Mosquitos VI (fighter bombers), beginning with No. 605 Squadron. This took longer than anticipated mainly because of the diversion of Mosquitos overseas and No. 605 Squadron temporarily adopted Mosquitos II.

The policy for intruders in the original meaning of the term (operations against homing enemy bombers and their bases) did not differ in any respect from the policy settled in 1942. Six intruder aircraft and their crews were placed on a state of readiness each night and a further two aircraft and their crews were to stand by at two hours availability from thirty minutes after sunset until one hour before first light.

F. Cmd. Op. Inst.
No. 38/1942 and
13 Sept. 1942 in
A.H.B./IIM/A2/3A.

Ibid., Addendum,
3 Dec. 1942.
A.H.B./IIM/A2/3A.

The Intruder Controller at Headquarters Fighter Command was responsible for issuing nightly operational orders but the intruder squadron commander could, if he thought necessary, modify instructions regarding the route and height of the aircraft under his command in the light of his own operational experience and he was responsible for briefing each of his crews for an operation. The Station Commander of the airfield on which the aircraft were based was responsible for deciding whether or not flying conditions were suitable. A number of amendments were made to the Fighter Command Operational Instruction on intruders, clarifying the system of reporting the results of intruder sorties to Headquarters Fighter Command.

Addendum Nos.
2-3 to F. Cmd.
Op. Inst.
No. 28/1942,
12 Jan. 1943 and
14 April 1943
A.H.B./IIM/A2/4A.

(ii) Night Rangers

The G.A.F., helped by bad flying weather, was able to contain the British fighter force in the winter months with a minimum of effort and loss on its part. As the Mosquitos and Mustangs of Fighter Command had a good radius of action from coastal bases in Great Britain and as the enemy night-bomber offensive against this country had declined, it was an opportune moment to start ranger operations both by day and by night with the following four objects: to keep the enemy fighter force in the west dispersed and on the 'qui vive'; secondly, to destroy enemy bomber, reconnaissance, training and communications aircraft; thirdly, to disrupt enemy flying training; finally, to maintain a series of attacks upon enemy transport targets.

F. Cmd. Op. Inst.
No. 7/1943,
21 Jan. 1943 and
19 Mar. 1943 in
A.H.B./IIM/A2/4A.

Air Marshal Leigh-Mallory decided that his Beaufighter squadrons were to keep three aircraft (which had been stripped of all A.I. equipment) available for ranger operations and an additional six aircraft, (Mosquitos II) were to be allotted to each of ten Mosquito A.I. squadrons for the same purpose, (1) also with their A.I. equipment removed. Their striking power was limited to the fire from four 20-millimetre cannon. It was hoped that the full complement of these Mosquitos would be received by April 1943 but like those on demand for Nos. 605 and 418 Squadrons there was a long delay and by the target date there still remained two ranger flights to be formed, while the remainder, although formed, had fallen below establishment.

N.A.D. (43) 1,
12 March 1943
para. 32 and
N.A.D. (43) 3,
8 June 1943,
paras. 39-42.

The essential difference between night ranger and intruder operations was that whereas the former type of operation was planned and executed without reference to enemy air activity intruders were directed against definite hostile air activity, known or anticipated. The intruder crews had to remain at 'readiness' until ordered to take off by the Intruder Controller and while in the air were diverted from one target to another. Night ranger aircraft operated more on a

F. Cmd. Op. Inst.
No. 7/1943,
21 Jan. and
19 March 1943,
A.H.B./IIM/A2/4A.

(1) Including Nos. 25, 29, 410, 151, 157, 456, 307, 264, 256 Squadrons.

free-lance basis; they were able to take off at pre-determined times and had to maintain radio silence although they were able to use V.H.F./R.T. on the homeward journey.

Preliminary instructions on ranger operations were issued on 31 January but they were amended in detail on 19 March. The most suitable conditions for operating each type of aircraft were carefully defined. Night ranger operations by Mosquitos against airborne targets were to take place whenever there was suitable weather. Night ranger operations by Mosquitos and Beaufighters against ground targets were to take place in fine weather only, during the period of four nights before, during and three nights after the night of full moon. Beaufighters were not allowed to operate against airborne targets with the exception of the full moon period.

The small number of experienced A.I. night-fighter crews were forbidden to fly on night-ranger operations on the grounds that they were indispensable to the night air defence of the United Kingdom (this order excluded the four most proficient night fighter air crews in each squadron from taking part). In addition, squadron and flight commanders were not allowed to fly more than one ranger operation per month. Ranger crews were to undergo a specialized form of training, involving navigation, location of flak areas and instruction in the attack of ground and air targets. Their names were to be notified to Headquarters Fighter Command. The above conditions did not, however, apply to Beaufighter night-fighter squadrons; their A.I. training was no less important, but the restrictions imposed on Beaufighter ranger sorties made it improbable that the number of ranger sorties flown would affect the state of A.I. training in the squadrons.

Nos. 10, 11 and 12 Groups were to plan their own ranger operations and each Group was responsible for controlling the sorties of all ranger aircraft in its own area regardless of whether they belonged to that Group or not. Aircraft flew from forward bases in the three Groups concerned and this ruling made it possible for an aircraft to pass from one Group's sphere of influence to another. The continental areas of operation allotted to the three Groups was as follows: No. 10 Group, France west of the line Le Havre-Bourges-Lyons; No. 11 Group France east of No. 10 Group area and Germany south of latitude 50° north and all Belgium; No. 12 Group was to cover Germany north of latitude 51° north and all Holland. No areas were allotted to Nos. 13 and 14 Groups; their ranger aircraft were to operate from advanced airfields in the three forward Groups.

Group controllers were to notify all details of night ranger sorties to the Intruder Controller at Headquarters Fighter Command. The latter with his comprehensive knowledge of the situation was able to assist individual Groups with information about enemy movements. The Intruder Controller was also responsible for Nos. 609 (Typhoon) and 137 (Whirlwind) Squadrons which operated in an area restricted to Walcheren-Lille-Arras-Amiens-St. Valery-en-Caux and No. 11 Group was therefore instructed to keep ranger aircraft out of this area as far as possible.

On certain occasions ranger aircraft of all Groups were to engage in a concerted plan under the direction of the Intruder Controller. He could also call upon the night ranger force if the intruder effort seemed to him to be insufficient.

Ranger Ops.,
13 May 1943.
A.H.B./IIM/42/4A.

Air Marshal Leigh-Mallory was later prompted to revise the somewhat drastic restrictions on A.I. crews, squadron and flight commanders preventing these persons from taking part in ranger operations and on 13 May they were cancelled. He emphasised that the role of the night-fighter force was primarily defensive and that over much attention was being paid to the offensive side with the result that insufficient care was being taken to maintain the standard of A.I. training in night fighter squadrons and, on the other hand squadron commanders were not gaining enough experience of intruder operations and were unable to advise and superintend the training of aircrew under their command. It had to be remembered at the same time that successful A.I. crews were few and far between and as they formed an 'irreplaceable backbone of the night-fighter force they were not to be exploited'. New instructions to this effect were issued on 13 May 1943.

(iii) Introduction of Serrate

R.A.F. Signals
Hist. Vol. VII,
'Radio Counter-
Measures', Chap. 14,
pp. 170-172.

By the end of 1942 both the Allies and the Germans were endeavouring to discover some means whereby radar transmissions from an aircraft could be exploited by the opposite side. One method adopted by the R.A.F. was to home fighter-bomber aircraft on to the transmissions from enemy radar stations (a method known by the codename Abdullah) and aircraft of the Fleet Air Arm were experimenting with a technique enabling them to discover and attack enemy surface vessels by means of the latter's radar emanations. Secondly there was Serrate. Serrate-equipped aircraft were able to detect enemy night fighters when their A.I. was on, at ranges up to 80/100 miles and to home onto them. For successful completion of the interception indications of range were essential and thus a complete A.I. equipment (the Mark IV) was used in conjunction with Serrate and the navigator was assisted by Gee. The Air Staff realised that offensive homing operations would assume great importance in the support of the night-bomber offensive, for Bomber Command could not be expected to keep its losses low by relying on evasion tactics for an indefinite period. The codeword Serrate applied to both the type of equipment used and to the actual operations. Serrate was installed in the Beaufighters of No. 141 Squadron (which was to concentrate solely on this type of operation) in the spring of 1943 and a short period of intensive training in the new interception technique in which Defiants were used as the 'enemy' began on 12 May at Drem.

Memo on Bomber
Support Ops.,
para. 17
20 Sept. 1943.
A.H.B./IIM/42/4A.

The first sorties with Serrate were flown on 14/15 June. From the start there were ample contacts with the Lichtenstein A.I. in use in the German fighters. During the first three months of Serrate operations one successful combat resulted on the average from every eleven sorties despatched or from every nine sorties completing a patrol. All except one contact - an initial visual - resulted from Serrate homing. The operations revealed, however, that the Beaufighter aircraft did not possess sufficient speed or manoeuvrability at the heights at which they encountered enemy aircraft during Bomber Command raids but they were not, in fact, equipped with Mosquito aircraft until November 1943.

N.A.D. (43) 9
16 Sept. 1943,
paras. 35-36 and
No. 141 Sqn.
O.R.B.

(iv) Operation Flower (Bomber Support)

An earlier chapter showed that in the autumn of 1942 intruders were instructed to support Bomber Command operations as they had little to do because of the lack of enemy night bomber activity. In early 1943 Fighter Command was

See Pt. II,
Chap. 8.

N.A.D. (43) 1,
12 March 1943,
para. 34 and
N.A.D. (43) 3,
para. 42.

A.H.B./IIH/241/3/801,
Encl. 21A and
Min. Nos. 18-20,
Encls. 29A-30A.

Ibid.,
Encl. 26A.

See Part IV,
Chap. 15.

A.H.B./IIH/241/3/801,
Encls. 36A-41A and
A.M. File C.S. 12253,
Encls. 25A-30A.

Ibid., Encls.
30A, 36A.

A.M. File C.S. 12253,
Mins. Nos. 27-28.

A.H.B./ID8/103.

Nos. 418 and 605
Sqn. O.R.Bs.

experiencing a shortage of suitable aircraft for bomber support duties. In the first place the intruder force had been depleted by the departure of No. 23 Mosquito Squadron to Malta and No. 3 Squadron equipped with long-range Hurricanes was being converted to Typhoons. The Bostons were unsatisfactory for the role of bomber support, firstly, because they were unwieldy to fly when loaded with bombs and this practice was discontinued with the permission of the then Commander-in-Chief Fighter Command, Air Marshal Sir Sholto Douglas; secondly, because they were too slow for the interception of German night fighters especially as the enemy had resorted to switching off navigation lights in the vicinity of base. The long delay in replacing the Bostons with Mosquitos VI has been noted and the Mosquitos with which No. 605 Squadron were temporarily equipped did not carry bombs. This made it impossible to operate more than one intruder over an airfield at a time because of the difficulty of recognition. Finally, the use of the latest type of A.I. over the Continent was prohibited which ruled out the regular Mosquito squadrons and the performance of the only A.I. allowed overseas, the Mark IV, was considered to be unsatisfactory.

On the other hand the new Serrate equipment promised well although its development was proceeding slowly and Air Marshal Leigh-Mallory was also willing to provide ten to twenty of the Mosquito II ranger aircraft to reinforce bomber support operations. The latter measure was interrupted in the early summer by the need to support Coastal Command's offensive against U-boats in the Bay of Biscay (Operation Instep) which was then at its height.

Meanwhile with the night bomber offensive developing in strength against targets in the Ruhr and north-west Germany, Sir Arthur Harris urgently needed aircraft from February onwards to muzzle the night-fighter bases in the vicinity of bomber routes in particular Venlo, Gilze-Rijen and Leeuwarden, as German prisoners of war stated that these three were of particular importance. He complained that every other command obtained priority over the bomber offensive and on 29 June wrote to the Air Ministry in this vein. He followed this up with a personal letter to Sir Charles Portal on 3 July in which he demanded a force of about 100 night fighters to be available for bomber support and he wanted the bombing of night-fighter bases to be redoubled. The Chief of Air Staff replied that it would be impossible to decrease the British night-fighter defences any further and informed Sir Arthur Harris that he would shortly have the benefit of an additional two Serrate squadrons while the ranger flights were to be equipped with Mosquito fighter bombers and they were to be assisted in bombing airfields by aircraft of No. 2 Group. He himself believed that there was no need for Fighter Command to support Bomber at the expense of Coastal Command and held that the latter could be assisted on the days when Bomber Command had been unable to operate on the previous night. Air Marshal Leigh Mallory was informed that provided he did not neglect the air defence of Great Britain his intruder squadrons were to give full support to the bomber offensive. At the same time Air Marshal Leigh-Mallory was adamant that he could do little in the way of disorganizing the enemy night-fighter defences until his intruders were equipped to carry bombs (the Whirlwinds could only operate at short range).

By the end of June the situation had improved. Nos. 418 and 605 Squadrons were fully equipped with Mosquito VI

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fighter/bombers carrying 250 pound and 500 pound bombs⁽¹⁾ while the Mosquito II of the ranger flights, also due to re-equip shortly with Mosquito VI fighter-bombers were operating on bomber-support operations, hence-forward to be known by the code name Flower. The task for these aircraft was to cover enemy night-fighter bases in proximity to the routes taken by Bomber Command aircraft. In time the Mosquitos were to carry either bombs or long-range tanks. The former were to be carried whenever targets were near enough to dispense with the long-range tanks.

(v) System of Control of Flower and Serrate Operations

Between 0900 and 1000 hours Bomber Command passed to the Intruder Controller at Headquarters Fighter Command the target or alternative targets for the night's operations. During the morning the Intruder Controller discovered from the intruder squadrons, No. 141 Squadron and the controllers of Nos. 10, 11 and 12 Groups the number of aircraft available and informed them of the night's general tasks. He instructed them regarding the alternative fitting of long-range tanks or bombs. At 1430 hours the detailed Bomber Command programme was passed to the Intruder Controller who passed it on in turn to No. 141 Squadron. The plan for Flower operations was made from this detailed programme and at 1600 hours a conference, attended by the Group Captain Night Operations, and a meteorological officer, was held at Fighter Command at which the plan was approved or amended and then submitted to the Senior Air Staff Officer for confirmation, afterwards being sent to the Groups and Stations concerned.

The tactical plan for Serrate operations was made by the Officer Commanding No. 141 Squadron. He decided on the spacing of his aircraft within the bomber stream and the height at which they were to fly and was responsible for briefing the aircrews accordingly.

Intruder and Bomber Support Operations January to June 1943⁽²⁾

In January 1943, 98 intruder sorties were flown against enemy bombers, training aircraft, night-fighter bases and a number of leaflets were also dropped. Two enemy aircraft were claimed to have been damaged for the loss of a Hurricane of No. 3 Squadron. In February 60 intruder sorties were flown and during the full moon period on 15/16 and 16/17 February a number of aircraft penetrated into north Germany, some reaching as far as Oldenburg, Osnabruck and Dortmund. Ranger operations began on 15/16 February and were continued on the following night, Nos. 25, 256 and 151 Mosquito Squadrons and No. 409 Beaufighter, Nos. 137 Whirlwind and 609 Typhoon Squadrons taking part besides the full-time intruder squadrons. A total of 27 ranger sorties was flown in the month and 23 night rhubarbs. Two Do.217's were claimed to have been destroyed, one aircraft possibly destroyed and two damaged for the loss of three R.A.F. fighters. Various targets on the ground including trains and locomotives as well as canal traffic were attacked.

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- (1) No. 418 Squadron dropped its first bombs (250 pound) on 21 June, the first Fighter Command Mosquito Squadron to do so in 1943.
 - (2) For a summary of night offensive operations in 1943 See App. No. 31.

Memo. on Bomber
Support Ops.,
20 Sept. 1943,
paras. 3-8.
A.H.B./IIM/A2/4A.

F. Cmd., Form 'Y',
Jan.-June 1943.

In March the offensive was increased to 71 intruders, 33 rangers and 26 night rhubarbs. Two Do.217's were claimed to have been destroyed and one damaged. A total of 25 ranger sorties were flown between 20/21 and 23/24 March - the full moon period. Three fighter aircraft failed to return.

April saw the ranger effort increased to 128 sorties and these were 86 intruders and 21 rhubarbs. A total of 144 attacks was made on enemy shipping, rail, motor and canal transport. Four aircraft including a Do.217 and a Ju.188 were claimed to have been destroyed and one aircraft damaged. Seven fighter aircraft were lost through enemy action.

The powerful operations of Bomber Command aircraft against targets in the Ruhr in May was the reason for a more intensive effort (amounting to 122 sorties) against enemy night-fighter bases by intruder aircraft of Fighter Command. As noted earlier, these operations were subsequently known by the code name Flower. On 16/17 May intruders of Nos. 25 and 410 Squadrons supported the Bomber Command attack on the Mohne and Eder Dams and afterwards received a message from Headquarters Bomber Command thanking them for the 'special intruder effort which was successfully carried out in every way'. There were 225 intruder, 166 ranger and 4 night rhubarb sorties flown. Six enemy aircraft including a Ju.88, an He.111 and an F.W.190 were claimed to have been destroyed while eight aircraft were damaged. Eight R.A.F. fighters were lost.

A.H.B./IIH/252/110,
Encl. 26A.

Fighter Cmd.,
Form 'Y'.

In June the effort against enemy night-fighter bases was slightly higher than that against other types of target (120 sorties as opposed to 111 directed against enemy bombers and the night training organization). A total of 48 Serrate sorties in support of Bomber Command beginning on 14/15 June were flown by No. 141 Squadron.

No. 141 Sqdn.,
O.R.B. 1943.

FC/S.33846,
Pt. 1,
Encl. 1B.

The Squadron had not expected to operate on this night (it supported a raid by Lancasters on Oberhausen) and it was impossible to make plans in detail for the five sorties which were flown. Serrate contacts were first obtained near the Dutch coast and a few chases back towards England were attempted. A number of stern chases on Serrate contact alone occurred, but in most cases had to be abandoned when the enemy aircraft switched off its A.I. Three enemy aircraft thus chased were clearly conscious of pursuit; one led the Beaufighter eastwards in a series of orbits and jinks, keeping its A.I. on most of the time, for twenty minutes. The chase ended when the Beaufighter obtained a number of A.I. contacts and simultaneous visuals on several large balloons at 18,000 feet, among which the enemy aircraft had vanished. Two enemy aircraft chased the Beaufighter concerned for five and ten minutes respectively, one in a circular chase and one over the sea in a stern chase. On the second occasion the Beaufighter had insufficient petrol to 'play' and was compelled to evade.

A.I. contacts after Serrate occurred several times, a number being lost owing to difficulty in checking the correspondence between the respective 'blips'. Two A.I. dogfights occurred; one lasted six minutes and was broken off by the enemy aircraft diving away; in the other, the squadron commander, Wing Commander J. R. D. Braham and his observer Flight Lieutenant W. J. Gregory, sighted and destroyed an Me.110 at 10,000 feet near the east coast of the Zuider Zee.

It was noted at the time that, since all the bombers were Lancasters, flying in a high, fast, compact formation, the enemy fighters were flying fast to intercept the bombers and they out-distanced the Beaufighters which were mainly below the bombers and thus lacked the advantage of height on the enemy fighters. It was suggested that, in future, the Beaufighters went to the inside of the fighter belt while the bombers were going in, and to the coast later; in this way they would obtain head on instead of stern chases.

Altogether twelve enemy aircraft were claimed to have been destroyed during the month, five of them (four Me.110's and one Ju.88) were claimed to have been destroyed by No. 141 (Serrate) Squadron. A total of 169 attacks were made by intruder and ranger aircraft against ground and air targets. Four fighters failed to return.

Policy for Intruder and Bomber Support Operations:
July to December 1943

(i) Intruders

By the beginning of July the two intruder squadrons had been equipped to carry bombs.⁽¹⁾ But the fulfilment of the policy so keenly advocated by the Commander-in-Chief Fighter Command was not by any means regarded with approval by all the aircrew concerned. A number were of the opinion that the four 250-pound or even the 500-pound bombs would have a negligible effect on enemy airfields and that the advent of the new bombing policy would merely stimulate the German defences to a greater alertness thereby raising the casualty rate; finally, the carrying of bombs required the removal of long-range petrol tanks, which prevented intruder aircraft from covering north-west Germany.

Some of these points of difference were discussed at an important conference on intruder and bomber support operations held at Headquarters Air Defence Great Britain on 19 November. It was decided there that aircraft engaged on intruder operations should carry bombs but no long-range tanks as these operations seldom called for long-range flights and it was an advantage for a pilot to have both bombs and cannon at his disposal. But it was impossible to exchange long-range tanks and bombs at short notice and the conference agreed that when Bomber Command was attacking long distance targets in the winter months, the intruder squadrons supporting them would retain their 50 gallon drop tanks while No. 2 Group, then attacking targets nearer home, would continue to carry bombs. Following upon this, it was agreed that No. 2 Group, versed as it was in bombing operations, should control all Flower operations, beginning in the new year (1944) and Air Defence Great Britain, since it had access to 'Y' and radar information and intelligence about the scale of enemy effort against Great Britain, was to be responsible for intruder type operations.

On 30 November an Air Defence Great Britain Instruction again defined the object and scope of intruder operations, the

(1) It should be added that it was only possible to attack specific targets in moonlight as there were no bombsights fitted to the Mosquito aircraft. (See A.H.B./IIH/252/144, Encl. 1A in which the method for intruder bombing is laid down).

Fighter Cmd.,
Form 'Y'.

No. 605 Sqdn.
O.R.B., Entry
14 July 1943.

App. 'E' in
A.H.B./IIH/A2/4A,
15-30 Nov. 1943 and
A.H.B./IIH/252/86,
Encl. 41A.

A.D.G.B. Op Inst.
No. 6/1943,
30 Dec. 1943 in
A.H.B./IIH/A2/4A.

principles of which remained the same as noted earlier in this chapter. The Intruder Controller at Headquarters Air Defence Great Britain was to continue to direct all intruder operations. Intruders were to operate from Coltishall, Bradwell Bay, Manston, Ford, Exeter. The only new items were, that in the event of renewed heavy air attacks on Great Britain No. 2 Group was to support the full time intruder squadrons. Secondly, instructions designed to safeguard friendly aircraft were issued. Aircraft (excepting four-engined bombers) burning navigation lights over the continent were to be attacked on sight. An aircraft without navigation lights might be attacked, in the first instance, if it was acting in a hostile manner e.g. taking off or landing at an enemy airfield, or, secondly, if it had definitely been recognised as hostile by visual means.

(ii) Intruder Operations by Single-engined aircraft
(Night Rhubarbs)

A.D.G.B. Op. Inst.
No. 1/1943,
17 Nov. 1943 in
A.H.B./IIM/A2/4A and
A.H.B./IIH/252/110,
Encls. 48A-49A.

From the first week of August it was decided to increase the intruder effort with single-engined aircraft which were to operate from Manston during the moonlight period. Nos. 1, 3, 198 and 609 Typhoon Squadrons were detailed for the task, which was, in effect, the same as that carried out by the full-time intruder squadrons. Night Rhubarbs, as they were called, were only to take place on bright moonlight nights where there was no more than 5/10th cloud and aircraft were not to operate over 2,000 feet. The responsibility for deciding if the weather was fit for operations lay with the Station Commander.

Only targets of military importance were to be attacked and care was to be taken to inflict as little harm as possible on the civilian population. Flights were to be routed so as to avoid flak. The plan of operations had to be approved by an officer appointed for that task in the Group after which the gist of it was passed to the Group Controller under which the squadron was to operate and to the Intruder Controller at Fighter Command. The latter authorised the despatch of aircraft and co-ordinated times of sorties so that they did not clash either with one another or with other night operations.

(iii) Operation Flower and Formation of No. 100
(Special Duties) Group Bomber Command

A.H.B./IIH/252/110,
Encl. 47A.

On 26 July Headquarters Fighter Command instructed that all operations where intruder and ranger aircraft supported R.A.F. Bomber Command at night were to be known by the code-name Flower.

Memo on Bomber
Support Ops.,
20 Sept. 1943 in
A.H.B./IIM/A2/4A,
paras. 2, 9-10 and
16.

Flower operations had been limited during the summer months largely to the sorties carried out by the two regular intruder squadrons, for the following reasons: the squadrons which provided ranger aircraft were also involved in Operation Instep until July, the shortage of trained aircrew, the need for maintaining standing patrols in vulnerable coastal areas to provide protection against enemy bomber infiltration (in certain squadrons in Nos. 10 and 11 Groups all available aircrew had been reserved for that purpose) and the re-equipment of night-fighter squadrons with new aircraft and A.I. which entailed complete squadrons undergoing periods of training. Nevertheless even with the small number of aircraft available, it was usually possible to cover all the main enemy night-fighter airfields and several of the minor ones in the appropriate phases of large-scale raids by

N.A.D. (43) 9,
16 Sept. 1943,
para. 14.

Bomber Command. By the end of September the Mosquitos VI with which the ranger flights had by then been equipped were being transferred to No. 2 Group where they were used to re-equip Nos. 464, 487 and 21 Ventura Squadrons. They were to be used for Flower operations until No. 2 Group was required to take part in large scale operations with the Tactical Air Force.

App. 'E' in
A.H.B./IIH/A2/4A,
15-30 Nov. 1943,
Items II and V.

In November at the conference already mentioned, Flower operations were divided into two parts; firstly, the bombing of enemy night-fighter airfields just before a Bomber Command raid (this to be the primary responsibility of No. 2 Group) and, secondly, harassing attacks while the bombing was in progress and afterwards, on the return flight attacks with guns and bombs, the latter being the responsibility of the intruder squadrons. The effectiveness of the first type of operation depended upon the Bomber Command plan allowing time for No. 2 Group aircraft to reach enemy airfields ahead of the main bomber force under cover of darkness.

A.H.B./IIH/241/3/801,
Encl. 61A.

A.H.B./IIH/252/86,
Encl. 42A, Item III.

A.H.B./IIH/241/3/861,
Encl. 75A.

The approach of winter weather presented a serious obstacle to bomber support operations. Bomber Command frequently flew over the top of a bad weather belt to reach objectives beyond in areas where the weather was clear. On 17 October intruders engaged on bomber support were ordered to conform and to fly to their patrol areas at high altitudes. But intruders were more dependent than bombers on obtaining pinpoints for checking their positions and Bomber Command was to complain of the intruder's inability to operate. The conference on 19 November agreed that Flower aircraft were able to penetrate bad weather belts provided the aircrews concerned had been trained in high altitude navigation and considered that Bomber Command Pathfinder beacons might be of assistance. Following upon this the order allowing squadron commanders to cancel intruder operations on their own initiative was rescinded on 24 November and Flower operations were henceforward only to be cancelled when bomber operations were abandoned.

Requests were also made for more suitable bombs and for an efficient A.I. equipment as enemy fighters had ceased to use navigation lights; the A.I. Mark X was considered to be the most suitable as A.I. Mark V was too limited for that type of operation.

A.H.B./IIH/241/3/801,
Encls. 78A-81A.

However, Bomber Command was most anxious that A.I. Mark X or any other kind of centimetre equipment should not be used over enemy territory as they were supposed to be immune to Window and if captured by the enemy would prejudice the night-bomber offensive. On 28 December Air Marshal Leigh-Mallory assured Bomber Command that it would be consulted before any decision was taken to use centimetre equipment over enemy territory although he gave warning that A.I. Mark VIII would be used over the Continent when Overlord began. For the time being he did not consider that A.I. Mark VIII would be of much use to bomber support operations as it required accurate ground control and was unlikely to aid free-lance fighters. On the other hand A.I. Mark X might be of great value to the bomber offensive but as it was an important defensive weapon in the event of the enemy using Window in attacks against the United Kingdom, it was improbable that the Air Staff would expose it to possible capture. In any case the equipment was still in an experimental stage.

On 29 December 1943, because of the increasing enemy fighter opposition to the night-bomber offensive, new instructions were issued on Operation Flower which affirmed the tactics discussed above. The planners of Flower operations were urged to get to know the enemy's latest tactics which would assist them in devising fresh means of baffling the German air defences. The importance of only allowing highly trained aircrew to take part in Operation Flower was impressed upon Group Commanders.

A.H.B./241/3/861,
Encl. 60A.

See R.A.F. Narrative:
'The R.A.F. in the
Bombing Offensive
against Germany',
Vol. V. Annex,
Chap. 3.

During the summer months of 1943 Bomber Command operations had become more and more complicated while the bomber offensive itself was gathering momentum and the number of aircraft supplied by Fighter Command was far from adequate. Sir Arthur Harris therefore proposed on 31 August that the responsibility for bomber support operations should be taken away from the Air Officer Commanding-in-Chief Fighter Command, whose chief interest lay in defensive matters, and given to a new Group within Bomber Command which would co-ordinate and control all bomber support and radio countermeasure operations. His logical proposal was to a large extent accepted and led to the formation of No. 100 (Special Duties) Group on 3 December 1943 to which, as will be seen, several Fighter Command squadrons were seconded.

(iv) Operation Serrate

R.A.F. Signals
Hist. Vol. VII,
Chap. 14, p. 172.

The second three months of Serrate operations which ended in October 1943 was less successful than the first. One combat on an average resulted from every 35 sorties despatched, or from 26 sorties completing a patrol, in spite of the improved skill of aircrew. The reasons for this were that the enemy's system of night-fighter control had been dislocated by the introduction of Window by Bomber Command and the looser form of control adopted by the Germans gave fewer opportunities for homing by Serrate aircraft. Indifferent weather also interfered with the A.I. Mark IV equipment.

FC/S.33846 Pt. 1,
Encl. 20A and
O.R.S. (F.C.),
Rept. No. 494.

Unfortunately, as pointed out earlier, the Beaufighter VI aircraft were inferior in performance to the opposing German night fighters and many interceptions failed because of the superior speed and manoeuvrability of the German aircraft. Apart from head-on encounters, interceptions were not attempted outside the radius of four to five miles distance. The usual tactics were for the Beaufighter having picked up a Serrate contact from astern to imitate the flight of a bomber in the face of the pursuing fighter until the aircraft were less than ten miles apart, whereupon the Beaufighter would whip round and attack the enemy aircraft from astern. There were only two or three aircrew competent enough to execute these difficult tactics and it is all the more creditable that the aggregate number of claims for Serrate aircraft from 14/15 June until the end of October was 15 aircraft destroyed, mainly Me.110's, one possibly destroyed and four damaged.

Another adverse factor was that when Serrate aircraft flew over western France where there were few, if any, enemy night fighters, they were liable to be surprised by single-engined catseye fighters on which, of course, no Serrate contacts could be obtained. By September, through the use of Window, the enemy began to operate 'Fighter Nights' over Bomber Command target area with A.I. fighters and caused the Serrate aircraft to operate over the target area rather than en route to and from the target.

No. 141 Sqdn.
O.R.B.,
Nov.-Dec. 1943.

See R.A.F. Narrative: 'The R.A.F. in the Bombing Offensive against Germany', Vol V, Annex, Chap. 3.

Mosquitos II for No. 141 Squadron did not begin to arrive until the second week in November⁽¹⁾ and technical difficulties in fitting the Serrate apparatus in the new aircraft combined with poor weather prevented extensive operations that month. On 4 December the squadron proceeded from Wittering to West Raynham where it was absorbed into No. 11 Group Bomber Command along with two new Serrate squadrons (Nos. 169 and 239 squadrons previously operating with Mustangs).⁽²⁾ Their operations thus pass out of the scope of this narrative.

(v) Operation Mahmoud

Fighter Cmd. Op. Inst. No. 30/1943 dated 23 July 1943 in A.H.B./IIM/A2/4A and Memo. on Bomber Support Ops., 20 Sept. 1943 in A.H.B./IIM/A2/4A, paras. 22-24.

Hitherto efforts to entice German night fighters into action on nights when Bomber Command was not operating had been unsuccessful because of the few number of aircraft engaged on offensive sorties. Experience derived from the Serrate operations described above had shown, however, that it would be possible to use night fighters equipped with A.I. Mark IV, but without Serrate equipment, to attack enemy night fighters in areas off the bombers' route. Night fighters might patrol singly over the enemy night-fighter belt and it was more than likely that they could be located and singled out for interception. Using similar tactics as Serrate aircraft i.e. enticing the enemy to short range, and then executing a steep turn to bring the night fighter to the rear of the enemy aircraft, the Fighter Command aircraft would have the advantages of superior A.I. equipment, better fire power and, to begin with, the additional factor of surprise. When Allied bomber operations were in progress many of the contacts would be of friendly aircraft and the problem of identification would arise. Operation Mahmoud, the name by which these tactics were known, was therefore restricted to nights when bombers were not operating, or to areas lying outside the bomber's route.

Mosquitos and Beaufighters, provided they were fitted with A.I. Mark IV and all special equipment had been removed, were allowed to take part in Operation Mahmoud. Squadrons equipped with Mosquito II aircraft were permitted to convert up to six aircraft to A.I. Mark IV specially for Mahmoud operations. The Serrate squadron might also operate on nights when it was not required for bomber support. Mahmoud was, however, a temporary operation for squadrons equipped with old types of A.I. equipment and as soon as they were replaced with more advanced equipment, this operation would cease.

As with intruder operations, the Intruder Controller at Headquarters Fighter Command was responsible for allotting patrol points and height bands, for despatching aircraft and for co-ordinating all sorties. States of aircraft available for Operation Mahmoud were to be sent by Groups daily to Headquarters Fighter Command and after the Intruder conference at 1600 hours, instructions were sent to Group Controllers naming the forward bases to which Mahmoud aircraft were to be despatched for operations. They were Coltishall, Castle Camps,

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- (1) The delay was caused by the usual technical difficulties and the shortage of parts for the highly specialised equipment (A.H.B./ID8/406A).
 - (2) They reformed as Mosquito squadrons at the beginning of October 1943 and began to operate with No. 100 Group early in the new year.

Hunsdon, West Malling, Manston, Ford. In order to provide a means of identification in the event of Mahmoud aircraft intercepting one another over enemy territory, Mark IIG I.F.F. was to be carried. Operation Mahmoud required aircraft to fly at extreme range because of the targets of Bomber Command and as there were only a small number of aircraft fitted with long-range tanks, rarely more than three aircraft operated per night. Operation Mahmoud was initiated on 22/23 August by No. 96 Squadron.

A.H.B./IIH/241/3/801,
Encl. 85A.

It did not, on the whole, meet with much success, as will be seen in the section dealing with bomber support operations in the latter part of 1943, and was discontinued in the second week of December. In the first place the Mosquitos II being used were required to be re-equipped with Serrate and sent to the two squadrons then reforming in No. 100 Group. Meanwhile the squadrons carrying out Operation Mahmoud were low in aircraft and could not expect replacements when Mosquitos II were required elsewhere. Further, most of the aircrew involved were inexperienced in long distance navigation and had no 'Gee' aids to help them and were constantly experiencing failures with their A.I. equipment, probably because of the high altitudes through which they were travelling.

(vi) Operation Mandrel

Memo. on Bomber
Support Ops.,
20 Sept. 1943 in
A.H.B./IIM/A2/4A,
paras. 25-28.

Another bomber support operation was known as Mandrel. Since December 1942 No. 515 Squadron equipped with Defiants had been used to jam enemy early warning stations, known as Freyas situated along the Channel coast. Selected areas were patrolled in accordance with the requirements of Bomber Command. Operational instructions were despatched by the Duty Air Commodore at Headquarters Fighter Command and aircraft were controlled by the appropriate Sectors in Nos. 11 and 12 Groups.

At Headquarters Fighter Command it was doubted whether the jamming was really profitable. Freya stations were used for long range detection rather than for controlling interceptions. In the event of small numbers of bombers, operating, Freya equipment was used for the initial pick-up of a target, which was then selected for interception by the Wurzburg. At that time Bomber Command tactics consisted of concentrating on a single target and it seemed probable that the Wurzburg could pick up targets for interception without the assistance of a Freya.

R.A.F. Signals
Hist. Vol. VII,
Chaps. 8 and 11,
pp. 87-88 and
147-148.

By July 1943 the Freya stations had changed their frequency band and Mandrel operations ceased, pending the design and construction of new equipment to be installed in Beaufighter II aircraft. Early in 1944 No. 515 Squadron, whose equipment with new radio countermeasures apparatus during the latter part of 1943 had proved unsuccessful, was transferred to No. 100 Group to carry out intruder or alternatively R/T jamming operations.

Intruder and Bomber Support Operations: July to December 1943

During the next six months the intruder sortie per se became a rarity as a result of the decreased enemy air activity against the British Isles. From July to September only 198, and for the last three months no more than 142, sorties were flown against enemy bombers and against the

A.H.B./II/39/2
(A.D.G.B. O.R.S.
Rept. No. 17).

German night flying training organisation. Five aircraft were claimed to have been destroyed in this type of operation.

The offensive effort by night was mainly directed against enemy night-fighter bases and Mahmoud and Serrate sorties were also flown in support of the night bomber offensive. Ranger operations decreased in number from June onwards because the ranger squadrons were required for operations over the Bay of Biscay and secondly, because the support of Bomber Command was on a higher priority while in the autumn the ranger Mosquitos were transferred to No. 2 Group.

Ibid., para. 3.

In July there were 277 Flower and 'pure' intruder sorties (of these 177 were flown against night-fighter bases), 50 ranger and 65 Serrate sorties. Eight enemy aircraft were claimed to have been destroyed for the loss of five R.A.F. fighters. In August there was a total of 382 intruders (including 258 sorties flown against enemy night-fighter bases), 56 ranger, 12 Mahmoud and 101 Serrate sorties. Out of 81 aircraft seen, twelve were claimed to have been destroyed, two possibly destroyed and seven damaged. Eight fighters failed to return. On 23/24 August Nos. 605 and 418 Squadrons supported a heavy Bomber Command raid on Berlin by patrolling the distant airfields of Stendal, Parchim and Griefenwald; two enemy fighters were believed to have been damaged. Throughout the month numerous attacks were made on ground targets of every kind.

Ibid., para. 3.

But the climax of intruder operations in 1943 came in September when 269 intruder (including Flower), seven ranger, 32 Mahmoud, 53 Serrate and 17 miscellaneous sorties were flown. Out of 126 enemy aircraft identified, (1) 20 were claimed to have been destroyed, one possibly destroyed and two damaged for the loss of seven fighters. The German night fighters adopted new tactics this month and instead of attempting to intercept the R.A.F. bombers en route to the target the majority of them were moved to the target area for interception. These fighters were frequently moved back several hundred miles, so that at the end of the operation they were forced to land at airfields round the target area. From 23 September onwards intruders made free lance patrols round the bomber target instead of covering specified enemy bases. The new tactics immediately bore fruit and on 23/24 and 27/28 September ten aircraft were claimed destroyed, nine of which were shot down by the free-lance method.

A.H.B./IHK/85/88B,
Encl. 10A and
Memo. on Bomber
Support Ops.
paras. 12-14,
20 Sept. 1943 in
A.H.B./IIM/A2/4A.

At this point a digression is necessary to explain the tactics of Flower operations. Aircraft flew at low levels, usually well below 5,000 feet, both to and from their targets. The route was planned so as to avoid areas known to be heavily defended by light flak. On locating the enemy airfield the intruder patrolled in the vicinity with the intention of intercepting enemy fighters. The following table illustrates the average time spent patrolling over targets according to their distance.

(1) The large number may be accounted for by the fact that aircrew on bomber support operations reported brilliant and incautious lighting on airfields and a great use of lights in aircraft in September.

| Distance of Target from base (miles) | 100-150 | 150-200 | 200-250 | 250-300 | 300-400 | Over 400 |
|----------------------------------------|---------|---------|---------|---------|---------|----------|
| Average time spent on patrol (minutes) | 52 | 41 | 46 | 36 | 33 | 25 |

The chances of contacting the enemy were rare unless the latter was burning navigation lights. Bombs were usually dropped at the end of a patrol in an attempt to disorganise activity on the airfield. Only 250 and 500 pound bombs were used; they were fused for delayed action not exceeding 30 minutes as well as for instantaneous action.

It was not expected at the time that many hostile aircraft would be shot down in Flower operations as compared with the intruder operations against bombers returning from raids against the United Kingdom. The German night fighters were under no obligation to concentrate round their base and were able to take off and land at suitable intervals without using navigation lights and without fear of collision. Nevertheless the bombing of airfields, by damaging the runways, might prevent aircraft from taking off at a critical moment or might necessitate the diversion of those already airborne. While the damage caused by these raids was unlikely to be great, it was hoped that at least some disorganisation would occur on airfields and at patrolling centres. If that disorganisation came at a critical period of a heavy bomber raid, the operation was fully justified.⁽¹⁾

A.H.B./II/39/2,
para. 3.

The good results obtained in the summer could not be maintained and during October and November there was a sharp drop in the number of aircraft seen, combats and aircraft destroyed while there was a corresponding increase in losses by intruder and bomber support aircraft. In October one aircraft was claimed to have been destroyed, one possibly destroyed and three damaged for four night fighters. In November, Air Defence Great Britain losses amounted to nine for two aircraft claimed destroyed, one possibly destroyed and five damaged. Only 24 sorties obtained visuals on enemy aircraft out of a total of 221 sorties.

Ibid.,
para. 8 et seq.

An analysis by the Operational Research Section of Air Defence Great Britain reached the following conclusions. Bad weather in these months meant that few aircraft reached their targets and lessened the chances of sighting both the target airfield and enemy aircraft. The attack of long range targets by Bomber Command made it necessary to patrol farther afield⁽²⁾ and this necessarily reduced the time that an intruder could remain over the target which again lowered the chance of sighting enemy aircraft. The failure to convert visuals into combats (in October nine combats developed from 23 visuals in bomber support operations and for intruders one combat out of eight visuals) was due partly to the greater number of aircraft which doused their lights (this began

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- (1) Unfortunately little evidence has come to light from German sources of the effects of intruder operations (See conclusion of this chapter).
 - (2) The average distance of bomber targets from the U.K. had increased from 290 miles in June to 470 miles in November. Targets included Munich, Leipzig, Berlin, Stuttgart, Mannheim/Ludwigshafen.

suddenly in November) and partly to the increased number of pursuits by enemy aircraft. Intruders were opening fire too early thereby lessening the chance of lethal strikes and giving the enemy an opportunity of dowsing lights or otherwise evading. The rise in losses in November was ascribed to three possible reasons: bad weather conditions increasing the risk of the intruder losing its way and running out of fuel; the extreme range of patrol areas which in turn magnified the risk of running out of petrol of the intruder engaged in combat; finally, an unexpected aggressiveness on the part of enemy night fighters.

Ibid.,
paras. 9-10.

Mahmoud operations had also proved expensive. In October and November just over four per cent of the aircraft despatched had failed to return. Confusion had arisen probably because too many contacts were obtained at night fighter orbit points while over the target identification between friendly and hostile aircraft became difficult. A.I. jamming was frequent and added to the confusion. The radio operators on Mahmoud operations were still inexperienced in A.I. Mark IV technique and on A.I. technique generally when adapted to dog fights rather than to the stern chases to which they had been accustomed in defensive operations. Mahmoud operations ceased, as already explained, early in December.

The confusion with friendly aircraft and the jamming of A.I. equipment was also experienced by the Serrate squadron but the chief trouble of Serrate operations was the constant failure of the aircraft and radar equipment. Twenty-two per cent of the sorties were abortive due to radar equipment failures and six per cent owing to other failures in the aircraft. These problems were now taken over by Bomber Command after the formation of No. 100 Group.

Ibid.,
para. 11.

The Operational Research Section offered six recommendations. Intruder crews were to be given the necessary training to conduct high level navigation to their targets when operations took place beyond bad weather belts. All aircraft despatched on long-range patrols should fly with maximum fuel load; if possible 100 gallon drop tanks should be obtained. Extra fuel was especially valuable in winter months when bad weather conditions were prevalent. Centimetre A.I. in cat's-eye intruders would be of the greatest possible assistance. Some form of rearward warning device or backward-looking A.I. would also be very useful with or without centimetre A.I. Intruder crews were, whenever possible, to hold their fire to within 600 feet of intercepted aircraft. The formation of a specialised Mahmoud squadron might increase the efficiency of this operation. The Serrate squadron should be re-equipped with new aircraft and reliable radar equipment.

A.D.G.B.,
Form 'Y'.

In December bad weather still further hindered night operations. Only 100 sorties were flown and three aircraft were believed to have been destroyed, one possibly destroyed and two damaged. One fighter was lost. On two nights, the 20/21st and 22/23rd in the only good weather conditions encountered the number of enemy aircraft seen suddenly increased and it was then as well as on the 23/24th that the above claims were made.

Summary of Intruder and Bomber Support Operations in 1943

In 1943 a total of 3,278 night offensive sorties were flown, excluding anti-shipping sorties; 72 aircraft were claimed to have been destroyed, nine probably destroyed and

F. Cmd./A.D.G.B.,
Form 'Y'.

46 damaged for the loss of 60 aircraft (one aircrew saved). So far it has proved impossible to check these claims accurately with German documents as the losses of Luftflotte 3 and Luftflotte Reich are not divided into operations by night and day.

Enemy Doc.
A.H.B.6 Trans.
No. 157.30.

Ibid.,
A.H.B.6 Trans.
No. VII/149.

In a casualty return of Luftflotte 3 covering the period April to December 1943 the date, location and type of aircraft is given and the cause of loss is sometimes attributed to night fighters and in other cases merely classified as 'unknown'. From these figures it is possible to deduce that 30 aircraft were lost to intruders. Luftflotte Reich also suffered a number of casualties from intruders. From September to December some 18 night fighters or bombers, mostly Me.110's or Ju.88's were shot down and eight aircraft damaged probably as a result of intruder action.

The total intruder effort for 1943 was a great improvement on the previous year and reached its peak in September and useful assistance albeit on a small scale was given to operations by Bomber Command. The Bostons had been replaced by Mosquitos armed with cannon and bombs and they were able to penetrate deeper into Germany. Three squadrons in No. 2 Group were available for bomber support operations. Finally, valuable experience was gained in the use of A.I. and Serrate-equipped aircraft over the continent which was to benefit the more complex bomber support operations of 1944.

Policy and Operations, Intruder and Bomber Support:
January to May 1944.

(i) Planning of Bomber Support Operations

A.H.B./I/H/241/3/582A,
Encls. 2A, 6A and
11A.

Flower or Bomber Support Operations by which latter name they were to become known to the exclusion of any other was to be the subject of a good deal of acrimonious dispute between Bomber Command and Air Defence Great Britain from early 1944 onwards. The problem of control in which no less than four formations were concerned was particularly vexatious. The newly created No. 100 Group was eager to gather all night-fighter squadrons engaged on bomber support under its control but Air Defence Great Britain, which had inaugurated bomber support operations and which already had a workable organization with a fund of experience at its disposal, contended that it was best fitted to direct night-offensive operations. Thirdly, certain Mosquito fighter-bomber squadrons of No. 2 Group were engaged in attacking night-fighter bases but at the same time the Group's main function was to support impending operations on the continent. No. 8 (Pathfinder) Group also for a short time was engaged in the attack of night-fighter airfields.

Ibid.,
Encl. 6A.

A loose system of control was evolved during the spring of 1944, which, though far from satisfactory, appeared to satisfy temporarily all the formations concerned. Briefly the procedure was this. No. 100 Group informed the Intruder Controller at Headquarters Air Defence Great Britain of the plan for the night's bomber operations including likely airfields to be used by the enemy fighters and on this the Intruder Controller prepared a plan for his two intruder squadrons. (The fighters of No. 100 Group patrolled the beacons and target areas while the intruders of Air Defence Great Britain patrolled German night-fighter bases after the main bomber attack up to a range of 500 miles; they were able to patrol for 15 minutes at the maximum range). Meanwhile No. 100 Group had informed No. 2 Group of suitable

airfields they might bomb within a restricted range of 375 miles. These attacks were to take place when the German night fighters were presumed to be landing.⁽¹⁾ No. 2 Group then drew up a plan to conform with the general plan of bomber operations which was passed on to Air Defence Great Britain by No. 100 Group. By that time the Intruder Controller had divulged to No. 100 Group his plan for the intruder squadrons. But the total number of night fighters available for bomber support was extremely inadequate (no more than about 30 aircraft per night at that time) while the imminence of Overlord diverted the attention of No. 2 Group and the renewed German night-bomber attacks against the capital caused a reduction in bomber support aircraft available on any one night. However the Air Commander-in-Chief, Air Chief Marshal Leigh-Mallory, assured Bomber Command all possible support without prejudicing the 'major role' for which his squadrons existed.

Ibid, Encl. 2A.

Bomber Command suffered heavy losses during March and a conference, at which plans for strengthening the fighter support for night-bomber raids were discussed, was held at the Air Ministry on 20 April with the Chief of Air Staff presiding. The members, which included Sir Arthur Harris, Sir Trafford Leigh-Mallory and Sir Roderic Hill, could find no objection against the use of A.I. Mark X overseas (permission to use A.I. Mark X thus was subsequently granted by the Combined Chiefs of Staff; this will be discussed in a later section) and therefore they decided that two A.I. Mark X squadrons were to be transferred from Air Defence Great Britain to No. 100 Group immediately.⁽²⁾ Bomber Command was to be further reinforced by the transfer of the two regular intruder squadrons in Air Defence Great Britain after the Allied Armies had been established on the continent. No. 23 Squadron temporarily on attachment in the Mediterranean theatre was to transfer at once to No. 100 Group.⁽³⁾ Lastly, all night intruders were to be fitted with A.I. Mark X, backward-looking A.I. and Serrate. To what extent these proposals were carried out will be seen in the next chapter.

Ibid,
Encls. 12A and
16A.

Early in the new year Headquarters Bomber Command complained that little bombing by intruders had been carried out and that Air Defence Great Britain was reluctant to operate when the weather was bad. Further, it suspected that the Air Officer Commanding No. 2 Group was more interested in the preparatory operations for Overlord than in bomber support operations. But night offensive operations by Air Defence Great Britain in January were markedly poor due to bad weather. In fact from January to April the percentage of sorties

A.H.B./
114/241/3/861,
Encl. 86A.

O.R.S. (A.D.G.B.)
Rept. No. 68,
para. 5,
27 June 1944 in
A.H.B./11M/A2/5A.

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- (1) Formations of No. 2 Group taking part were Nos. 138 and 140 Wings including Nos. 464, 487, 613 and 21 Squadrons equipped with Mosquitos VI taken from the original Mosquito ranger flights. Each aircraft carried four 500 pound bombs.
 - (2) The two squadrons were Nos. 85 and 157 Mosquito Squadrons. No. 85 Squadron represented the elite of the British night-fighter force and it had been longest in the line under No. 11 Group. No. 157 Squadron, though not yet equipped with A.I. Mark X, was well versed in navigation, having co-operated with Coastal Command in operations over the Bay of Biscay.
 - (3) Permission was obtained for No. 23 Squadron's return to the U.K. from the C.C.S. and the Squadron arrived home early in June.

obtaining visuals had remained almost constant at about 22 per cent; the number of visuals per cent sorties reached a maximum of 61 per cent in February later descending to 48 per cent. The enemy aircraft destroyed or probably destroyed per hundred sorties varied between 8 per cent and 10½ per cent.

Two other types of intruder operation continued to be carried out by Air Defence Great Britain: intruder operations against enemy bombers and operations against training activity. Apart from the two regular intruder squadrons, Nos. 29, 151, 157, 307 Mosquito and Nos. 3 and 486 Typhoon Squadrons also took part. These three types of operation will now be considered in turn.

(ii) Operation Flower

O.R.S. (A.D.G.B.)
Rept. No. 68,
para. 4.

In the latter part of 1943 enemy night fighters were flying free-lance patrols in the bombers' target area and were landing within about fifty miles of the target. By the beginning of 1944 they had evolved new tactics. They now attempted to intercept the bomber stream before the bombing began as well as over the target, and then pursued the bombers on their return journey. Aircraft engaged on Flower operations were therefore no longer required to fly at a maximum range to attack night fighters. The main reason for failure to reach targets was bad weather but operations were only seriously affected in January.

Ibid,
paras. 2-3.

From January to April 443 Flower sorties were despatched by Air Defence Great Britain, of which 336(1) reached their objectives. More aircraft were seen on the ground than in the air and 25 aircraft were claimed to have been destroyed in the air and on the ground for the loss of three intruders and the accidental destruction of one. German night-fighter pilots had become very wary of intruders and it was usually difficult to find targets in the vicinity of night-fighter bases. However, aircrew often gave their positions away when taxiing in, by wing tip lights, cockpit lighting, exhaust flames and ground crews signalling with lamps.

A.H.B./118/80/19.
No. 2 Group
Ops. Digest,
No. 6, p. 3,
25 April 1943.

A reference must be made to the Flower operations carried out by No. 2 Group. From 20 December until the last week in April 306 Flower sorties were flown at night; of these 129 attacked the primary target, 16 the alternative target and 161 were abortive, many of them because of weather.(2)

(iii) Intruder Operations

O.R.S. (A.D.G.B.)
Rept. No. 68,
para. 4.

Intruder operations against enemy bombers returning from the attack of targets in the United Kingdom naturally depended upon the amount of hostile activity directed against this country. Thus the 'Little Blitz' in February and March caused an increase in the number of sorties. From January to April 229 sorties were flown against homing bombers;

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- (1) This total does not include the effort made by No. 2 Group.
 - (2) The Mosquito squadrons of No. 2 Group were to play an important part in the North West European Campaign and became highly skilled in the low level attack of transportation and other ground targets. (See A.H.B. Narrative: 'Liberation of N.W. Europe', Vols. IV to V).

20 aircraft were attacked in the air out of 132 aircraft seen and eleven aircraft were claimed to have been destroyed. Out of 16 aircraft either seen landing or on the ground three were claimed to have been destroyed. Only one fighter was lost through enemy action and two were lost through other causes. The operations reached their climax in February during the enemy raids against London when 12 out of 60 aircraft seen in the air were attacked half of this number being claimed as destroyed.

(iv) Operations against Enemy Night Flying Training

Ibid.

The only type of pre-arranged intruder operation was directed against enemy training activity. From January to April 95 sorties were flown of which 74 reached their target; 14 aircraft were attacked in the air out of 32 aircraft seen and 13 aircraft were claimed to have been destroyed or probably destroyed in the air and one damaged for the loss of three fighters. The extreme range of many of the targets patrolled, Bordeaux, Marseilles, Stendal, Gardelegen, Kitzingen to take a few examples at random, made or marred the success of an operation. When the target had not been attacked before, the intruders frequently achieved surprise; they found enemy aircraft relatively easy to shoot down because of the lack of warning and they were usually seen at once, often in large numbers. Against this, it was frequently impossible to predict weather conditions over the target area or the amount of enemy air activity likely to be in progress and both factors caused many sorties to be abortive. Another handicap was that when there was no activity at the airfield chosen as target the defences were quickly alerted on to the intruder. The low losses experienced may be attributed partly to the element of surprise achieved and partly to the experience of the intruder crews sent on this duty.

Offensive Operations in May 1944

A.D.G.B.,
Form 'Y'.

In May, in spite of activities associated with Operation Overlord, 289 sorties including Flower operations were flown by Air Defence Great Britain. Attacks were made on airfields in northern France and in north-west Germany including St. Dizier, Chateaudun, Dijon, Coulommiers, Tours, Melun, Laon/Athies, Gutersloh, Rheine, Handorf, Nordhorn, Plantlunne, Twente/Enschede. A total of 16 aircraft was claimed as destroyed or probably destroyed and 16 damaged for the loss of four fighters. After 27/28 May No. 2 Group ceased to carry out Flower operations in order to support Twenty-First Army Group on the Continent.

Release of A.Is. Mark VIII and X for Intruder Operations

Mins. of Mtg.
at H.Q.
A.D.G.B.,
1 Apr. 1944 in
A.H.B./IIM/A2/
5A.

On 1 April a conference on intruder operations was held at Headquarters Air Defence Great Britain attended by staff officers in charge of intruder operations and by the commanders of No. 605 and 418 Squadrons. Because of the renewed air attacks against London they decided to increase the number of aircraft at readiness for intruder operations to six aircraft per squadron (four at readiness and two at one hour's notice) while the balance of available aircraft was to be used on Operation Flower. Hitherto eight to ten aircraft were usually reserved for the latter operation.

Another item discussed was the need to illuminate enemy airfields in order to catch night fighters as they were landing. A 20-lb. light bomb was being produced and would be

used when available. As an alternative it was suggested that it might be possible to spot enemy aircraft by using path-finder type flares. Rocket-projectile flares (Glow-worm) could also be used after Mosquitos had been fitted with rocket-projectile rails but at that time they were on top priority to the Royal Navy.

Ibid.

Meanwhile the problem of whether or not to use centimetre A.I. over enemy occupied territory had recurred. For if A.I. equipped night fighters could cross the Channel they would have a better chance of intercepting German raiders operating against this country. If this was permitted there was no reason why centimetre A.I. should not be installed in intruder aircraft. Bomber Command no longer objected as it now believed that it would take the Germans at least nine months to copy A.I. Mark VIII but, on the other hand, there was every reason to suppose that they were already making a similar type of equipment themselves.

A.H.B./IIM/252/114,
Encls. 22A and 25A.

The ban on A.I. Mark VIII was lifted on 1 May 1944 and that on A.I. Mark X on 4 June, on the eve of D-Day, enabling centimetre A.I. to be used on Flower and intruder operations. But with the imminence of the landings in Normandy, the responsibilities of Air Defence Great Britain in safeguarding the preparations for invasion in southern England were particularly onerous, while shortly after D-Day all available night-fighter squadrons became absorbed in operations against the flying bombs, and trials with A.I. Mark VIII and X were therefore restricted to a small number of sorties flown by the Fighter Interception Unit, shortly to be re-designated Fighter Interception Development Squadron, beginning on 7 June.

Night Fighter Estab.
Rept. No. 1,
24 Nov. 1944 in
A.H.B./IIM/A2/5A.

By the end of October this squadron had flown 62 sorties with A.I. Mark VIII and 27 with A.I. Mark X the former producing 29 contacts resulting in 11 visuals which led to claims for six aircraft destroyed and one damaged, while the latter produced 15 contacts leading to seven visuals and three aircraft claimed destroyed. In addition two aircraft were destroyed without the use of A.I. equipment. The trials revealed that free lance patrols using these two types of A.I. were profitable, especially as enemy night fighters used lights or pyrotechnics very sparingly when near base and only four of the aircraft claimed destroyed could have been brought to combat without the use of radar. Of the two, the A.I. Mark X was considered to be superior because it possessed a greater range and its extensive azimuth cover gave a greater number of contacts than the Mark VIII. This had been anticipated before the trials began. The trials also established that well trained A.I. night-fighter squadrons would, with a little experience, find no difficulty in changing over to intruder operations.

Mtg. H.Q. A.D.C.B.,
7 Oct. 1944 in
A.H.B./IIM/A2/5A.

The preoccupations of Air Defence Great Britain during the summer of 1944 made it impossible to resume extensive intruder/Flower operations until October when Bomber Command was planning a fresh offensive against targets in the Ruhr. A new phase then began. Nos. 605 and 418 Squadrons which had been the mainstay of the intruder effort from 1942 to 1944 and had acquired valuable experience in this type of operation were transferred to No. 2 Group where they were to operate in a ground support role.⁽¹⁾ In their place five Mosquito

(1) In September and October 1944 Nos. 605 and 418 Squadrons flew daylight ranger sorties over the Baltic area, Austria and the Balkans from airfields in Belgium and Italy. (No. 605 and 418 Squadron C.R.Bs.).

squadrons (Nos. 25, 307, 406, 29 and 151) were to specialise in bomber support operations fitted with A.I. Mark X, backward looking A.I. and Gee amongst other equipment. A brief account of their activities will be related in the following chapter.

Summary of Period January to May 1944 and Conclusion

The total score claimed by Air Defence Great Britain for the period January to May 1944 was 49 aircraft destroyed or probably destroyed in the air and 22 on the ground, a total of 71 aircraft against 18 intruders missing and accidentally destroyed. Once again it is impossible to extract accurate figures from the casualty returns of Luftlotte 3 and Luftlotte Reich but a very rough estimate might be 65 aircraft, largely Me.110's, destroyed including 11 destroyed on the ground, 11 damaged due to intruders. A number of these casualties could have been caused by No. 100 Group Bomber Command or by fire from heavy bombers themselves.

In the period 1943 to June 1944 intruder operations had changed from one of a strictly defensive to that of an offensive character. Until the end of 1942 intruder operations had been complementary to the defence of the British Isles; they had prevented the enemy from using his forward bases for short flights to Great Britain and from carrying out double sorties by compelling him to locate his bombers farther back. But on the decline of enemy long range bomber raids in 1943 and the extension of the Allied night bombing offensive, Fighter Command's intruder squadrons flew farther afield and performed the following tasks:

- (i) Patrols of enemy night-fighter bases in support of large scale attacks by R.A.F. Bomber Command.
- (ii) Visits to enemy fighter training areas to disrupt his training.
- (iii) Attacks on transportation and other targets.

On the face of it, it would appear that these offensive operations had an insignificant effect on the G.A.F. From the scanty evidence available it is certain that little material damage was done but that the nuisance value was great. Night-fighter pilots, many of whom were far from skilled at this period, often had to be diverted to unfamiliar airfields after a sortie and accidents were not infrequent. The dropping of even small calibre instantaneous or short delayed-action bombs while flying was in progress at a night-fighter base may well have had a demoralising effect.

Interrogation of G.A.F. officers immediately after the war has revealed that no special methods were employed in combating intruders on an airfield other than that the anti-aircraft guns were turned to face the landing runway in order to fire at any intruder which attempted to attack aircraft in the process of landing. When R.A.F. night intruders were known to be in the vicinity, boundary lights were usually flicked on and off to indicate to friendly aircraft that it was unsafe to land. Any aircraft attempting to land after this signal had been given was fired at without further warning.

The largely experimental bomber support operations in the period provided valuable experience, particularly in regard to

A.D.I.(K) Rept.
No. 359A, 1945,
in Vol. 28.

Serrate, although the number of aircraft destroyed was not large. The provision of suitable aircraft either able to penetrate deeply equipped with long-range tanks or to drop bombs was slow. Nevertheless by the end of 1943 airfields in eastern and southern Germany and Czecho-Slovakia as well as in all parts of France were liable to harassing attacks from Mosquito aircraft. (1)

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- (1) The inability of the Germans to intrude effectively over Great Britain provides an interesting counterpart to this conclusion besides illustrating the growth of Allied air superiority. Among reasons given by a G.A.F. officer after the war were the efficient fighter defences, R.D.F. and fighter control. The shortage of fuel naturally affected operations. The necessity to carry long range tanks in order to attack British and U.S. bomber bases would have put the German aircraft at a disadvantage when the superiority in speed of the Allied fighters was a critical factor.
(A.D.I. (K) Rept. No. 3528/1945).

CHAPTER 17

AIR OPERATIONS UNCONNECTED WITH OPERATION OVERLORD AND
CROSSBOW COUNTER-MEASURESIntroduction

In this final chapter it is intended to gather together the activities of Air Defence Great Britain/Fighter Command which fall outside the context of the narratives dealing with major operations in the period 1944/1945. During the summer months of 1944 Air Defence Great Britain was preoccupied with two tasks: it supported the landings on the Continent (Operation Overlord) and, secondly, was responsible for the defence of the country against the flying bombs and later the rockets. The narratives prepared by the Air Historical Branch⁽¹⁾ which deal with these subjects cover the operations of Air Defence Great Britain adequately and make further analysis redundant.

The expulsion by the Allied armies of the enemy from the coasts of north France, Belgium and a large part of Holland, together with the winning of air superiority by the Allied Air Forces, had largely removed the threat of attack from orthodox aircraft and Fighter Command for the most part was engaged in the support of the bomber offensive over Germany. But the air defence of the British Isles remained, as always, its prime consideration. It was undoubtedly due to the existence of a small but alert fighter force of this country backed up by a vigilant ground organisation that the enemy did not attempt (apart from a few relatively insignificant attacks) any serious air operations in the final stages of the war against the U.K.

Reduction of Air Defences and Tasks of Fighter Command

On 15 October 1944 the Allied Expeditionary Air Force was disbanded and Air Staff SHAEF under the direction of Sir Arthur Tedder controlled the operations of the Tactical Air Forces. Air Defence Great Britain reverted to its old title of Fighter Command and came under control of Air Ministry again. Air Marshal Sir Roderic Hill, who had been in command during the crucial period of the Normandy landings and the flying bomb attacks, remained as Commander-in-Chief and continued to hold that post until the end of the war. He had already submitted his proposals to the Air Staff for the reduction of Air Defence Great Britain, both as a consequence of the more favourable military and air situation and because of the pressing need for economies in manpower. After examination by the Chiefs of Staff (A.A.) Sub-Committee they were approved by the Deputy Prime Minister and sent out as a directive to Air Defence Great Britain on 22 September.

A.H.B./II/74/3.

Ibid.

The new arrangements were based on the assumption that the east coast was still subject to attack from flying bombs and long range bombers but not west of a line Humber to Southampton. Fighter defences supported by full radar and Royal Observer Corps cover were to be maintained east of Cape Wrath - Falkirk - Leyburn - Tamworth - Brackley - Gloucester - Bournemouth including the Shetlands and the

(1) Namely 'The Liberation of North-west Europe', Vols.III-V and this Narrative, Vol.VI.

Glasgow-Clyde area. Reduced fighter defences with full Royal Observer Corps cover but reduced radar cover were to be maintained west of a line Gloucester-Bournemouth and in the industrial area of south Wales. The air defences including radar and Royal Observer Corps cover in Northern Ireland and in the Portree and Oban areas were no longer required. The rest of England, outside those areas provided with air defences, now enjoyed a relaxed black-out but full Observer Corps cover continued to be provided in the event of an emergency. No other air defences were to be retained in these areas. All balloon defences, with the exception of the personnel and resources required to deploy and maintain in action a barrage of some 800 balloons which might be required to counter any development of air-launched flying bomb attacks, were to be disbanded.

Nos. 9, 10,
11 and 12
Group O.R.B.s.
1944.

These measures led to the elimination of No. 9 Group, the operational commitments of which passed to No. 12 Group on 4 August (it retained its responsibilities as a parent group of Officer Training Units and Tactical Exercise Units until 18 September), while No. 10 Group became semi-operational (it closed down on 2 May 1945). Fairwood Common, Portreath, Middle Wallop, Honiley, Newcastle and Digby Sector Headquarters also closed down in the summer and autumn of 1944. In April 1945, Fighter Command consisted of the following Groups and Sectors:-

| <u>Group</u> | <u>Air Officer Commanding</u> | <u>Sector</u> |
|--------------|-------------------------------------------|---------------------------------|
| No. 10 | Air/Cdre. A. V. Harvey 1 Nov. 1944 | { Colerne { Exeter |
| No. 11 | A.V.M. J. B. Cole-Hamilton 1 Nov. 1944 | { Biggin Hill { North Weald |
| No. 12 | A.V.M. J. W. Baker 1 Jan. 1944 | { Coltishall { Church Fenton |
| No. 13 | Air/Cdre. J. A. Boret 26 Nov. 1940 | { Turnhouse { Kirkwall |

A.H.B./II/74/3.

In addition a number of measures were taken to meet the threat of air-launched flying bomb attacks. Night fighter and intruder patrols were to be maintained during the hours of darkness. The eastern gun box consisting of 136 H.A.A. guns and 210 L.A.A. 40-m.m. guns disposed in Essex and round the Thames and Medway estuaries were to be retained. Fighter squadrons were to move to north-east England in the event of air attacks developing over the Humber area.

F.Cmd. Order
of Battle,
28 Dec. 1944.

At the end of December 1944 there were 31 day-fighter squadrons in Fighter Command⁽¹⁾ including 11 Mustang III and 13 Spitfire IX (mostly high-flying) and three Spitfire XVI squadrons. The night-fighter force consisted of eight Mosquito squadrons, including five Mosquito XXX squadrons for bomber support operations, three Mosquito XVII squadrons and a night-flying Tempest squadron for anti-flying bomb operations.

(1) of which one was non-operational.



Mustang III



Wreckage of a train carrying Flying Bombs
after Fighter-Bomber attack on 1 September 1944.

No. 10 Group had been reduced to two squadrons (including one air/sea rescue squadron), while the strength of No. 12 Group had decreased to seven squadrons and No. 13 Group (responsible for the defence of Scotland) to three squadrons. The bulk of the day and night-fighter squadrons was thus contained in No. 11 Group.

The tasks of Fighter Command from the autumn of 1944 to the end of the war in May 1945 were threefold. Firstly, it was responsible for providing counter measures against the rockets and flying-bombs which consisted mainly of fighter-bomber attacks and armed reconnaissance against installations and communications in the Netherlands and north-west Germany. A small number of aircraft were also kept at readiness to deal with attacks by orthodox aircraft such as intrusions over bomber airfields and minelaying operations off the east coast. Secondly, a force of long range fighters was organised to provide escort and cover for the daylight penetrations of Bomber Command against Germany. Thirdly, the night-fighter squadrons trained for and carried out offensive operations in support of Bomber Command attacks on Germany by night. It will be recalled that these operations were initiated by Fighter Command but with the growing strength and complexity of heavy bomber operations a special Group (No. 100 Group) was created late in 1943 to co-ordinate radio counter measures and other bomber support operations. Fighter Command, however, strongly contended that its night offensive operations should not be controlled by the Headquarters of another Command and it continued to hold out against the absorption of its night-fighter squadrons by Bomber Command. Also in an offensive capacity it sent out a small number of ranger aircraft by day and by night to attack aircraft in the area and on the ground deep in enemy occupied territory. The main features of these operations will now be related.

See Chap. 16

Day Fighter Operations

(i) Long Range Escort to Daylight Attacks on Germany by R.A.F. Bomber Command - 27 August 1944 to 25 April 1945.

During its period under control of Headquarters Allied Expeditionary Air Force, Air Defence Great Britain had carried out a large number of escort operations and fighter sweeps over France and the Low Countries in connection with Operation Overlord. It had also taken part extensively in the air-borne operations at Arnhem. In this section it is intended to deal with the escort and support of penetrations by R.A.F. Bomber Command by day over Germany. On 27 August Bomber Command recommended daylight bombing operations east of the Rhine with an attack by 244 Lancasters and Halifaxes on Homburg in the Ruhr. Escort was provided by nine squadrons of Spitfires IX. This operation marked a new phase in the two Command's activities and until the end of the war No. 11 Group was to maintain up to 14 Mustang squadrons and five squadrons of Spitfires IX or XIV exclusively for long-range escort duties.

By the end of September 1944 there were seven Mustang III squadrons available in Air Defence Great Britain for long range escort duties. In addition to the four squadrons (Nos. 129 and 306, 315 and 316 (Polish) Squadrons) already based in

south-eastern England, Nos. 19, 65 and 122 had been transferred from 2nd T.A.F. together with four Spitfire IX squadrons in exchange for five Tempest and two Spitfire XIV squadrons. A number of Spitfire squadrons in the meantime were converted to Mustangs and by the end of April 1945 there were no less than 16 Mustang squadrons available.

A.H.B./ID4/84.

The Air Staff resisted any suggestions that were advocated by the protagonists of strategic bombing at this time to create a long range fighter escort force solely for the use of Bomber Command which would be controlled by the latter in the same way that the VIIIth U.S. Fighter Command was controlled by the VIIIth U.S. Air Force.⁽¹⁾ It was recognized that a comparison could not be drawn as the U.S. fighters were not burdened with any defensive responsibilities. No attempt was made to define roles for the R.A.F. fighters. Thus, the Spitfire, basically a defensive fighter, was used until the end of the war for escorting heavy bombers over the Ruhr and its range became less of a handicap when airfields on the continent became available for use. The Mustang, primarily an offensive fighter, had also proved its worth in a defensive role - against the flying bombs. Similarly the fighter control organization in Great Britain had shown itself sufficiently flexible to be used either for defensive or for offensive purposes.

Ibid.

Bomber Command's daylight operations over Germany in the autumn and early winter of 1944 were governed in the first place by the necessity to attack targets around mid-day in order that fighter escorts might reach base before darkness fell. It was decided that the training of Mustang pilots in navigating by night and in landing in darkness, which had already begun, must be speeded up to enable greater flexibility in the timing of heavy bomber attacks. Fighter Command, after consultations with Bomber Command, agreed to provide escorts up to a range of 280 miles from bases in England when 'last light' operations were intended, which would entail fighters returning for the last 100 to 150 miles in darkness and making a night landing. Spitfires were unable to take part on this type of operation because, even with the aid of 90 gallon drop tanks, they had an insufficient reserve of fuel to make night landings. On 20 October Air Marshal Hill reported to the Deputy Chief of Air Staff that the training of Mustang pilots in night flying had reached an advanced stage. Spitfires also practised night flying in the event of Bomber Command attacking targets nearer to base, but they were unable to take part in any operations east of the Ruhr until airfields on the continent became available to them for refuelling and rearming.

Ibid.

Secondly, the number of targets that could be attacked by Bomber Command were limited because the R.A.F. Mustangs, for the most part, were not equipped with overload fuel tanks fitted in the fuselage and thus had a restricted range. The radius of action of these Mustangs, after allowing 15 minutes at a fuel consumption of 60 gallons per hour for manoeuvring under combat conditions and a ten per cent fuel reserve, was not more

(1) See also R.A.F. Narrative: 'The R.A.F. in the Bombing Offensive against Germany', Vol. VI, Chap. 5, pp. 120-122. It was realised that close co-operation between Bomber and Fighter Commands already existed and that re-organization would be a hindrance rather than a help.

than 450 miles. It was considered that the extra tanks impaired the combat efficiency of the Mustang⁽¹⁾ while the amount of work which the modifications would involve would take too long and was too complicated for conversion to be practicable. However replacement Mustangs were to be fitted with the additional rear fuel tank while Spitfires were also to be fitted with extra tanks which would enable Bomber Command to attack in daylight targets such as Hamburg, Brunswick or Nuremburg.

Ibid.

The lack of airfields on the continent presented another problem. A number of them could only be used in fair weather and others had been severely damaged by Allied bombing. Congestion on all of them was inevitably caused by aircraft of 2nd T.A.F., Ursel, in Belgium, became available for No. 11 Group Spitfires in December 1944 and Maldegem became available early in 1945. Ursel could provide emergency accommodation and rearming and refuelling facilities for a maximum of six squadrons. In dry weather the number could be increased to ten squadrons if only rearming and refuelling were required. The two airfields enabled Spitfires to fly 100 miles east of the Ruhr.

Ibid.

R.A.F. Signals
History, Vol. IV,
Chap. 25, p. 448.

By the end of 1944 Fighter Command had established a procedure for the escort of daylight bombing raids. Co-operation between the two Commands in planning these operations was good and their unity of purpose was reinforced by the frequent exchange of visits between Bomber and Fighter Wing leaders and by close liaison between the two planning staffs. No. 25 (Base Defence) Sector, responsible for the night defence of the British Sector in France, maintained V.H.F. control of Fighter Command escorts over the continent, regardless of whether the aircraft were operating from airfields in this country or from Holland, and a direct telephone line was established between No. 11 Group and No. 25 Sector in order that the latter could be informed of any change of plan affecting the fighters under No. 25 Sector control. Teleprinter communication between Headquarters No. 11 Group, No. 25 Sector and Ursel and Maldegem was also provided so that operational orders (Form D) were received there at the same time as at sectors and airfields in England. Briefing of squadrons operating from airfields on the continent was the responsibility of No. 25 Sector which was in telephonic communication with Ursel and Maldegem. The Microwave Early Warning Set (M.E.W.) of the VIIIth Air Force which was sited at Aachen had been linked by telephone with No. 25 Sector and was available, when VIIIth Air Force commitments allowed, for long range direction of No. 11 Group fighters. Similar arrangements were made with the Type 70 set which was put up in January 1945 to co-ordinate the Group Control Centre and the various radar posts in No. 83 Group. The 'Y' and meteorological services of No. 25 Sector were also placed at the disposal of No. 11 Group's fighters.

Ibid, p. 443.

Ibid,
pp. 461-462.

The operations, as far as Fighter Command was concerned, were arduous but uneventful for the most part. By September 1944 the enemy's day-fighter force was no longer able to contest Allied superiority in the air. Lack of fuel,

(1) In a fully loaded condition the Mustang was unstable until approximately 40 gallons of petrol had been used from the rear fuselage tank.

a shortage of trained and experienced pilots, surveillance of their airfields in northwest Germany by the Allied Tactical Air Forces, put the G.A.F. at a severe disadvantage. Only occasionally was it able to intervene with any effect against Allied daylight attacks and, when it did, was content merely to cut off stragglers from the loose formations or gaggles adopted by the Lancasters and Halifaxes. What told most upon the escorting pilots was the monotony and strain of long hours in the cockpit endeavouring to keep in touch with the bomber stream frequently in poor visibility. But there was an ameliorative feature of the operations in that aircraft which had been damaged or had run short of fuel were able to land at airfields in liberated territory. From time to time squadrons landed on the continent when bad weather closed down their home base.

From 1 September to 15 October, the date when Air Defence Great Britain became Fighter Command again, 21 bomber escorts were provided. Nine fighters were lost, the pilots of two aircraft being saved. Only one enemy aircraft was claimed to have been destroyed. The targets of Bomber Command were oil refineries in the Ruhr such as Bottrop, Sterkrade, Wanne Eikel and Kamen. Requests for close support by the Army were also answered and Emden and Wilhelmshaven on the north German coast were attacked.

One operation which provided greater hazards than usual for bombers and their escort was an attack on 7 October against the Kembs dam on the Rhine north of Basle in which three Mustang squadrons of the North Weald Sector accompanied 13 Lancasters of No. 5 Group. The first wave of bombers was to attack at 8,000 feet and the second at zero feet. No. 129 Squadron provided top cover, No. 315 (Polish) covered the low-flying force and No. 306 (Polish) Squadron was detailed to silence flak positions defending the dam. The approach to the target was uneventful and enemy opposition was not aroused until the first two Lancasters of the low-flying force went in to attack. The second bomber was hit by flak after crossing the dam. Meanwhile No. 306 Squadron had temporarily subdued the anti-aircraft gunfire enabling the remainder of the force to place their delayed action bombs accurately. The fighters covering the target area did not turn for home until the last bomb was dropped and landed at dusk after being airborne for four and a half hours.

From mid-October until the end of the year 59 bomber raids were escorted by Fighter Command (6,794 sorties) for the loss of 20 fighters (three pilots saved); 15 enemy fighters were claimed to have been destroyed. Altogether 124 bombers were lost but flak accounted for the greater number of these casualties. Among the targets attacked by the bombers, in addition to those already mentioned, were Leverkusen, Cologne, Solingen, Honberg, Duisburg, Gelsenkirchen, Witten, Trier, Coblenz and the Roer Dams. Sixteen fighter sweeps were flown over northwest Germany; most of them were intended to be diversions in support of the bombing force. Airfields, road, rail, and waterborne traffic were attacked.

Enemy opposition was very slight during October and November despite heavy attacks on the Ruhr. The Eighth Air Force, on the other hand, withstood several desperate attacks over central Germany organised by General Galland. Occasionally an Me.262 jet propelled fighter would be sighted but these

A.D.G.B.,
Form 'Y'.

No.129 Sqn.
O.R.B.

Fighter
Command,
Form 'Y'.

Ibid.

aircraft usually evaded combat. By December the G.A.F. on the Western Front had been reinforced and roused for action in anticipation of the surprise counter attack in the Ardennes which was to be launched in the middle of that month. On the 5th pilots of eight Mustang III and four Spitfire Squadrons escorting 140 heavy bombers to Hamm and the Ruhr Dams sighted approximately 100 enemy fighters, but the latter mostly evaded combat. Three of the enemy were claimed to have been destroyed but no bombers or fighters were lost.

Int/Tacs.
No. 308/1944
in App. I of
B. Cmd. O.R.B.
A.H.B./IIM/Al/
5A.

On 12 December, 144 heavy bombers were despatched against Witten, south of Dortmund in the Ruhr, and this operation is remarkable for the fact that it produced a fiercer enemy fighter reaction than had been experienced since the early autumn. Eight Mustang squadrons from Andrews Field and North Weald escorted the bombers to the target. The Lancasters were plotted by the enemy as they crossed the Belgian coast at 1301 hours, an hour before reaching their target. They made a detour, flying 100 miles east-south-east, then 100 miles north-east to a point 40 miles north of the Ruhr before flying southwards to Witten. From 1258 hours a large number of Me.109's and F.W.190's took off from airfields in north-west Germany. At about 1400 hours 40 enemy fighters were seen circling to the east of Witten and of these, at least 12, attacked the bomber formation in threes, eventually breaking up into attacks made singly. This combat over the target lasted five or six minutes and involved mainly the leading bombers. Both bombers and fighters retaliated vigorously. Altogether ten of the enemy were claimed to have been destroyed, five by the bombers, one of which was attacked four times and claimed to have shot down an Me.410 and Me.109, and five by the Mustangs. Nine Lancasters were attacked, of which four were shot down by enemy fighters; one bomber was destroyed by flak, one by bombs and two to unknown causes. Heavy flak was directed at the bombers and their escort from the target area.

Fighter
Command
Form 'Y'.

From January 1944 until the end of the war in Europe in May 1945 Fighter Command took part in 102 bomber escort operations (a total of 8,878 sorties); 32 fighters were lost (including three not due to enemy action) of which nine pilots were saved. Losses to heavy bombers amounted to 108 aircraft, for the most part due to flak; a remarkably low total considering the hundreds of sorties flown. Twenty-nine fighter sweeps over north-west Germany, mostly in connection with bomber operations, were also made by Fighter Command.

Int/Tac. No. 51/
45, App. I.
B. Cmd. O.R.B./
A.H.B./IIM/Al/
6A.

Ibid - No. 75/45,
App. I, A.H.B./
IIM/Al/6A.

In January and February 1945 daylight raids by Bomber Command continued to be made against oil and communications targets in the Ruhr, the latter type of target including the Dortmund-Ems canal and railway viaducts on the eastern fringes of the Ruhr. The tempo of daylight operations increased in March when preparations by the Allied Armies for crossing the Rhine began; 47 bomber escorts took place in this month alone. On 11 March 1079 bombers flew to Essen; 11 Mustang squadrons escorted the bombers from England to the target area; seven Fighter Command Spitfire Squadrons which took off from Ursel and Maldegem in Belgium covered the bombers withdrawal. Enemy fighters did not attempt to intercept this large-scale penetration in spite of the many stragglers which would have made easy targets. On 25 March, the day after the crossing of the Rhine at Wesel, Bomber Command attacked Hamm. It was one of the deepest daylight penetrations made to that date and six Spitfire squadrons and one Mustang squadron which took off

SECRET

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from Belgium escorted the bombers as they approached; 11 Mustang squadrons covered the force as it flew into the target area. In addition fighters of the Eighth Air Force swept the area in support of their own heavy bomber attacks. The R.A.F. bombers flew in two separate gaggles about ten miles apart in line astern. Both gaggles were about six miles long and one to two miles wide; height was good and there were no stragglers during the penetration. The formation flying of the bombers that day was highly praised by Fighter Command. No enemy interceptions took place.

Jet-propelled fighters were active in the last week of March in the Bremen-Hamburg area but their intervention was of a desperate, suicidal character rather than a calculated defensive action. On 31 March 468 bombers made for Bremen escorted by 12 Mustang III and IV squadrons. The last of the three waves of bombers, 100 Lancasters of No. 6 Group, arrived several minutes late at the rendezvous with the fighters and were left behind by the escort which assumed that the bomber force was complete. About 30 Me.262's and a few F.W.190's pounced on the group of bombers selecting aircraft on the edge of the gaggle. They dived from 24,000 feet zooming up again to fire from below. Their speed was estimated to be 600 miles per hour and they were believed to be using self-exploding ammunition. Only Nos. 309 and 122 Squadrons, providing target cover, saw the unescorted gaggle, the latter squadron attempted to engage but could not close to less than 700 yards. No 309 Squadron then appeared and, dropping reserve tanks, dived down to engage from 25,000 feet. The enemy dived away into cloud before they could be intercepted. Seven bombers were shot down by the enemy and ten more sustained 17 attacks. Bomber crews claimed to have destroyed four fighters. One Mustang was lost.

Fighter Cmd,
Form 'Y'

A.H.B./ID4/
381/B, Mins. of
DCAS Mtg.,
4 Apr. 1945.

Ibid.

A further engagement took place on 9 April when, in another raid on Hamburg, No. 309 Squadron claimed to have destroyed three Me.262s and damaged two others. April was the last month of heavy bomber operations in Germany and such targets as Nordhausen, Nuremberg, Bayreuth, Swinemunde and Berchtesgaden were bombed. The cessation of rocket (V2) attacks against Great Britain at the end of March was the reason for six Spitfire fighter/bomber squadrons, which had been employed in counter measures against rocket installations and other targets in the Netherlands, being made available for heavy bomber support duties. Arrangements were made for refuelling and rearming the squadrons by 2nd T.A.F. in the Eindhoven area. However, the number of heavy bomber operations was rapidly declining owing to the swift advance of the Allied Armies across Germany. The last bomber escort undertaken by Fighter Command was on 25 April when Wangerooze, a fortified island on the Dutch coast, and Berchtesgaden were raided but no encounters with enemy fighters were reported. Arrangements were also made early in April for four squadrons of the Polish Mustang Wing to cover and support spearheads of Twenty First Army Group advancing through northern Germany, if it became impossible to make landing grounds quickly enough for the short-ranged fighters of 2nd T.A.F. In the event, the squadrons were not used in this role.

In conclusion it must be stressed that throughout this period Allied air superiority was maintained so consistently that there was little for fighters escorting bombers to do and that the air combats which have been described above were

exceptional in a large number of virtually unopposed operations as far as the enemy air force was concerned.

(ii) Fighter Escort to Coastal Command and Other Daylight Operations

A.H.B./IIS/
110/5/65.

Fighter Command also provided escorts to Coastal Command Beaufighters and Mosquitos attacking enemy shipping off the Danish and south Norwegian coasts. In January 1944 Air Chief Marshal Leigh-Mallory had agreed - after much discussion going back to August 1943 - to provide Mustang III escort when torpedo-carrying aircraft of Coastal Command were operating against a major German naval unit such as the Tirpitz, in Norwegian waters. Later this concession was extended to escort of anti-shipping strikes. (The primary task of the Mustangs at that date, it will be remembered, was to escort U.S. heavy bombers when flying into Germany). Fighter Command had hitherto been averse to accepting the commitment, particularly before the Mustangs were available, because of the great strain to pilots flying single-engined fighters for three to four hours at a stretch over the sea, the difficult weather conditions likely to be encountered and the navigational problems which the flights involved. Subsequently it was found that special navigational training was unnecessary and in the course of normal operations Mustang pilots became used to flying for long distances over the sea. Operations off the Norwegian coast were initiated by No. 315 (Polish) Squadron late in July 1944. Shortly afterwards No. 316 (Polish) Squadron also took part.

Fighter Cmd.,
Form 'Y'.

A total of 66 operations was escorted during the period 15 October 1944 until 4 May 1945. Fifteen R.A.F. fighters were destroyed but the pilots of three of them were saved. The operations were, like the escorts overland, largely uneventful but their long hours spent while flying over the sea meant little relaxation for the pilots.⁽¹⁾ One of the few encounters with enemy aircraft took place on 7 December when No. 315 Mustang Squadron flying from Peterhead escorted a force of Beaufighters and Mosquitos detailed to attack shipping off the Norwegian coast. Near Gossen a Mustang was shot down and at once some 15 Me.109's and F.W.190's appeared from all directions. During the dog fights which followed four Me.109's and two F.W.190's were claimed to have been destroyed (the latter two fighters colliding in mid-air); two other aircraft were believed to have been probably destroyed.

Ibid.

On 16 February an encounter took place off the Danish coast and No. 65 Mustang Squadron claimed to have destroyed three Me.109's without loss to itself. The same Squadron on 25 March beat off an attack by about 20 F.W.190's on Mosquitos near Bergen for the loss of one Mustang. They claimed to have destroyed three of the enemy.

These operations culminated with Coastal Command's attacks on the great concourse of shipping which, in the last days of the war, put out from ports on the north-east German

(1) It was considered that the Mosquito fighter was unsuitable for operations against single-engined fighters. In order to reduce the strain on the Mustang pilots, squadrons were to be changed over at two monthly intervals. (Entry 10 Jan. 1945, F. Cmd. O.R.B., A.H.B./IIM/A2/6).

A.H.B./ID4/
381 B, Mins of
D.C.A.S. Mtgs,
24 and 26 Apr.
1945.

coast in an attempt to reach safety in Scandinavia. Meanwhile it had been decided by the Air Staff that two Mustang squadrons engaged on long-range escort duties to Bomber Command should be made available exclusively for escort to Coastal Command aircraft attacking shipping in Norwegian or Danish waters. The squadrons were to be based at Peterhead. In the first week of May seven escorts were flown for Coastal Command over the Kattegat and Skaggerak without any molestation from the G.A.F. On 4 May Fighter Command flew on its last offensive operation. Three escorts were provided for Coastal Command. Of these the most eventful was that carried out by Nos. 64 and 126 Squadrons. Having seen the Beaufighters sink a U-Boat, attack and damage a small destroyer, three U-Boats and a motor vessel of about 5,000 tons, they sighted in the Little Belt four U-Boats in line astern and three in line astern 24 miles north of Kiel, proceeding north and followed by a Sperrbrecher.⁽¹⁾ The Mustangs made two attacks and damaged five submarines. One Mustang was shot down by flak either from the Sperrbrecher or from a U-Boat.

Fighter Omd.,
Form 'Y'.

Fighter Command flew 318 shipping or weather reconnaissances during the period 15 October 1944 to 8 May 1945. Three fighters were lost, the pilots of two being saved. The Command also took part in anti-midget submarine patrols in the spring of 1945. These latter operations will be dealt with in detail in the R.A.F. Narrative, 'The R.A.F. in Maritime Warfare', Volume V.

Night Fighter Operations

(1) Defensive Operations by Air Defence Great Britain/Fighter Command - June 1944 November 1944.

In the early stages of the Normandy battle night fighters of Air Defence Great Britain and No. 85 Group (the latter containing the night-fighter element of 2nd T.A.F.) afforded protection both over the beach-head and later over the battle-field after the armies had broken out into France. No. 85 Group remained under the control of Air Defence Great Britain until the occupation of air bases in the Low Countries whereupon its squadrons moved over to the continent.⁽²⁾ The latter's night-fighters continued to give support in the battle area in conjunction with No. 85 Group until the end of November. During that time 276 combats took place resulting in 221 aircraft destroyed, 12 probably destroyed and 31 damaged.

Upon the launching of the enemy's flying bomb offensive, Mosquito night-fighter squadrons, including the two intruder squadrons and the two Mosquito squadrons recently transferred to No. 100 Group were used to intercept these missiles by night and later No. 501 Tempest Squadron flew on night operations for this purpose. The night-fighter squadrons were also used to intercept the He.111's from which, in the middle of September, flying bombs were launched against this country. The intruder squadrons patrolled airfields used by the He.111's and scoured the areas in which the enemy had located sites for the launching of long range rockets.⁽³⁾

-
- (1) A type of block ship or merchant ship heavily armed.
 - (2) Main H.Q. of No. 85 moved to Normandy on 17 August 1944.
 - (3) Full details of countermeasures against the flying bombs may be found in Vol. VI of this narrative.

A.H.B./IHK/85/
88A.

(ii) Plans for Night Offensive Operations in Support of
Bomber Command October 1944

A.H.B./IIH/
241/3/585,
Encl. 52A.

The commitments of Overlord and Crossbow had left few opportunities for the support of night operations by Bomber Command. The latter was in any case itself fully engaged in support of Overlord during the summer months. Thus night-fighter offensive sorties reverted to the old type of intruder operation, the attack of bomber bases behind the enemy front; these attacks were carried out by Nos. 605, 418 (R.C.A.F.), 29, 367 Squadrons. Headquarters Air Defence Great Britain was clearly best suited to plan operations and it also co-ordinated the intruder effort of No. 100 Group.

A.H.B./IIH/
241/3/582A,
Encls. 30A,
35A - B.

With the arrival of autumn and the intensification of the night-bomber offensive against Germany bomber support operations again came to the fore. Nos. 85 and 157 Squadrons were now required to return to No. 100 Group as were the two regular intruder squadrons in Air Defence Great Britain which had been promised to Bomber Command as soon as Allied troops were well established on the continent. The Air Officer Commanding No. 100 Group estimated that a minimum of 150 night fighters should support a large scale night raid of which 60 should be provided by Air Defence Great Britain. By Mid-October the commitments of Fighter Command, as it was now redesignated, had been reduced and Sir Roderic Hill declared that it would be feasible to make five out of the total of eight night-fighter squadrons then in the Command available for bomber support operations. Sir Arthur Harris at once returned to his argument that No. 100 Group should assume control of all the night-fighter squadrons engaged in bomber support.

A.H.B./IIM/A2/
5A App. D.5,
1-14 Oct.1944.

A.H.B./IIH/
241/3/582A,
Encl. 38A.

Nos. 85 and 157 Squadrons were returned to No. 100 Group on 28 August after No. 501 Tempest Squadron and a Mosquito XXX squadron with Merlin 76 engines had become available in Air Defence Great Britain. But Air Chief Marshal Leigh Mallory had evolved a new role for the two intruder squadrons. He wanted to transfer them to No. 2 Group, 2nd T.A.F. to increase the night armed reconnaissances behind the enemy front. These Mosquito operations of No. 2 Group had assumed great importance and extended over the American sectors as the Ninth U.S. Air Force had no comparable aircraft at their disposal. On 4 October the Chief of Air Staff approved the transfer of these squadrons to No. 2 Group. Air Marshal Hill meanwhile resisted Sir Arthur Harris' demands for the transfer of control of the bomber support squadrons reviving his counter arguments e.g., the defensive responsibilities of Fighter Command, the small number of night-fighter squadrons at his disposal, the experience already attained by Fighter Command Headquarters in directing night offensive operations. In this he was supported by the Chief of Air Staff who instructed that his bomber support squadrons were to remain in Fighter Command for the time being. This arrangement was to continue until the end of the war.

A.H.B./IIH/
241/3/585,
Encls. 45A-47A.

A.H.B./IIH/
241/3/582A,
Encl. 33A.

Ibid,
Encl. 34A.

Ibid,
Encls.
39A-40A.

Ibid,
Encl. 48A.

The five offensive night-fighter squadrons were eventually disposed as follows: Nos. 29 and 151 Squadrons at Hunsdon, Nos. 25 and 307 at Castle Camps and No. 406 Squadron at Manston. Nos. 406, 151, 25 and 307, where not already equipped, were to receive Mosquitos XXX fitted with A.I. Mark X. No. 29 Squadron was to remain fitted with A.I. Mark VIII. As for the squadrons detailed for a defensive

role, Nos. 68 and 125 Squadrons were located at Coltishall and Nos. 96 and 456 Squadrons at West Malling.

R.A.F. Signals
Hist, Vol.VII,
Chap. 14
p. 180.

The five offensive squadrons were to be given additional equipment to enable them to fly on high as well as low level patrols. These were: A.I. Mark X, SCR. 729 (an American interrogator equipment for use with Mark III I.F.F., modified by the R.A.F. under the name Perfectos to home on to the enemy's latest form of I.F.F. - the FuGe 25A); a backward-looking A.I.; Gee; one eight channel V.H.F. set; modified Mark IIIG I.F.F. for fighter to fighter identification; Type 'F' and Type 'Z'.⁽¹⁾

A.H.B./IIM/A2/
5A, App. D5,
Dec. 1944.

Nos. 406 and 151 Squadrons were to be equipped with Gee in place of Perfectos as an immediate measure and drop tanks were to be supplied for Mosquito XXX aircraft. Training for offensive operations was to be supervised by four aircrew from Nos. 605 and 418 Squadrons before they departed to No. 2 Group while Bomber Command was to help in training aircrews in the use of Gee. Early in December it was arranged that two aircrews each from Nos. 25, 151 406 and 307 Squadrons were to be attached to No. 100 Group for training in night-fighter offensive operations.

Ibid, App. 'E'
Nov. 1944.

At a conference held at Headquarters Fighter Command on 24 November, at which the progress made in preparing the night-fighter squadrons for offensive operations was reviewed, doubts were thrown on the value of Perfectos. Perfectos was difficult to manufacture and some officers believed that it could only have a limited value for the intruder squadrons. It was agreed that only twelve sets were to be provided which might be useful for the interception of He.111's, the flying bomb-carriers already mentioned. The fitting of backward-looking A.I. in the form of Monica VIII was to go ahead with all haste. A fitting party from No.43 Group proceeded to each night-fighter station to install the equipment. Squadrons sent their aircraft to Coltishall where they were rapidly fitted with Gee.

Ibid, App.D5,
28 Dec. 1944.

(iii) Control of Night-Fighter Offensive Operations

Ibid, App. 'E',
1 - 14 Oct.1944.

Bomber support operations continued to be planned by the Intruder staff at Stanmore but very close liaison was to be maintained with No. 100 Group in order to ensure that the plan conformed with the night's bomber operations. Intruder, day and night rangers were also to remain under control of Fighter Command working in close conjunction with No. 100 Group,

(iv) Night Offensive Operations: June to December 1944

From June to the end of October the emphasis of night-fighter offensive operations fell on low level intruder patrols.

(1) Types 'F' and 'Z' were infra red air to air identification equipment, Type 'F' being an infra red lamp in the tail of a night-fighter which could be identified by an infra red receiver in the nose of a friendly aircraft. Type 'Z' was a similar contrivance fixed in the nose and its transmissions could be received in the tail turrets of friendly night bombers. (A.H.B./IIM/241/3/593(A), Encl. 14A and R.A.F. Signals History, Vol.III. Aircraft Radio, Chap. 14).

A.D.G.B. Form
Form 'Y'.
See Sum. of
Night Offensive
Ops., June 1944-
May 1945,
App. No. 32.

A.H.B./IIM/A2/
5A, App. D5,
Dec. 1944.

In that period 68 aircraft were claimed to have been destroyed, five probably destroyed and 39 damaged for the loss of 19 intruders. The six squadrons which carried out these operations were Nos. 418, 605, 29, 307, 25 and 151 respectively. At the same time experimental flights were carried out by the Fighter Interception Unit with A.I.s Mark VIII and X which thoroughly justified the use of A.I. equipment in an offensive role and the fact that aircraft were attacked and destroyed within sight of their bases while flying low without lights undoubtedly had a serious moral effect on enemy night-fighter crews and controllers. In the course of September and October when, on account of the disorganised state of the G.A.F. after the retreat into Germany, there were few aerial encounters, a number of transportation targets (road, rail and water) were attacked.

Bomber support operations began in earnest again in November but the type of operation was still restricted to low level patrols. Squadrons had been preparing for the bomber support role since September but the continuing commitments of Operation Overlord and countermeasures against the flying bombs retarded training and in November the intruder force lost its most experienced aircrews when Nos. 605 and 418 Squadrons were transferred to No. 2 Group. By the last week of November, of the squadrons involved in training for night offensive operations, No. 406 (No. 10 Group) had made satisfactory progress; 24 aircrews were operational in A.I. Mark X, 15 aircrews had gained experience in ranger patrols and 19 aircrews had taken part in operational sorties to the Lorient area. The squadrons in No. 11 Group (Nos. 151 and 25) were unable to start intensive training before 18 November because of commitments. In No. 12 Group (No. 307 Squadron) training with A.I. Mark X was proceeding slowly because of bad weather but Gee training was up to standard.

Operations in the last two months of 1944 were abbreviated by poor weather and only five enemy aircraft were claimed to have been destroyed or probably destroyed. Nine night fighters were lost of which the crews of two were saved.

(v) Day Ranger Operations carried out by Intruder Squadrons
September to October 1944

Before dealing with night offensive operations in the last five months of the war, the day rangers flown by Nos. 605 and 418 Squadrons in the autumn of 1944 must be noted. Usually operating in pairs or with single aircraft they sought out and attacked airfields well behind the front usually containing second line enemy aircraft in Norway, Denmark, along the shores of the Baltic, eastern and southern Germany and the Balkans. The Mosquitos flew from such advanced airfields as Peterhead in Scotland, St. Dizier or Le Culot (recently liberated airfields in Belgium) and Iesi near Ancona in Italy. From 12 September to 23 October they claimed to have destroyed 51 aircraft and damaged 36, of which six destroyed and two damaged were in the air. This was the result of some 25 sorties from which four Mosquitos and their crews failed to return. One aircrew was believed to have force-landed safely in enemy-occupied territory. The results were certainly remarkable for the small number of ranger aircraft involved. Daylight rangers had been flown spasmodically earlier in the year. Altogether from February to the end of October 1944, 196 daylight ranger sorties were flown for the loss of eight aircraft; 143 enemy aircraft were claimed destroyed and 83

Nos. 605
and 418
Sqn. O.R.Bs.

A.H.B./IIC/85/
88A,
Encl. 45.

damaged. No. 2 Group Mosquitos had also flown in the Spring a number of daylight ranger sorties over the Danish and Baltic coasts. The depletion of the intruder force by the transfer of the two full-time intruder squadrons caused day ranger operations to be abandoned for the time being. In the early spring of 1945 a ranger flight known as the Fighter Experimental Flight belonging to the Central Fighter Establishment recently formed at Wittering, together with the Fighter Interception Development Squadron flew five daylight patrols against airfields in Denmark and eastern Germany for the loss of two Mosquitos. Five enemy aircraft were believed to have been destroyed.

A.H.B./IIM/A2/
5A, App. D5,
15-31 Oct. 1944.

(vi) Night Fighter Offensive Operations January to May 1945

Bomber Command did not allow the controversy over the control of the bomber support squadrons to abate. At the end of January Sir Arthur Harris complained to the Chief of Air Staff about the small number of sorties flown by Fighter Command night-fighter squadrons in comparison with No. 100 Group and, secondly, about the long time taken by the new bomber support squadrons in Fighter Command to complete their training. Once again these complaints were deflected by the Chief of Air Staff who reminded the Commander-in-Chief Bomber Command that a number of aircraft had been put out of commission by the fitting of backward-looking A.I. in January and he further stated that it was unfair to compare the present night-fighter squadrons with Nos. 85 and 157 Squadrons which had transferred in the spring of 1944 as the latter were highly trained in night operations and, furthermore, had experienced better weather when training for bomber support. The policy of the Air Staff was that as there was still possibility of air attack against the British Isles either by 'V' Weapons or by aircraft and that as Fighter Command was required to supplement No. 85 Group on the Continent in an emergency, no more night-fighter squadrons should be transferred to Bomber Command as they would lose their experience and technique in the interception of enemy aircraft.

A.H.B./IIH/
241/3/582A,
Encl. 53A.

Ibid,
Encl. 58A.

A.H.B./ID/12/
98.

The installation of Monica VIII equipment in four night-fighter squadrons by the end of January enabled Fighter Command to fly high level bomber support patrols but very few enemy aircraft were encountered in the air. The German night-fighter force was by then in eclipse. In March the Fighter Experimental Flight began to carry out night rangers and they were so successful that by April (for by then the bomber offensive was practically over) all the offensive night-fighter squadrons were flying on ranger operations; they attacked and destroyed a large number of aircraft on the ground together with road and rail transportation.

Fighter Cmd.,
Form 'Y'
See Sum. of
Night Offensive
Ops., June 1944-
May 1945,
App. No. 32.

Attacks by Enemy Intruders during March 1945

On the night of 3/4 March some 80 German aircraft operated overland. This was the first occasion on which the enemy had made an attack in any strength against the United Kingdom since 22/23 May 1944 when 65 long range bombers operated. During that time, of course, England was not immune from enemy attack, some 7,500 flying bombs, 1,115 A.4 rockets having been directed against London and south-east England. Smaller attacks comprising some ten aircraft on each occasion were made on 4/5, 17/18 and 20/21 March. For the most part the intruders, usually Ju.88's, made landfall under cover of returning Allied bombers and the main targets attacked were airfields and aircraft, built-up areas and road or rail transport, the majority

A.W.A. Rept.
No. BC/36 in
A.H.B./IIB/47/3.

of the attacks being made with machine gun and cannon fire. A total of 42 airfields (including one R.A.F. Station) was attacked by 51 enemy aircraft during the month. The total weight of bombs dropped in these attacks was eight tons. Bomber stations in Yorkshire and Lincolnshire absorbed most of the enemy intruder effort. The results achieved in the attacks on airfields were one airfield temporarily closed operationally, 19 aircraft destroyed and five damaged in the air and a few aircraft damaged on the ground. In addition to the 19 aircraft destroyed, three were reported missing, cause unknown. Seven enemy aircraft were destroyed including four destroyed by fighters and three crashed when flying at very low level. No further attacks by German aircraft were made against the British Isles.

Conclusion

The last eighteen months of the war found Fighter Command in a predicament. The military forces so long contained in the British Isles had gone over to the offensive and together with the Anglo-U.S. long-range bomber force had to a large extent removed the *raison d'être* of Fighter Command - the defence of Great Britain. The defensive organization of Fighter Command was used offensively as it became the nucleus for co-ordinating air operations covering the landings in Normandy. Its day-fighter squadrons were the foundation of Nos. 83 and 84 Groups, 2nd T.A.F., and its night-fighter squadrons similarly nourished No. 85 Group, to which it added in 1944 six night-fighter squadrons. Later its two regular intruder squadrons were transferred to No. 2 Group. In another sphere it provided No. 100 Group with six squadrons to be used in a bomber support role, including the first Serrate squadron, two A.I. Mark X squadrons, one of which was the crack night-fighter squadron in the Command, together with a wealth of skilled aircrew. In the summer of 1944 it gave up its allotment of 50 Mosquitos XIX to No. 100 Group to enable the latter to use A.I. Mark X in its bomber support duties. In addition aircraft of No. 100 Group could and did take advantage of the homing facilities of the Coltishall Sector on their return from flights over Germany.

Although Fighter Command had successfully combated the flying bombs and had provided valuable support to Operation Overlord in the shape of cover over the beachhead, protection against aerial minelayers, patrols during landings by airborne troops, by the end of the summer of 1944 it was in danger of becoming merely a reservoir of aircraft and aircrew upon which either Bomber Command or the Allied Expeditionary Air Force could draw. Bomber Command, apart from its demands for the control of night-fighters, wanted a fighter escort force trained exclusively in the task of supporting daylight bombing raids and which would not only provide cover as far as the fringes of the Ruhr but, using Mustangs, would fly deep into Germany. They argued that it had taken the greater part of the war to evolve a long range fighter and they believed it to be bad policy for the whole of Fighter Command to become absorbed in a defensive role when, with the advent of guided missiles, a bomber force supported by long range fighters must be ready to strike instantly at the outset of a new war. Fighter Command, on the other hand, contended that it was bad policy to split up the night-fighter force with its highly developed ground organization for interception and its night-fighter crews, all of whom were hand picked and who had undergone arduous and specialized training. They pointed out that Fighter Command had inaugurated both day-and

A.H.B./ID/12/
98.

Ibid.

night-fighter offensives and that a defensive organization could easily be transformed into an offensive one (like No. 11 Group in Operation Overlord); that the creation of a Fighter Escort Group would be uneconomical and that it was essential to keep an offensive outlook alive in the Command and to train pilots in both long range and short range fighter roles.

Ibid.

In the event the Air Staff was unwilling to dissipate the technique of air fighting, and the complex ground organization that accompanied it, built up in Fighter Command and they were able to support their case by drawing attention to the possibilities of air attack (though growing remote) and the defensive responsibilities of Fighter Command on the continent. They therefore looked favourably on Fighter Command claims for sovereignty and agreed to a compromise as far as the control of night-fighter offensive operations were concerned. Bomber and Fighter Commands each had their own organization for controlling such operations and their own units for the development of night-fighter tactics and equipment. For the support of daylight bombing raids a force of 14 Mustang and five Spitfire squadrons had been built up in Fighter Command specially for this purpose but there was no question of going further and committing them exclusively to this role.⁽¹⁾ Whilst the Commanders-in-Chief of Fighter and Bomber Commands, arguing between themselves or with the Air Staff, carried on a vendetta, they preserved their sense of responsibility; the co-ordination of operations in which the two Commands were concerned by day and by night did work reasonably well, and they were helped by the fact that the enemy night-fighter threat rapidly diminished during the winter of 1944/1945, while the threat from day fighters was almost negligible.

- (1) The order of battle for Fighter Command in the last week of April 1945 was as follows:-

| Day Fighters | Night Fighters |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1 X Mustang I Sqn. 10 X Mustang III Sdns. 6 X Mustang IV Sdns. 9 X Spitfire IX Sdns. 4 X Spitfire XVI Sdns. 1 X Spitfire XXI/XXII Sqn. 1 X Meteor III Sqn. | 7 X Mosquito XXX Sdns. |
| Total 32 Squadrons | Total 7 Squadrons |

SECRET

APPENDICES

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SECRET

FIGHTER COMMAND ORDER OF BATTLE TO 2200 HOURS
2 JANUARY 1942

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-------------------|--------------------------|----------------|--------------|------------------------------|
| <u>NO.9 GROUP</u> | | | | |
| Andreas | 457 (RAAF) | Spitfire VB | Andreas | Day |
| Woodvale | 308 (Polish) | Spitfire IIA | Woodvale | Day |
| " | 256 | Defiant I | Squires Gate | Night |
| Valley | 350 (Belgian) | Spitfire IIA | Valley | Day (1 Flight operational) |
| " | 456 (RAAF) | Beaufighter II | Valley | Night (1 Flight operational) |
| " | 74 | Spitfire VB | Llanbedr | Day |
| Atcham | 131 | Spitfire VB | Atcham | Day |
| " | 96 | Defiant I | Wrexham | Night |
| " | 68 | Beaufighter I | High Erccall | Night |
| Honiley | 257 | Hurricane IIB | Honiley | Day |
| " | 1456 Flight (Turbinlite) | Havoc | Honiley | Night |

Summary: S.E. Day Squadrons 5½; T.E. Night Squadrons 3½; Turbinlite Squadrons ½;
 Non-Opnl. S.E. Day Squadrons ½; Non-Opnl. T.E. Night Squadrons ½.

| | | | | |
|--------------------|--------------------------|----------------------|-----------------|-----------------------|
| <u>NO.10 GROUP</u> | | | | |
| Fairwood Common | 312 (Czech.) | Spitfire VB | Fairwood Common | Day |
| " " | 125 (Newfoundland) | Defiant I | Fairwood Common | Night |
| " " | 615 | Hurricane IIB | Angle | Day (L.R.) |
| Colerne | 87 | Hurricane IIC | Colerne | Night |
| " | 1454 Flight (Turbinlite) | Havoc | Colerne | Night |
| " | 263 | Whirlwind Bomber | Charmy Down | Day |
| " | 417 (RCAF) | Spitfire IIA | Charmy Down | Day (Non-operational) |
| Portreath | 66 | Spitfire IIA | Portreath | Day (L.R.) |
| " | 247 | Hurricane IIC | Predannack | Night |
| " | 600 | Beaufighter II | Predannack | Night |
| " | 1457 Flight (Turbinlite) | Havoc | Predannack | Night |
| " | 130 | Spitfire VA & VB | Perranporth | Day |
| " | 310 | Spitfire VB | Perranporth | Day |
| Exeter | 307 (Polish) | Beaufighter II | Exeter | Night |
| " | 317 (Polish) | Spitfire VB | Exeter | Day |
| " | 306 (Polish) | Spitfire VB | Church Stanton | Day |
| " | 302 (Polish) | Spitfire VB | Harrowbeer | Day |
| Middle Wallop | 604 | Beaufighter I | Middle Wallop | Night |
| " | 1458 Flight (Turbinlite) | Havoc | Middle Wallop | Night |
| " | 245 | Hurricane IIB & IIC | Middle Wallop | Day |
| " | 118 | Spitfire VB | Ibsley | Day |
| " | 501 | Spitfire VB | Ibsley | Day |
| " | 234 | Spitfire VB | Ibsley | Day |
| " | 402 (RCAF) | Hurricane IIB Bomber | Warmwell | Day |

Summary: S.E. Day Squadrons 13; S.E. Night Squadrons 2; T.E. Day Squadrons 1;
 T.E. Night Squadrons 4; Non-Opnl. S.E. Day Squadrons 1;
 Turbinlite Squadrons 1½.

| | | | | |
|--------------------|--------------------------|-------------------------------|--------------|-------|
| <u>NO.11 GROUP</u> | | | | |
| Tangmere | 1 | Hurricane IIC | Tangmere | Day |
| " | 219 | Beaufighter I | Tangmere | Night |
| " | 1455 Flight (Turbinlite) | Havoc | Tangmere | Night |
| " | 41 | Spitfire VB | Westhampnett | Day |
| " | 129 | Spitfire VB | Westhampnett | Day |
| " | 23 (Int.) | Havoc I and Boston III | Ford | Night |
| " | F.I.U. | Beaufighter, Havoc & Blenheim | Ford | Night |
| Kenley | 452 (RAAF) | Spitfire VB | Redhill | Day |
| " | 602 | Spitfire VB | Kenley | Day |
| " | 485 (RNZAF) | Spitfire VB | Kenley | Day |
| Biggin Hill | 72 | Spitfire VB | Gravesend | Day |
| " | 124 | Spitfire VB | Biggin Hill | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------------------------------|-----------------------------|----------------------|--------------|-------------------------|
| <u>NO.11 GROUP</u> (CONTD.) | | | | |
| Biggin Hill | 91 | Spitfire VB | Hawkinge | Day |
| " | 401 (RCAF) | Spitfire VB | Biggin Hill | Day |
| " | 264 | Defiant II | West Malling | Night |
| " | 29 | Beaufighter I | West Malling | Night |
| " | 1452 Flight (Turbinlite) | Havoc | West Malling | Night |
| Hornchurch | 64 | Spitfire VB | Hornchurch | Day |
| " | 411 (RCAF) | Spitfire VB | Hornchurch | Day |
| " | 313 (Czech.) | Spitfire VB | Hornchurch | Day |
| " | 32 | Hurricane IIB & IIC | Manston | Day |
| " | 607 | Hurricane IIB Bomber | Manston | Day |
| North Weald | 222 | Spitfire VB | North Weald | Day |
| " | 403 (RCAF) | Spitfire VB | North Weald | Day |
| " | 121 (Eagle) | Spitfire VB | North Weald | Day |
| " | 3 (Int.) | Hurricane IIC | Hunsdon | Night |
| " | 1451 Flight (Turbinlite) | Havoc II | Hunsdon | Night |
| " | 85 | Havoc II | Hunsdon | Night |
| Northolt | 315 (Polish) | Spitfire VB | Northolt | Day |
| " | 316 (Polish) | Spitfire VB | Northolt | Day |
| " | 303 (Polish) | Spitfire VB | Northolt | Day |
| Debden | 71 (Eagle) | Spitfire VB | Martlesham | Day |
| " | 418 (RCAF) (Int.) | Boston III | Debden | Night (Non-operational) |
| " | 65 | Spitfire VB | Debden | Day |
| " | 111 | Spitfire VB | Debden | Day |
| " | 157 | Mosquito | Castle Camps | Night (Non-operational) |

Summary: S.E. Day Squadrons 24; T.E. Night Squadrons 4; F.I.U.; Non-Opnl. T.E. Night Squadrons 2; Intruder Night Squadrons 2; Turbinlite Squadrons 1½.

| | | | | |
|--------------------|-----------------------------|----------------|---------------|----------------------------|
| <u>NO.12 GROUP</u> | | | | |
| Duxford | 601 | Airacobra | Duxford | Day |
| " | 56 | Hurricane IIB | Duxford | Day (Re-equipping Typhoon) |
| " | 154 | Spitfire IIA | Fowlmere | Day (Non-operational) |
| Coltishall | 255 | Beaufighter II | Coltishall | Night |
| " | 152 | Spitfire IIA | Coltishall | Day (L.R.) |
| " | 137 | Whirlwind | Matlask | Day |
| " | 19 | Spitfire VB | Ludham | Day |
| Wittering | 25 | Beaufighter I | Wittering | Night |
| " | 151 | Defiant II | Wittering | Night |
| " | 266 | Spitfire VB | Kingscliffe | Day |
| " | 1453 Flight (Turbinlite) | Havoc | Wittering | Night |
| Digby | 609 | Spitfire VB | Digby | Day |
| " | 409 (RCAF) | Beaufighter II | Coleby Grange | Night |
| " | 412 (RCAF) | Spitfire VB | Wellingore | Day |
| Kirton | 616 | Spitfire VB | Kirton | Day |
| " | 133 (Eagle) | Spitfire VB | Kirton | Day |
| " | 1459 Flight (Turbinlite) | Havoc | Hibaldstow | Night |
| " | 253 | Hurricane IIB | Hibaldstow | Night |
| Church Fenton | 610 | Spitfire VB | Leconfield | Day |

Summary: S.E. Day Squadrons 10; T.E. Night Squadrons 5; S.E. Night Squadrons 1; T.E. Day Squadrons 1; Non-Opnl. S.E. Day Squadrons 1; Turbinlite Squadrons 1.

| | | | | |
|--------------------|-----------------------------|---------------------|------------|-------------------------|
| <u>NO.13 GROUP</u> | | | | |
| Catterick | 122 | Spitfire VB | Scorton | Day |
| Ouston | 406 (RCAF) | Beaufighter II | Acklington | Night |
| " | 43 | Hurricane IIA & IIB | Acklington | Day |
| " | 1460 Flight (Turbinlite) | Havoc | Acklington | Night (Non-operational) |
| Turnhouse | 481 | Spitfire VA | Turnhouse | Day (Non-operational) |
| " | 410 | Defiant I | Drem | Night |
| " | 611 | Spitfire IIA & IIB | Drem | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------|----------|-----------|-----------|---------|
|--------|----------|-----------|-----------|---------|

NO.13 GROUP (CONTD.)

| | | | | |
|-----------|-------------------|---------------|------|-------|
| Turnhouse | 340 (Free French) | Spitfire IIA | Drem | Day |
| Ayr | 141 | Beaufighter I | Ayr | Night |

Summary: S.E. Day Squadrons 4; T.E. Night Squadrons 2; Non-Opnl. S.E. Day Squadrons 1; Non-Opnl. Night Squadrons 1; Turbinlite Squadrons 1.

NO.14 GROUP

| | | | | |
|----------|-----------------|--------------|------------|-----------------------|
| Dyce | 603 | Spitfire VB | Dyce | Day |
| " | 132 | Spitfire IIB | Peterhead | Day |
| " | 416 (RCAF) | Spitfire IIA | Peterhead | Day (Non-operational) |
| Kirkwall | 54 | Spitfire IIB | Castletown | Day |
| " | 331 (Norwegian) | Spitfire IIA | Skeabrae | Day |
| " | 123 | Spitfire IIA | Castletown | Day |

Summary: S.E. Day Squadrons 5; Non-Opnl. S.E. Day Squadrons 1.

NO.82 GROUP

| | | | | |
|--------------|-----|--------------------|--------------|------------------------------------|
| Eglinton | 134 | Spitfire IIA | Eglinton | Day |
| Ballyhalbert | 504 | Spitfire IIA & IIB | Ballyhalbert | Day |
| " | 153 | Defiant I | Ballyhalbert | Night (Re-equipping Beaufighter I) |

Summary: S.E. Day Squadrons 2; T.E. Night Squadrons 1.

SUMMARY FOR FIGHTER COMMAND

| | <u>Day Squadrons</u> | | <u>Turbinlite</u> | <u>Night Squadrons</u> | | | <u>Total</u> |
|-----------------------------------|----------------------|-------------|-------------------|------------------------|-------------|-----------------|--------------|
| | <u>S.E.</u> | <u>T.E.</u> | | <u>S.E.</u> | <u>T.E.</u> | <u>Intruder</u> | |
| No.9 Group | 5½ | - | ½ | - | 3½ | - | 9½ |
| No.10 Group | 13 | 1 | 1½ | 2 | 4 | - | 21½ |
| No.11 Group (excluding F.I.U.) | 24 | - | 1½ | - | 4 | 2 | 31½ |
| No.12 Group | 10 | 1 | 1 | 1 | 5 | - | 18 |
| No.13 Group | 4 | - | ½ | - | 2 | - | 6½ |
| No.14 Group | 5 | - | - | - | - | - | 5 |
| No.82 Group | 2 | - | - | - | 1 | - | 3 |
| Total Sqdns. Formed. | 63½ | 2 | 5 | 3 | 19½ | 2 | 95 |
| Total Sqdns. Non-Opnl. | 4½ | - | - | - | 3½ | - | 8 |
| | 68 | 2 | 5 | 3 | 23 | 2 | 103 |

FIGHTER COMMAND ORDER OF BATTLE TO 2200 HOURS
4 JUNE 1942

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-------------------|-----------------------------|----------------|-------------|----------------------------------------|
| <u>NO.9 GROUP</u> | | | | |
| Andreas | 93 | Spitfire VB | Andreas | Day (Forming) |
| Woodvale | 315 (Polish) | Spitfire VB | Woodvale | Day |
| " | 256 | Beaufighter I | Woodvale | Night (Re-equipping Beaufighter I) |
| Valley | 456 (RAAF) | Beaufighter II | Valley | Night |
| | 232 | Spitfire VB | Llanbedr | Day |
| Atcham | 96 | Beaufighter II | Wrexham | Night (Re-equipping Beaufighter II) |
| " | 255 | Beaufighter VI | High Ercall | Night |
| Honiley | 257 | Hurricane IIB | Honiley | Day |
| " | 1456 (Flight Turbinlite) | Havoc I | Honiley | Night |

Summary: Day Squadrons 3; T.E. Night Squadrons 4; equivalent of ½ Turbinlite Squadron; forming Spitfire Squadron 1.

| | | | | |
|--------------------|----------------|-------------------------|----------------|----------------------------------|
| <u>NO.10 GROUP</u> | | | | |
| Fairwood | 421 (RCAF) | Spitfire VB | Fairwood | Day |
| Common | 125 | Beaufighter II | Common | Night |
| " | (Newfoundland) | | Common | |
| " | 263 | Whirlwind Bomber | Angle | Day |
| Colerne | 87 | Hurricane IIC | Charmy Down | Night |
| " | 1454 Flight | Havoc I | Charmy Down | Night |
| " | (Turbinlite) | | | |
| " | 264 | Mosquito | Colerne | Night (Re-equipping Mosquito) |
| Portreath | 600 | Beaufighter VI | Predannack | Night |
| " | 1457 Flight | Havoc II | Predannack | Night |
| " | (Turbinlite) | | | |
| " | 1449 Flight | Hurricane I | St. Mary's | Day |
| " | 130 | Spitfire VB | Perranporth | Day |
| " | 19 | Spitfire VB | Perranporth | Day |
| " | 234 | Spitfire VB | Portreath | Day |
| Exeter | 307 (Polish) | Beaufighter VI | Exeter | Night |
| " | 310 (Czech) | Spitfire VB | Exeter | Day |
| " | 247 | Hurricane IIC | Exeter | Night |
| " | 154 | Spitfire VB | Church Stanton | Day |
| " | 312 (Czech.) | Spitfire VB | Harrowbeer | Day |
| Middle | 604 | Beaufighter I | Middle Wallop | Night |
| Wallop | | | | |
| " | 1458 Flight | Boston III | Middle Wallop | Night |
| " | (Turbinlite) | | | |
| " | 245 | Hurricane IIB & IIC. | Middle Wallop | Day |
| " | 501 | Spitfire VC | Ibsley | Day (L.R.) |
| " | 118 | Spitfire VB & VC | Ibsley | Day |
| " | 66 | Spitfire VC | Ibsley | Day |
| " | 175 | Hurricane IIB Bomber | Warmwell | Day |

Summary: S.E. Day Squadrons 12½; S.E. Night Squadrons 2; T.E. Night Squadrons 5; T.E. Day Squadron 1; equivalent of 1½ Turbinlite Squadrons.

| | | | | |
|--------------------|-------------------|-------------------------|--------------|-------|
| <u>NO.11 GROUP</u> | | | | |
| Tangmere | 1 | Hurricane IIC | Tangmere | Day |
| " | 219 | Beaufighter I | Tangmere | Night |
| " | 1455 Flight | Havoc II | Tangmere | Night |
| " | (Turbinlite) | | | |
| " | 41 | Spitfire VB | Merston | Day |
| " | 131 | Spitfire VB | Merston | Day |
| " | 129 | Spitfire VB | Westhampnett | Day |
| " | 340 (Free French) | Spitfire VB | Westhampnett | Day |
| " | 23 (Int.) | Havoc I & Boston III | Ford | Night |
| " | F.I.U. | Beaufighter | Ford | Night |
| Kenley | 402 (RCAF) | Spitfire VB | Redhill | Day |
| " | 602 | Spitfire VB | Redhill | Day |
| " | 485 (RNZAF) | Spitfire VB | Kenley | Day |
| " | 611 | Spitfire VB | Kenley | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-----------------------------|--------------------------|----------------------|----------------|---------|
| <u>NO.11 GROUP (CONTD.)</u> | | | | |
| Biggin Hill | 72 | Spitfire VB | Biggin Hill | Day |
| " | 133 (Eagle) | Spitfire VB | Biggin Hill | Day |
| " | 91 | Spitfire VB | Hawkinge | Day |
| " | 401 (RCAF) | Spitfire VB | Gravesend | Day |
| " | 124 | Spitfire VB | Gravesend | Day |
| " | 32 | Hurricane IIB & IIC | West Malling | Day |
| " | 29 | Beaufighter I | West Malling | Night |
| " | 1452 Flight (Turbinlite) | Boston III | West Malling | Night |
| Hornchurch | 174 | Hurricane IIB Bomber | Manston | Day |
| " | 122 | Spitfire VB | Hornchurch | Day |
| " | 64 | Spitfire VB | Hornchurch | Day |
| " | 81 | Spitfire VB | Hornchurch | Day |
| " | 121 | Spitfire VB | Southend | Day |
| " | 313 (Czech.) | Spitfire VB | Fairlop | Day |
| " | 418 (RCAF) (Int.) | Boston III | Bradwell Bay | Night |
| North Weald | 222 | Spitfire VB | North Weald | Day |
| " | 412 (RCAF) | Spitfire VB | North Weald | Day |
| " | 331 (Norwegian) | Spitfire VB | North Weald | Day |
| " | 3 (Int.) | Hurricane IIC | Hunsdon | Night |
| " | 1451 Flight (Turbinlite) | Havoc II | Hunsdon | Night |
| " | 85 | Havoc II | Hunsdon | Night |
| Northolt | 317 (Polish) | Spitfire VB | Northolt | Day |
| " | 303 (Polish) | Spitfire VB | Northolt | Day |
| " | 302 (Polish) | Spitfire VB | Heston | Day |
| " | 316 (Polish) | Spitfire VB | Heston | Day |
| Debden | 403 (RCAF) | Spitfire VB | Martlesham | Day |
| " | 71 (Eagle) | Spitfire VB | Debden | Day |
| " | 350 (Belgian) | Spitfire VB | Debden | Day |
| " | 111 | Spitfire VB | Debden | Day |
| " | 157 | Mosquito | Castle Camps | Night |
| " | 65 | Spitfire VB | Great Sandford | Day |

Summary: S.E. Day Squadrons 33; T.E. Night Squadrons 4; Intruder Squadrons 3; F.I.U. equivalent of 1½ Turbinlite Squadrons.

NO.12 GROUP

| | | | | |
|---------------|--------------------------|---------------------|---------------|------------|
| Duxford | 56 | Typhoon | Snailwell | Day |
| " | 256 | Typhoon | Duxford | Day |
| " | 609 | Typhoon | Duxford | Day |
| Coltishall | 68 | Beaufighter I | Coltishall | Night |
| " | 137 | Whirlwind Bomber | Matlask | Day |
| " | 610 | Spitfire VB | Ludham | Day |
| Wittering | 151 | Mosquito | Wittering | Night |
| " | 616 | Spitfire VI | Kingscliffe | Day |
| " | 486 (RNZAF) | Hurricane IIB | Wittering | Day (L.R.) |
| " | 1453 Flight (Turbinlite) | Boston III | Wittering | Night |
| Digby | 411 (RCAF) | Spitfire VB | Digby | Day |
| " | 409 (RCAF) | Beaufighter II | Coleby Grange | Night |
| Kirton | 306 (Polish) | Spitfire VB | Kirton | Day |
| " | 1459 Flight (Turbinlite) | Havoc II | Hibaldstow | Night |
| " | 253 | Hurricane IIB & IIC | Hibaldstow | Night |
| Church Fenton | 308 (Polish) | Spitfire VB | Hutton | Day |
| " | 25 | Beaufighter I | Cranswick | Night |
| | | | Church Fenton | Night |

Summary: S.E. Day Squadrons 9; T.E. Night Squadrons 3; S.E. Night Squadrons 1; T.E. Day Squadrons 1; equivalent of 1 Turbinlite Squadron.

NO.13 GROUP

| | | | | |
|-----------|--------------------------|---------------------|------------|---------------|
| Catterick | 332 (Norwegian) | Spitfire VB | Catterick | Day |
| Ouston | 243 | Spitfire VB | Ouston | Day (Forming) |
| " | 141 | Beaufighter I | Acklington | Night |
| " | 43 | Hurricane IIB & IIC | Ouston | Day |
| " | 1460 Flight (Turbinlite) | Havoc I | Acklington | Night |
| Turnhouse | 242 | Spitfire VB | Drem | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------|----------|-----------|-----------|---------|
|--------|----------|-----------|-----------|---------|

NO.13 GROUP (CONTD.)

| | | | | |
|-----------|------------|----------------|------|-------|
| Turnhouse | 410 | Beaufighter II | Drem | Night |
| Ayr | 406 (RCAF) | Beaufighter II | Ayr | Night |
| " | 165 | Spitfire VB | " | Day |

Summary: Day Squadrons 4; T.E. Night Squadrons 3; equivalent of $\frac{1}{2}$ Turbinlite Squadron; Spitfire Squadron Forming $1\frac{1}{2}$.

NO.14 GROUP

| | | | | |
|-----------|------------|-------------|------------|-----|
| Peterhead | 416 (RCAF) | Spitfire VB | Peterhead | Day |
| Kirkwall | 167 | Spitfire VB | Castletown | Day |
| " | 132 | Spitfire VB | Skeabrae | Day |
| " | 164 | Spitfire VA | Skeabrae | Day |

Summary: Day Squadrons 4.

NO.82 GROUP

| | | | | |
|--------------|-----|---------------|--------------|-------|
| Ballyhalbert | 153 | Beaufighter I | Ballyhalbert | Night |
| " | 504 | Spitfire VB | Kirkistown | Day |
| Eglinton | 152 | Spitfire VB | Eglinton | Day |

Summary: Day Squadrons 2; T.E. Night Squadrons 1.

FLEET AIR ARM SQUADRON
OPERATING UNDER FIGHTER COMMAND

| | | | | |
|---------------|-----|-------------------|-----------|---|
| Church-Fenton | 885 | 6 Sea Hurricanes | Hutton | - |
| Turnhouse | 801 | 12 Sea Hurricanes | Cranswick | - |
| " | 384 | 6 Fulmars | Turnhouse | - |
| Peterhead | 802 | 6 Sea Hurricanes | Peterhead | - |

SUMMARY FOR FIGHTER COMMAND

| | <u>Day Squadrons</u> | | | <u>Night Squadrons</u> | | | <u>Total</u> |
|-----------------------------------|-----------------------------------|-------------|-------------------|------------------------|-------------|-----------------|------------------------------------|
| | <u>S.E.</u> | <u>T.E.</u> | <u>Turbinlite</u> | <u>S.E.</u> | <u>T.E.</u> | <u>Intruder</u> | |
| No.9 Group | 3 | - | $\frac{1}{2}$ | - | 4 | - | $7\frac{1}{2}$ |
| No.10 Group | $12\frac{1}{2}$ | 1 | $1\frac{1}{2}$ | 2 | 5 | - | 22 |
| No.11 Group (excluding F.I.U.) | 33 | - | $1\frac{1}{2}$ | - | 4 | 3 | $41\frac{1}{2}$ |
| No.12 Group | 9 | 1 | 1 | 1 | 3 | - | 15 |
| No.13 Group | 4 | - | $\frac{1}{2}$ | - | 3 | - | $7\frac{1}{2}$ |
| No.14 Group | 4 | - | - | - | - | - | 4 |
| No.82 Group | 2 | - | - | - | 1 | - | 3 |
| Total Squadrons Formed | $67\frac{1}{2}$ | 2 | 5 | 3 | 20 | 3 | $100\frac{1}{2}$ |
| Total Squadrons Forming | 2 | - | - | - | - | - | 2 |
| | $69\frac{1}{2}$ | 2 | 5 | 3 | 20 | 3 | $102\frac{1}{2}$ |

FIGHTER COMMAND ORDER OF BATTLE TO 2200 HOURS
3 DECEMBER 1942

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|-----------------|----------------------------|
| <u>NO.9 GROUP</u> | | | | |
| Woodvale | 317 (Polish) | Spitfire VB | Woodvale | Day |
| " | 256 | Beaufighter VI | Woodvale | Night |
| Valley | 456 (RAAF) | Beaufighter VI | Valley | Night |
| " | 41 | Spitfire VB | Llandedr | Day |
| Atcham | 247 | Hurricane II | High Erccall | Day (Re-equipping Typhoon) |
| " | 535 (Turbinlite) | Hurricane & Boston | High Erccall | Night |
| Honiley | 96 | Beaufighter VI | Honiley | Night |
| <u>Summary:</u> Day Squadrons 3; T.E. Night Squadrons 3; Turbinlite Squadrons 1. | | | | |
| <u>NO.10 GROUP</u> | | | | |
| Fairwood Common | 421 (RCAF) | Spitfire VB | Angle | Day |
| " | 125 (Newfoundland) | Beaufighter VI | Fairwood Common | Night |
| " | 536 (Turbinlite) | Boston & Hurricane | Fairwood Common | Night |
| Colerne | 533 (Turbinlite) | Boston & Hurricane | Charmy Down | Night |
| " | 245 (Turbinlite) | Hurricane IIB & IIC | Charmy Down | Night |
| " | 264 | Mosquito | Colerne | Night |
| " | 184 | Hurricane IID | Colerne | Day (Forming) |
| Portreath | 406 (RCAF) | Beaufighter VI | Predannack | Night |
| " | 1449 Flight | Hurricane I | St. Mary's | Day |
| " | 19 | Spitfire VB | Perranporth | Day (L.R.) |
| " | 130 | Spitfire VB | Perranporth | Day (L.R.) |
| " | 234 | Spitfire VB | Portreath | Day (L.R.) |
| Exeter | 307 (Polish) | Beaufighter VI | Exeter | Night |
| " | 310 (Czech.) | Spitfire VB | Exeter | Day (L.R.) |
| " | 257 | Typhoon VC | Exeter | Day |
| " | 175 | Hurricane Bombers | Harrowbeer | Day |
| " | 313 (Czech.) | Spitfire VB | Church Stanton | Day (L.R.) |
| " | 312 (Czech.) | Spitfire VB & VC | Church Stanton | Day (L.R.) |
| Middle Wallop | 604 | Beaufighter I | Middle Wallop | Night |
| " | 537 (Turbinlite) | Boston & Hurricane | Middle Wallop | Night |
| " | 504 | Spitfire VB & VC | Middle Wallop | Day (L.R.) |
| " | 118 | Spitfire VB | Zeals | Day (L.R.) |
| " | 66 | Spitfire VC | Zeals | Day (L.R.) |
| " | 266 | Typhoon | Warmwell | Day |
| " | 263 | Whirlwind Bombers | Warmwell | Day |
| <u>Summary:</u> S.E. Day Squadrons 14½; T.E. Day Squadrons 1; T.E. Night Squadrons 4; Turbinlite Squadrons 4; Forming Hurricane Squadron 1. | | | | |
| <u>NO.11 GROUP</u> | | | | |
| Tangmere | 165 | Spitfire VB | Tangmere | Day |
| " | 534 (Turbinlite) | Hurricane & Boston | Tangmere | Night |
| " | 486 (RNZAF) | Typhoon | Tangmere | Day |
| " | 616 | Spitfire VI | Westhamnett | Day |
| " | 131 | Spitfire VB | Westhamnett | Day |
| " | 141 | Beaufighter I | Ford | Night |
| " | 605 (Int.) | Boston III | Ford | Night |
| " | F.I.U. | Beaufighter | Ford | Night |
| Kenley | 402 (RCAF) | Spitfire IX | Kenley | Day |
| " | 401 (RCAF) | Spitfire IX | Kenley | Day |
| " | 412 (RCAF) | Spitfire VB | Redhill | Day |
| " | 416 (RCAF) | Spitfire VB | Redhill | Day |
| Biggin Hill | 340 (Free French) | Spitfire IX | Biggin Hill | Day |
| " | 611 | Spitfire IX | Biggin Hill | Day |
| " | 91 | Spitfire VB & VI | Lympne | Day |
| " | 29 | Beaufighter I | West Malling | Night |
| " | 531 (Turbinlite) | Boston & Hurricane | West Malling | Night |
| Hornchurch | 64 | Spitfire IX | Hornchurch | Day |
| " | 453 (RAAF) | Spitfire VB | Hornchurch | Day |
| " | 122 | Spitfire IX | Fairlop | Day |
| " | 137 | Whirlwind Bomber | Manston | Day |
| " | 174 | Hurricane Bomber | Manston | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-----------------------------|-------------------|--------------------|----------------|---------|
| <u>NO.11 GROUP (CONTD.)</u> | | | | |
| Hornchurch | 609 | Typhoon | Manston | Day |
| " | 350 (Belgian) | Spitfire VB | Southend | Day |
| " | 23 (Int.) | Mosquito | Bradwell Bay | Night |
| " | 418 (RCAF) (Int.) | Boston III | Bradwell Bay | Night |
| North Weald | 331 (Norwegian) | Spitfire IX | North Weald | Day |
| " | 332 (Norwegian) | Spitfire VB | North Weald | Day |
| " | 124 | Spitfire VI | North Weald | Day |
| " | 3 | Hurricane IIC | Hunsdon | Day |
| " | 530 (Turbinlite) | Boston & Hurricane | Hunsdon | Night |
| " | 85 | Mosquito | Hunsdon | Night |
| Northolt | 315 (Polish) | Spitfire IX | Northolt | Day |
| " | 306 (Polish) | Spitfire IX | Northolt | Day |
| " | 308 (Polish) | Spitfire VB | Northolt | Day |
| " | 302 (Polish) | Spitfire VB | Heston | Day |
| Debden | 157 | Mosquito | Castle Camps | Night |
| " | 132 | Spitfire VB | Martlesham | Day |
| " | 182 | Typhoon | Martlesham | Day |
| " | 334 (USA) | Spitfire VB | Debden | Day |
| " | 336 (USA) | Spitfire VB | Debden | Day |
| " | 335 (USA) | Spitfire VB | Great Sampford | Day |

Summary: Day Squadrons 30; T.E. Day Squadron 1; T.E. Night Squadrons 4; Turbinlite Squadrons 3; Intruder Squadrons 3; F.I.U.

NO.12 GROUP

| | | | | |
|------------|------------------|--------------------|---------------|---------------|
| Duxford | 181 | Typhoon | Duxford | Day |
| Coltishall | 68 | Beaufighter I | Coltishall | Night |
| " | 167 | Spitfire VB & VC | Ludham | Day (L.R.) |
| " | 56 | Typhoon | Matlask | Day |
| Wittering | 485 (RNZAF) | Spitfire VB | Kingscliffe | Day |
| " | 151 | Mosquito | Wittering | Night |
| " | 532 (Turbinlite) | Hurricane & Boston | Wittering | Night |
| Digby | 411 (RCAF) | Spitfire VB | Digby | Day |
| " | 409 (RCAF) | Beaufighter VI | Coleby Grange | Night |
| Kirton | 303 (Polish) | Spitfire VB | Kirton | Day |
| " | 538 (Turbinlite) | Hurricane & Boston | Hibaldstow | Night |
| Church | 316 (Polish) | Spitfire VB | Hutton | Day |
| Fenton | | | Cranswick | |
| " | 195 | Typhoon | Hutton | Day (Forming) |
| " | | | Cranswick | |
| " | 25 | Mosquito | Church Fenton | Night |
| " | 183 | Typhoon | Church Fenton | Day (Forming) |

Summary: Day Squadrons 7; T.E. Night Squadrons 4; Turbinlite Squadrons 2; Forming Typhoon Squadrons 2.

NO.13 GROUP

| | | | | |
|-----------|------------------|--------------------|------------|-------------------------------|
| Catterick | 403 (RCAF) | Spitfire VB | Catterick | Day |
| " | 219 | Beaufighter VI | Scorton | Night |
| Ouston | 410 (RCAF) | Beaufighter II | Acklington | Night (Re-equipping Mosquito) |
| " | 1 | Typhoon | Acklington | Day |
| " | 539 (Turbinlite) | Hurricane & Boston | Acklington | Night |
| Turnhouse | 65 | Spitfire VB | Drem | Day |
| " | 197 | Typhoon | Drem | Day (Forming) |
| Ayr | 222 | Spitfire VB | Ayr | Day |
| " | 488 (RNZAF) | Beaufighter II | Ayr | Night |

Summary: Day Squadrons 4; T.E. Night Squadrons 3; Turbinlite Squadrons 1; Forming Typhoon Squadron 1.

NO.14 GROUP

| | | | | |
|-----------|-----|------------------|------------|------------|
| Kirkwall | 602 | Spitfire VB | Skeabrae | Day |
| " | 610 | Spitfire VB | Castletown | Day |
| " | 129 | Spitfire VB & VI | Grimsetter | Day (L.R.) |
| Peterhead | 164 | Spitfire VB | Peterhead | Day |

Summary: Day Squadrons 4.

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------------------------------------------------------------------------|--------------|---------------|--------------|---------|
| <u>R.A.F. NORTHERN IRELAND</u> | | | | |
| Bally- halbert | 153 | Beaufighter I | Ballyhalbert | Night |
| " | 501 | Spitfire VB | Ballyhalbert | Day |
| <u>U.S.A.A.F. SQUADRONS</u> (NON-OPERATIONAL) | | | | |
| Eglinton | 95 (Pursuit) | P.38 | Eglinton | Day |
| " | 96 (Pursuit) | P.38 | Eglinton | Day |
| " | 97 (Pursuit) | P.38 | Eglinton | Day |
| <u>FLEET AIR ARM SQUADRONS</u> <u>OPERATING UNDER FIGHTER COMMAND</u> | | | | |
| Hornchurch | 841 | Albacore | Manston | Night |
| Tangmere | 823 | Albacore | Tangmere | Night |

| <u>SUMMARY FOR FIGHTER COMMAND</u> | | | | | | |
|--------------------------------------|----------------------|-------------|------------------------|-------------|-----------------|--------------|
| | <u>Day Squadrons</u> | | <u>Night Squadrons</u> | | | <u>Total</u> |
| | <u>S.E.</u> | <u>T.E.</u> | <u>Turbinlite</u> | <u>T.E.</u> | <u>Intruder</u> | |
| No.9 Group | 3 | - | 1 | 3 | - | 7 |
| No.10 Group | 14½ | 1 | 4 | 4 | - | 23½ |
| No.11 Group (excluding F.I.U.) | 30 | 1 | 3 | 4 | 3 | 41 |
| No.12 Group | 7 | - | 2 | 4 | - | 13 |
| No.13 Group | 4 | - | 1 | 3 | - | 8 |
| No.14 Group | 4 | - | - | - | - | 4 |
| R.A.F. N.I. | 1 | - | - | 1 | - | 2 |
| Total Squadrons formed | 63½ | 2 | 11 | 19 | 3 | 98½ |
| Total Squadrons forming | 4 | - | - | - | - | 4 |
| | 67½ | 2 | 11 | 19 | 3 | 102½ |

Authority: Fighter Command Orders of Battle.

LUFTFLOTTE 3: ORDER OF BATTLE 10 JULY 1942

| <u>Unit</u> | <u>Location</u> | <u>A/C Type</u> | <u>Strength</u> | <u>Service- able</u> | <u>Remarks</u> |
|----------------------------|----------------------------------|-----------------|-----------------|--------------------------|-------------------|
| Stab. JG.1 | Holland, N.W. Germany | F.W.190 | 2 | 2 | S.E. Fighter |
| I/JG.1 (less 1 Staffel) | Holland, N.W. Germany | Me. 109 | 28 | 17 | " " |
| II/JG.1 | Holland, N.W. Germany | F.W.190 | 39 | 32 | " " |
| Stab. JG.2 | Northern France | Me. 109 | 2 | 2 | " " |
| I/JG.2 (less 1 Staffel) | Northern France | F.W.190 | 28 | 21 | " " |
| II/JG.2 | Northern France | F.W.190 | 38 | 34 | " " |
| III/JG.2 | Northern France | F.W.190 | 40 | 36 | " " |
| 10/JG.2 | Northern France | F.W.190 | 15 | 13 | " " |
| Stab. JG.26 | Northern France | F.W.190 | 7 | 7 | " " |
| I/JG.26 | Northern France | F.W.190 | 38 | 29 | " " |
| II/JG.26 | Northern France | F.W.190 | 43 | 35 | " " |
| III/JG.26 | Belgium & Holland | F.W.190 | 36 | 28 | " " |
| 10/JG.26 | Northern France | F.W.190) | 16 | 14 | " " |
| | | Me. 109) | 7 | 7 | " " |
| | | | 339 | 277 | |
| <u>RESERVES (Fighter)</u> | | | | | |
| Erg. JG. Sud | Mannheim | Me. 109 | 59 | 26 | S.E. Fighter |
| Erg. JG. West | Casaux | Me. 109) | 44 | 26 | " " |
| | | F.W.190) | 5 | 3 | " " |
| | | | 108 | 55 | |
| 1/(F) 33 | Not known | Ju. 88) | 14 | 10 | Long Range Recce |
| | | Me. 109) | | | |
| 3/(F) 33 | Not known | Ju. 88 | 11 | 9 | " " " |
| 1/(F) 120 | Stavanger/Sola | Ju. 88 | 12 | 10 | " " " |
| 3/(F) 122 | Creil | Ju. 88) | 15 | 11 | " " " |
| | | + 3 Me. 109) | | | |
| 1/(F) 123 | Villacoublay | Ju. 88) | 17 | 8 | " " " |
| | | Me's 109, 110) | | | |
| 3/(F) 123 | Lannion | Ju. 88) | 15 | 6 | " " " |
| | | Me's 109, 110) | | | |
| | | | 84 | 54 | |
| Stab. I/KG.2 | Gilze-Rijen | Do. 217 | 28 | 22 | Long Range Bomber |
| II/KG.2 | Eindhoven | Do. 217 | 26 | 12 | " " " |
| III/KG.2 | Amsterdam/Schipol | Do. 217 | 35 | 30 | " " " |
| K. FI. Gr. 106 | Dinard/Pleurtaut | Ju. 88A4 | 27 | 19 | " " " |
| I/KG.26 | Norway | He. 111 | 36 | 31 | " " " |
| I/KG.40 | Part Trondheim, Part Bordeaux | He. 177 | 34 | 10 | " " " |
| II/KG.40 | Soesterberg | Do. 217 | 28 | 28 | " " " |
| III/KG.40 | Part Trondheim, Part Bordeaux | F.W. 200 | 21 | 13 | " " " |
| | | | 235 | 165 | |
| I/706(U) | Aalborg | Ar. 196) | 10 | 7 | Coastal |
| 5/196 | Brest | Bv. 138) | 18 | 13 | Coastal |
| | | Ar. 196 | 28 | 20 | |

Authority: Enemy Doc, A.H.B.6 Trans.

SECRET

TOTAL NUMBER OF SORTIES FLOWN BY FIGHTER COMMAND DURING 1942⁽¹⁾

| | DAY | | | | | NIGHT | | | | | |
|-----------------------|---------------------|-------------------------|-------------------------|--------------------|---------|---------------------|-------------------------|-------------------------|--------------------|--------|-----------------|
| | SHIPPING PATROLS | INTERCEPTION PATROLS | OFFENSIVE OPERATIONS | SPECIAL PATROLS | TOTALS | SHIPPING PATROLS | INTERCEPTION PATROLS | OFFENSIVE OPERATIONS | SPECIAL PATROLS | TOTALS | GRAND TOTALS |
| Jan. | 3,223 | 1,313 | 273 | 364 | 5,173 | 324 | 681 | 36 | 28 | 1,069 | 6,242 |
| Feb. | 4,338 | 1,816 | 906 | 517 | 7,577 | 442 | 580 | 60 | 21 | 1,103 | 8,680 |
| Mar. | 3,357 | 1,548 | 2,083 | 934 | 7,922 | 389 | 586 | 72 | 144 | 1,191 | 9,113 |
| Apr. | 4,086 | 2,863 | 7,651 | 1,490 | 16,090 | 448 | 1,569 | 207 | 62 | 2,286 | 18,376 |
| May | 3,615 | 3,482 | 5,841 | 1,383 | 14,321 | 208 | 1,123 | 198 | 15 | 1,544 | 15,865 |
| June | 4,141 | 3,929 | 5,895 | 1,543 | 15,508 | 269 | 1,725 | 366 | 33 | 2,393 | 17,901 |
| July | 3,859 | 3,558 | 3,441 | 1,472 | 12,330 | 173 | 1,899 | 376 | 59 | 2,507 | 14,837 |
| August ⁽²⁾ | 2,922 | 4,350 | 6,802 | 1,243 | 15,317 | 144 | 2,035 | 227 | 70 | 2,476 | 17,793 |
| Sept. | 2,683 | 3,136 | 2,137 | 950 | 8,906 | 108 | 1,534 | 102 | 53 | 1,797 | 10,703 |
| Oct. | 1,970 | 4,419 | 2,888 | 669 | 9,946 | 63 | 1,028 | 78 | 35 | 1,204 | 11,150 |
| Nov. | 1,785 | 2,742 | 2,648 | 731 | 7,906 | 94 | 746 | 115 | 20 | 975 | 8,881 |
| Dec. | 1,499 | 2,484 | 2,800 | 641 | 7,424 | 47 | 647 | 107 | 40 | 841 | 8,265 |
| TOTALS | 37,478 | 35,640 | 43,365 | 11,937 | 128,420 | 2,709 | 14,153 | 1,944 | 580 | 19,386 | 147,806 |

(1) These figures are taken from Fighter Command O.R.B. Appendices Forms 'Y' (A.H.B. Ref. IIM/A2/3A). They include some sorties which were not completed owing to weather, engine trouble or other causes.

(2) From August to December, figures include sorties carried out by U.S.A.A.F. fighter Units.

SECRET

PRINCIPAL GERMAN NIGHT ATTACKS 1942

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------|-----------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-----------|-------------------------------|-------------------------------|
| Night | Primary Target (Figures in brackets show total effort on each night and number of aircraft lost) | TONNAGES | | | Col.(5) as % of Col.(4) | Col.(5) as % of Col.(3) |
| | | Aimed at Target | On target or on land within 50 miles | On target | | |
| 23 Mar. | Dover (18-0) | - | 18 | 11 | 65 | - |
| 23 Mar. | Portland (28-2) | - | 5 | 5 | 100 | - |
| 2 Apr. | Weymouth (7-0) | - | 24 | 18 | 75 | - |
| 17 Apr. | Southampton (44-0) | - | 33(a) | 7 | 21 | - |
| 23 Apr. | Exeter (7-2)) | 175(a) (| - | 1 | - |) |
| 24 Apr. | Exeter (44-0)) | | 52(a) | 27(a) | 51 |) 16 |
| 25 Apr. | Bath (163-3) | 210 | 150 | 92 | 61 | 44 |
| 26 Apr. | Bath (83-2) | 115 | 65 | 43 | 67 | 37 |
| 27 Apr. | Norwich (73-2) | 102 | 56 | 54 | 97 | 53 |
| 28 Apr. | York (74-1) | 101 | 84 | 55 | 66 | 54 |
| 29 Apr. | Norwich (70-2) | 90(a) | 49(a) | 45(a) | 91 | 50 |
| 3 May | Exeter (90-8) | 131 | 78 | 62 | 80 | 47 |
| 4 May | Cowes (7-1) | 162 | 88 | 69 | 78 | 43 |
| 8 May | Norwich (76-2) | 113 | 68 | 1.5 | 2 | 1 |
| 19 May | Hull (132-1) | 168 | 108 | 30 | 27 | 18 |
| 24 May | Poole (96-2) | 166 | 49 | 9 | 18 | 5 |
| 29 May | Grimsby (66-0) | 70(a) | 28(a) | - | 0 | 0 |
| 31 May | Canterbury (77-0) | 116 | 55 | 46 | 84 | 40 |
| 1 June | Ipswich (65-2) | 88 | 49 | 9 | 18 | 10 |
| 2 June | Canterbury (58-5) | 52 | 23 | 8 | 36 | 15 |
| 3 June | Poole (91-2) | 139 | 61 | 17 | 27 | 12 |
| 6 June | Canterbury (32-1) | 54 | 33 | 7 | 22 | 13 |
| 21 June | Southampton (94-3) | 133 | 68 | 25 | 37 | 19 |
| 24 June | Birmingham (80-1) | 51 | 20 | - | 0 | 0 |
| 26 June | Norwich (60-3) | 56 | 28 | 20 | 73 | 36 |
| 27 June | Weston-Super-Mare (53-0) | 47 | 17 | 15 | 88 | 32 |
| 28 June | Weston-Super-Mare (53-1) | 47 | 20 | 18 | 90 | 38 |
| 6 July | Middlesbrough (7-0) | 48 | 30 | 16(b) | (53) | (33) |
| 7 July | Middlesbrough (53-2) | 59 | 26 | 16(b) | (63) | (27) |
| 25 July | Middlesbrough (22-3) | 28 | 23 | 21(b) | (91) | (79) |
| 27 July | Birmingham (111-7) | 78 | 36 | 24 | 67 | 31 |
| 29 July | Birmingham (100-6) | 71 | 24 | 10 | 42 | 14 |
| 30 July | Birmingham (457-6) | 49 | 26 | -(c) | 0 | 0 |
| 31 July | Hull (7-0) | 46 | 34 | 3 | 9 | 7 |
| 1 Aug. | Norwich (7-0) | 20 | 10 | 8 | 80 | 40 |
| 4 Aug. | Swansea (26-3) | 13 | 5 | - | 0 | 0 |

SECRETAPPENDIX NO. 4

2

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|----------|--------------------|-----|------|------|------|------|
| 10 Aug. | Colchester (7-0) | 15 | 10 | 2 | 20 | 13 |
| 13 Aug. | Norwich (7-2) | 8 | 3 | 1 | 33 | 13 |
| 14 Aug. | Ipswich (7-0) | 6 | 5 | 0.5 | 10 | 8 |
| 20 Aug. | Portsmouth (7-1) | 18 | 13 | 1 | 8 | 6 |
| 26 Aug. | Colchester (17-1) | 6 | 9(d) | - | 0 | 0 |
| 6 Sept. | Sunderland (7-2) | 19 | 10 | 0.3 | 3 | 2 |
| 17 Sept. | King's Lynn (7-1) | 7 | 7 | 5(e) | (71) | (71) |
| 31 Oct. | Canterbury (267-4) | 52 | 35 | 11 | 31 | 21 |

NOTES

(a) Excludes incendiaries.

(b) Includes Billingham.

(c) 14 tons fell on Wolverhampton and Walsall.

(d) Includes some bombs aimed at secondary targets.

(e) Includes Yarmouth.

Authorities: A.W.A.S. Reports and Enemy Docs, A.H.B.6 Trans.

SUMMARY OF THE RESULTS OF NIGHT INTERCEPTION DURING 1942. (1)

| <u>Sorties.</u> | | <u>Results</u> | | |
|------------------|-----|---------------------------|--------------|-------------|
| | | <u>Dest.</u> | <u>Prob.</u> | <u>Dam.</u> |
| <u>January</u> | | | | |
| T/E fighters | 357 | 4 | - | - |
| S/E fighters | 194 | - | - | - |
| Intruder | 16 | - | 1 | - |
| | | 4 | 1 | - |
| | | out of 358 enemy sorties. | | |
| <u>February</u> | | | | |
| T/E fighters | 218 | 2 | - | - |
| S/E fighters | 149 | - | - | - |
| Intruder | 34 | - | - | - |
| | | 2 | - | - |
| | | out of 318 enemy sorties. | | |
| <u>March</u> | | | | |
| T/E fighters | 224 | 2 | - | - |
| S/E fighters | 168 | - | - | - |
| Intruder | 51 | 1 | 1 | 3 |
| | | 3 | 1 | 3 |
| | | out of 519 enemy sorties. | | |
| <u>April</u> | | | | |
| A.I. fighters | 783 | 16 | 6 | 13 |
| Catseye fighters | 397 | 3 | 1 | 5 |
| Turbinlites) | | | | |
| and) | | | | |
| Satellites) | 3 | 1 | - | - |
| Intruder | 183 | 8 | - | 12 |
| | | 28 | 7 | 30 |
| | | out of 975 enemy sorties. | | |
| <u>May</u> | | | | |
| A.I. fighters | 547 | 14 | 3 | 5 |
| Catseye fighters | 187 | - | 1 | 1 |
| Turbinlites) | | | | |
| and) | | | | |
| Satellites) | 37 | - | - | - |
| Intruder | 198 | 10 | 2 | 7 |
| | | 24 | 6 | 13 |
| | | out of 791 enemy sorties. | | |
| <u>June</u> | | | | |
| A.I. fighters | 908 | 21 | 5 | 10 |
| Catseye fighters | 286 | 3 | - | 5 |
| Turbinlites) | | | | |
| and) | | | | |
| Satellites) | 68 | - | - | - |
| Intruders | 325 | 13 | - | 10 |
| | | 37 | 5 | 25 |
| | | out of 760 enemy sorties. | | |

(1) Presented by A.O.C.-in-C. Fighter Command to the Night Air Defence Committee of the War Cabinet.

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2

APPENDIX No. 5

| | | <u>Sorties</u> | | <u>Results</u> | | | |
|-------------------------------------------|----------------------------|----------------|--|----------------|--------------|------------|--|
| | | | | <u>Dest.</u> | <u>Prob.</u> | <u>Dam</u> | |
| <u>July</u> | | | | | | | |
| | A.I. fighters | 1231 | | | | | |
| | Catseye fighters | 655 | | 36 | 8 | 20 | |
| | Turbinlites and Satellites | 117 | | | | | |
| | Intruder | 309 | | 9 | 1 | 9 | |
| | | | | <hr/> | | | |
| | | | | 45 | 9 | 29 | |
| | | | | <hr/> | | | |
| out of 681 enemy sorties. | | | | | | | |
| <u>August</u> | | | | | | | |
| | A.I. fighters | 1374 | | | | | |
| | Catseye fighters | 424 | | 21 | 7 | 23 | |
| | Turbinlites and Satellites | 88 | | | | | |
| | Intruder | 158 | | 1 | 2 | 3 | |
| | | | | <hr/> | | | |
| | | | | 22 | 9 | 26 | |
| | | | | <hr/> | | | |
| out of 626 enemy sorties. | | | | | | | |
| <u>September</u> | | | | | | | |
| | A.I. fighters | 1086 | | | | | |
| | Catseye fighters | 252 | | 9 | 4 | 9 | |
| | Turbinlites and Satellites | 42 | | | | | |
| | Intruder | 112 | | 1 | - | 1 | |
| | | | | <hr/> | | | |
| | | | | 10 | 4 | 10 | |
| | | | | <hr/> | | | |
| out of 319 enemy sorties. | | | | | | | |
| <u>October and November⁽¹⁾</u> | | | | | | | |
| | A.I. fighters | 120 | | 6 | 1 | 1 | |
| | Catseye fighters | 2 | | - | - | - | |
| | Turbinlites and Satellites | 2 | | - | - | - | |
| | Intruders | 190 | | - | - | - | |
| | | | | <hr/> | | | |
| | | | | 6 | 1 | 1 | |
| | | | | <hr/> | | | |
| out of 258 enemy sorties. | | | | | | | |
| <u>December⁽²⁾</u> | | | | | | | |
| | A.I. fighters | 647 | | 1 | - | - | |
| | Catseye fighters | | | | | | |
| | Turbinlites and Satellites | | | | | | |
| | Intruder | 104 | | - | - | - | |
| | | | | <hr/> | | | |
| | | | | 1 | - | - | |
| | | | | <hr/> | | | |
| out of 124 enemy sorties. | | | | | | | |

- (1) These figures represent the number of sorties flown in answer to enemy aircraft and exclude 1650 sorties flown on routine patrols.
- (2) This number of sorties is estimated from Fighter Command Operations Record Book.

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| | ENEMY SORTIES (1) (excluding minelaying) | | ENEMY ATTACKS | | | GROUP AREAS | | | | | | Attacks under 6/10-10/10 Cloud Cover | Allied Merchant Ships sunk by Direct Attack at Sea | | ENEMY LOSSES | | | | | | FIGHTER COMMAND SORTIES | |
|-----------|---------------------------------------------------|-------|------------------|-------|------|----------------|-----|----|----|----|----|--------------------------------------------|-------------------------------------------------------------------|--------------------|----------------|---------|------|-------------|---------|------|-------------------------------|-------|
| | | | | | | | | | | | | | | | CLAIMS BY F.C. | | | SHIPS' GUNS | | | | |
| Month | Day | Night | Day | Night | Twl. | 9 | 10 | 11 | 12 | 13 | 14 | | No. | Tonnage (gross) | Dest. | P.Dest. | Dam. | Dest. | P.Dest. | Dam. | Day | Night |
| January | 314 | 138 | 12 | 6 | 14 | - | 10 | 4 | 7 | 7 | 4 | 78% | 3 | 9,262 | 1 | - | 1 | 2 | 1 | 2 | 3,260 | 324 |
| February | 491 | 153 | 30 | 8 | 3 | - | 6 | 6 | 23 | 2 | 4 | 85% | 2 | 3,700 | 6 | - | 8 | 1 | 3 | 5 | 4,246 | 442 |
| March | 465 | 220 | 13 | 6 | 12 | 2 | 18 | 3 | 3 | - | 5 | 68% | 2 | 884 | - | - | 1 | 3 | 1 | - | 3,370 | 389 |
| April | 486 | 106 | 8 | 1 | 1 | - | 3 | 4 | 2 | 1 | - | 33% | - | - | 2 | 1 | 1 | - | 1 | - | 3,994 | 448 |
| May | 515 | 133 | 24 | 4 | 2 | - | 12 | 12 | 6 | - | - | 33% | - | - | 7 | 2 | 6 | 3 | - | - | 3,680 | 208 |
| June | 419 | 170 | 5 | 2 | 5 | - | 7 | 4 | 1 | - | - | 25% | 1 | 345 | 2 | 2 | 4 | 2 | 2 | 2 | 4,066 | 269 |
| July | 628 | 200 | 19 | 1 | 4 | - | 11 | 11 | 2 | - | - | 54% | 2 | 1,460 | 6 | - | 2 | 1 | - | 1 | 4,009 | 173 |
| August | 649 | 238 | 8 | - | 3 | - | 4 | 5 | 2 | - | - | 55% | - | - | - | - | - | 7 | 1 | 2 | 3,054 | 144 |
| September | 480 | 187 | 20 | 2 | 1 | - | 12 | 10 | 1 | - | - | 60% | - | - | - | - | - | - | - | - | 2,737 | 108 |
| October | 574 | 122 | 21 | - | - | - | 16 | 4 | - | - | 1 | 20% | - | - | - | - | - | - | - | - | 2,178 | 63 |
| November | 417 | 40 | 3 | - | - | - | 1 | 2 | - | - | - | 100% | - | - | 3 | - | - | 1 | - | - | 1,879 | 94 |
| December | 340 | 33 | 18 | - | - | - | 17 | 1 | - | - | - | 50% | - | - | - | - | - | - | - | - | 1,549 | 47 |
| Total | 5,778 | 1,740 | 181 | 30 | 45 | 2 | 117 | 66 | 47 | 10 | 14 | Aver. 55% | 10 | 15,651 | 27 | 5 | 23 | 20 | 9 | 12 | 38,022 | 2,709 |

(1) Figures for the German Air Force are Fighter Command estimates, since German records do not give a breakdown into types of operation.

Authority: Fighter Command Form 'Y' and A.H.B. Narrative: 'The R.A.F. in Maritime War,' Vol.III.

ATTACK AND DEFENCE OF ALLIED SHIPPING IN HOME
WATERS DURING 1942

SECRET

APPENDIX NO.6

FIGHTER COMMAND DAY SQUADRONS IN THE LINE DURING 1942⁽¹⁾

| Figures are given for last week in each month | Spitfires IIA, IIB and VA. | Spitfires VB | Long-Range Spitfires VB and VC | Spitfires VI | Spitfires IX | Total Spitfires | Airocobras and Whirlwinds | Typhoons | Total except Hurricanes (2) | Hurricanes IIB, IIC and IID (3) | Total |
|-----------------------------------------------------|----------------------------------|-----------------|--------------------------------------|-----------------|-----------------|--------------------|---------------------------------|----------|--------------------------------------|------------------------------------------|-------|
| January | 8 | 43 | - | - | - | 51 | 3 | 1 | 55 | 13 | 68 |
| February | 8 | 48 | - | - | - | 56 | 3 | 1 | 60 | 13 | 73 |
| March | 3 | 51 | 1 | - | - | 55 | 2 | 2 | 59 | 10 | 69 |
| April | - | 49 | 1 | - | - | 50 | 2 | 2 | 54 | 12 | 66 |
| May | 2 | 54 | 2 | 1 | - | 59 | 2 | 3 | 64 | 13 | 77 |
| June | 1 | 48 | 3 | 1 | - | 53 | 2 | 3 | 58 | 12 | 70 |
| July | 1 | 47 | 6 | 1 | 3 | 58 | 2 | 4 | 64 | 11 | 75 |
| August | 1 | 48 | 8 | 2 | 5 | 64 | 2 | 6 | 72 | 10 | 82 |
| September | - | 46 | 9 | 1 | 6 | 62 | 2 | 6 | 70 | 9 | 79 |
| October | - | 30 | 9 | 2 | 8 | 49 | 2 | 6 | 57 | 6 | 63 |
| November | - | 28 | 11 | 2 | 9 | 50 | 2 | 8 | 60 | 5 | 65 |
| December | - | 27 | 11 | 1 | 10 | 49 | 2 | 8 | 59 | 5 | 64 |

Authorities: Fighter Command Orders of Battle, January-December 1942.
A.H.B. Reference: IIM/A2/3A.

- (1) This table includes operational squadrons, which may not have been engaged in active operations at the time, but it does not include squadrons, which were re-equipping, forming or those classed as non-operational.
- (2) This column has been given, since Hurricanes were not used in offensive sweeps.
- (3) The totals in this column include Hurricane IIB bombers but do not include aircraft in the composite 'Turbinlite' squadrons formed on 1 September 1942.

FIGHTER COMMAND OPERATIONAL LOSSES DURING 1942 (O.R.B. Form 'Y')

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|-----------------|------------------------------------------------------------------------------|----------------------------------|---------|---------------------------------------------------------|----------------------------------------------|---------|
| | Destroyed | Damaged | Aircrew | Destroyed | Damaged | Aircrew |
| <u>January</u> | 8 Spits. 1 Hurri. 1 Def. | | 11 | 14 Spits. 2 Beaus. | 6 Spits. 1 Hurri. 1 Whirl. | 8 |
| <u>February</u> | 10 A/C | | 11 | 16 A/C | 8 A/C | 8 |
| | 19 Spits. 6 Hurri. 4 Whirl. | 6 Spits. 1 Hurri. 1 Whirl. | 27 | 13 Spits. 4 Hurri. 2 Beaus. | 10 Spits. 2 Whirl. 1 Hurri. | 12 |
| <u>March</u> | 29 A/C | 8 A/C | 27 | 19 A/C | 13 A/C | 12 |
| | 38 Spits. 1 Hurri. | 22 Spits. 1 Hurri. | 32 | 12 Spits. 2 Def. 1 Beau. | 9 Spits. 1 Whirl. | 8 |
| <u>April</u> | 39 A/C | 23 A/C | 32 | 15 A/C | 10 A/C | 8 |
| | 102 Spits. 3 Bost. 2 Hurri. 1 Havoc | 19 Spits. 1 Bost. 1 Hurri. | 102 | 16 Spits. 5 Hurri. 2 Boston 1 Beau. | 19 Spits. 1 Hurri. 1 Whirl. 1 Bost. | 12 |
| <u>May</u> | 108 A/C | 21 A/C | 102 | 24 A/C | 22 A/C | 12 |
| | 65 Spits. 4 Hurri. 4 Bost. | 16 Spits. | 69 | 18 Spits. 2 Hurri. 4 Beaus. 2 Whirl. | 6 Spits. 3 Hurri. 2 Beaus. 1 Havoc | 11 |
| <u>June</u> | 73 A/C | 16 A/C | 69 | 26 A/C | 12 A/C | 11 |
| | 68 Spits. 10 Hurri. 3 Bost. 2 Beaus. | 20 Spits. 2 Hurri. | 75 | 17 Spits. 1 Bost. 1 Havoc 3 Beaus. 2 Hurri. | 11 Spits. 3 Hurri. | 8 |
| <u>July</u> | 83 A/C | 22 A/C | 75 | 24 A/C | 14 A/C | 8 |
| | 63 Spits. 9 Hurri. 2 Bost. 2 Whirl. 2 Beau. 1 Def. 1 Mosq. | 20 Spits. 1 Beau. | 73 | 7 Spits. 1 Beau. 2 Hurri. 1 Typh. | 4 Spits. 1 Hurri. 1 Beau. | 7 |
| | 80 A/C | 21 A/C | 73 | 11 A/C | 6 A/C | 7 |

SECRET

2

APPENDIX No. 8

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|------------------|---------------------------------------------------------------------|---------------------------------------------|---------|---------------------------------------------------------|----------------------------------------------|---------|
| | Destroyed | Damaged | Aircrew | Destroyed | Damaged | Aircrew |
| <u>August</u> | 120 Spits. 1 Havoc 4 Bost. 27 Hurri. 1 Mosq. 4 Typh. | 18 Spits. 3 Hurri. 1 Beau. | 119 | 10 Spits. 5 Beaus. 2 Hurri. 1 Mosq. | 13 Spits. 2 Hurri. 2 Beaus. 1 Typh. | 15 |
| <u>September</u> | 157 A/C | 22 A/C | 119 | 18 A/C | 18 A/C | 15 |
| | 36 Spits. 2 Bost. 3 Mosq. 1 Beau. | 3 Spits. 2 Beaus. 1 Mosq. 1 Hurri. | 45 | 13 Spits. 1 Light. 3 Mosq. 2 Beaus. 2 Typh. | 6 Spits. | 10 |
| <u>October</u> | 42 A/C | 7 A/C | 45 | 21 A/C | 6 A/C | 10 |
| | 19 Spits. 1 Typh. 1 P.38 1 Beau. 3 Whirl. | 6 Spits. 1 Whirl. 1 Beau. | 21 | 9 Spits. 2 Beaus. 5 Typh. | 2 Spits. 1 Typh. 1 P.38 | 9 |
| <u>November</u> | 25 A/C | 8 A/C | 21 | 16 A/C | 4 A/C | 9 |
| | 32 Spits. 1 Whirl. 2 Bost. 1 Mosq. | 8 Spits. 2 Typh. | 40 | 5 Spits. 1 Lys. 2 Def. 1 Beau. 1 Bost. | 7 Spits. 2 Typh. 2 Beaus. | 9 |
| <u>December</u> | 36 A/C | 10 A/C | 40 | 9 A/C | 11 A/C | 9 |
| | 22 Spits. 1 Bost. 3 Whirl. 1 Beau. 2 Typh. | 7 Spits. 1 Whirl. | 31 | 3 Spits. 1 Typh. 1 Bost. | 7 Spits. 1 Typh. 1 Mosq. | 7 |
| | 29 A/C | 8 A/C | 31 | 5 A/C | 9 A/C | 7 |

SUMMARY OF LOSSES DURING 1942⁽¹⁾

| CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------|
| Destroyed | Damaged | Aircrew | Destroyed | Damaged | Aircrew |
| 592 Spits. 7 Beaus. 60 Hurr. 2 Def. 21 Bost. 13 Whirl. 2 Havocs 7 Typh. 6 Mosq. 1 P.38 | 145 Spits. 5 Beaus. 9 Hurr. 1 Bost. 3 Whirl. 2 Typh. 1 Mosq. | 645 | 137 Spits. 24 Beaus. 17 Hurr. 3 Def. 5 Bost. 2 Whirl. 1 Havoc 9 Typh. 4 Mosq. 1 Light. 1 Lys. | 100 Spits. 7 Beaus. 12 Hurr. 1 Bost. 5 Whirl. 1 Havoc 5 Typh. 1 Mosq. 1 P.39 | 116 |
| 711 A/C | 166 A/C | 645 | 204 A/C | 133 A/C | 116 |

Total No. of A/C destroyed or missing from all causes on active operations 915

Total No. of A/C damaged from all causes on active operations 299

Total No. of aircrews killed or missing from all causes on active operations 761

(1) A.M. Weekly Statistical Analysis F.C. gives the following totals:-

Total No. of A/C destroyed on active operations from all causes 884

Total No. of A/C damaged from all causes 542 (Excluding Cat. A.)

Total No. of pilots lost 639

DEFINITIONS OF TYPES OF OFFENSIVE OPERATIONS (1)

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Circus</u> | Large-scale combined fighter and bomber operations designed with the intention of bringing the enemy fighters to action. In this type of operation powerful fighter forces are employed, and the radius of action is correspondingly limited. The comparatively small force of bombers is employed with the parallel object of stinging the enemy fighters into action as well as doing material damage. |
| <u>Ramrod</u> | Operations in which fighters escort bombers, the primary aim of the operation being to destroy the target. These operations may be to extreme fighter range, or provided for one reason or another with comparatively small fighter support. In such operations, owing to the limitations under which our fighters are working, the primary task is direct protection of the bombers, and general engagements with enemy fighters are not sought. If the operation is below 5,000 feet the code word should be prefixed by the word 'Low'. |
| <u>Fighter Ramrod</u> | This is a similar operation to Ramrod except that fighters are escorting cannon fighters in lieu of bombers, against a selected target. Cannon attack only is employed and not bombs. |
| <u>Rhubarb</u> | Small scale harassing operations by day by fighters or fighter bombers over enemy occupied territory primarily directed against enemy low-flying aircraft or ground target. |
| <u>Night Rhubarb</u> | Similar operations by night. |
| <u>Roadstead</u> | Operations in which fighters escort bombers (including Hurricane bombers, Typhoons and Whirlwinds) in attacks on ships, whether at sea or in harbour. |
| <u>Fighter Roadstead</u> | A similar operation to Roadstead except that fighters only are used and without bombs. |
| <u>Distill</u> | Patrols against enemy minesweeping aircraft after R.A.F. Bomber Command minelaying. |
| <u>Rodeo</u> | Fighter offensive sweeps over enemy territory without bombers. |
| <u>Ranger</u> | Offensive patrols by day or by night involving deep penetration of hostile territory with the object of destroying enemy bomber, reconnaissance, training and communications aircraft in rear areas, of disorganizing enemy low flying training, and of attacking enemy transport targets in rear areas. |
| <u>Popular</u> | Tactical reconnaissance of enemy-occupied territory to obtain information for the Army. |

(1) Fighter Command Intelligence Instruction No. 5/1942, 27 June 1942, revised May 1943.

Jim Crow Shipping reconnaissance to find suitable targets for attack by fighters or fighter-escorted bombers.

Instep Offensive fighter sweeps to intercept enemy sea-plane or long range land fighters interfering with the operations of Coastal Command aircraft in the Bay of Biscay.

Haunch Offensive patrols against enemy aircraft operating from the Brest area.

Serrate Equipment for the detection of enemy A.I. night fighters and the operations in which Serrate equipped fighters were used.

Flower Operations by night fighters in support of Bomber Command, in particular against enemy night fighters and night fighter bases.

Mahmoud Operations by night fighters against enemy night fighters outside the radius of Bomber Command operations or on nights when Bomber Command was not operating.

Diversion A diversionary operation consisting of a smaller force of fighters, and possibly bombers if available, which is staged in conjunction with Circus operations.

Feint A small force of fighters, possibly accompanied by bombers, which approaches the enemy coast-line and withdraws before becoming engaged with enemy fighters. The purpose of this operation is to maintain the enemy's defences at the highest possible state of preparedness.

Escort The role of an Escort is the direct protection of the bombers. The term Close Escort may be introduced to indicate a formation allotted to maintain position in the immediate vicinity of the bombers.

Escort Cover The cover of bombers and their escort from attack throughout an operation.

Target Cover The establishment of air superiority over the target area a few minutes before the bombers and their escort and escort cover are due to arrive and subsequently to cover their withdrawal.

Free Lance The role of a Free Lance is to seek out and destroy enemy aircraft in an allotted area of operations.

Forward Cover The following up of an operation and covering the withdrawal of the bombers and their escort in a forward area.

Rear Cover Cover the final phase of the withdrawal of the bombers and their escort to the United Kingdom.

Cover Fighter cover implies the maintenance of air superiority in a given area for a given time in order to give freedom of action to a striking force.

OFFENSIVE FIGHTER OPERATIONS BY DAY DURING 1942⁽¹⁾

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------|-------------------|------------------------------------------|-----------------|--------|-----------------------------------|---------------------------------------|----------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C ⁽²⁾ 'Reaction' | Losses ⁽³⁾ (R.A.F. Claims) | Losses ⁽⁴⁾ (German records) |
| <u>January</u> | | | | | | | |
| 2 | 2 Rhubarbs | Barges near Le Treport | 8 | 1 | 2 | 2 | - |
| 3 | 2 Rhubarbs | Distilleries Compenaxfort and Colleville | 4 | - | 1 | - | - |
| 4 | 2 Rhubarbs | Warehouses near Bourbourg | 4 | - | - | - | - |
| 5 | 1 Rhubarb | Distillery Fontaine-le-Dun | 2 | - | - | - | - |
| 6 | 1 Rodeo | | 102 | - | - | - | - |
| 9 | 1 Rhubarb | Concrete factory at Etables | 2 | - | 4 | 2 | 2 |
| 14 | 1 Rhubarb | Barges near Dunkirk | 4 | - | - | - | - |
| 15 | 1 Rhubarb | Flak ship off Dutch coast | 2 | - | - | - | - |
| 17 | 1 Rhubarb | Barges and train near Furnes | 2 | - | 3 | - | - |
| 21 | 2 Rhubarbs | Distilleries Verton and Hesdin | 4 | - | - | - | - |

(1) This is a summary of all offensive operations actually carried out. The authorities are H.Q. Fighter Command Forms 'Y' Vols. 9-12. It does not include operations which were abandoned, for weather or other reasons, before reaching the enemy occupied coast, although these were included on the original 'Y' Forms. It includes operations carried out at dawn.

(2) This is an estimate of the enemy "reaction" to our offensive operations. It does not include routine enemy patrols but it includes aircraft which may not have been seen by our pilots, e.g. enemy fighters which were put up "too late".

(3) This only includes aircraft claimed as definitely destroyed.

(4) These figures are taken from German records (A.H.B.6). They include all the single-engined fighter operational losses suffered by Luftflotte 3, except the few which are definitely known to have taken place over the United Kingdom. The losses sustained as a result of our offensive operations must therefore have been even lower.

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>January</u> | (Contd.) | | | | | | |
| 25 | (1 Rodeo (2 Feint Sweeps | | 84 | 1 | 30 | - | 1 |
| 26 | 1 Rhubarb | St. Vaast railway station | 4 | - | - | - | - |
| 28 | 3 Rhubarbs | Gun posts etc. in France | 6 | 1 | - | - | - |
| 29 | 1 Rhubarb | Distillery Courseulles-sur-Mer | 4 | 1 | - | - | - |
| <u>February</u> | | | | | | | |
| 2 | 1 Rhubarb | No targets attacked | 2 | 1 | 5 | - | 1 |
| 8 | 1 Rodeo | | 25 | - | - | - | - |
| 10 | 2 Roadsteads | Convoy N. of Brest | 33 | - | - | - | - |
| 11 | (1 Fighter Roadstead (1 Feint Sweep | Shipping off Dunkirk | 6 | 1 | - | - | - |
| | | | 37 | - | 10 | - | - |
| 12 | <u>Attacks on enemy naval units in Channel (see Appendix No.12)</u> | | | | | | |
| 13 | (1 Roadstead (5 Rodeos | Shipping off Dunkirk | 44 119 | 2 2 | - 1 | - 1 | - - |
| 15 | (1 Rhubarb (1 Roadstead | Factory and train near Dunkirk Target not found | 2 35 | - - | - - | - - | - - |
| 17 | 1 Rhubarb | Trains near Le Treport | 2 | - | - | - | - |
| 18 | (1 Roadstead (6 Rhubarbs | Target not found Verton distillery, Berck airfield and railway targets in N.E. France | 6 14 | - - | - 10 | - - | - - |
| 20 | 5 Rhubarbs | St. Pierre distillery, factory and railway targets in N.E. France | 10 | - | 2 | 1 | 1 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------------|-----------------------------------------|-------------------------------------------------------------------------|-----------------|-------------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>February</u> (Contd.) | | | | | | | |
| 24 | 4 Rhubarbs | Calais/Marck airfield, 2 trains near Dunkirk | 8 | - | - | - | - |
| 25 | 1 Rhubarb | Shipping near Zeebrugge | 4 | - | - | - | - |
| 26 | 1 Roadstead | Target not found | 28 | 1 | - | - | - |
| 27 | 2 Rhubarbs | Machine gun posts etc. | 4 | 2 | - | - | - |
| 28 | 1 Ramrod | Submarines in Ostend harbour | 108 | 3 | 70 | - | - |
| <u>March</u> | | | | | | | |
| 3 | 1 Feint Sweep (2 Circuses | Comines power stn. Abbeville Marshalling yards | 65 234 | - 3 | 6 18 | - 2 | - 2 |
| 8 | (1 Ramrod (1 Feint Sweep (1 Rodeo | Poissy aircraft factory | 24 74 37 | - - - | - - - | - - - | - - - |
| 9 | 1 Circus | Mazingarbe power station | 168 | 4 | 50 | 5 | - |
| 12 | 2 Rhubarbs | Barges and train near Bruges and Ostend | 4 | - | - | - | - |
| 13 | (1 Circus (1 Roadstead (1 Rhubarb | Hazebrouck marshalling yards Target not found Le Touquet airfield | 174 24 2 | 6 1 - | 65 2 - | 8 - - | - - - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|--------------------------|------------------------------------------------------------------|-----------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>March</u> (Contd.) | | | | | | | |
| 14 | (1 Roadstead 1 Fighter Roadstead 1 Ramrod) | Shipping in Le Havre harbour Convoy N. of Fecamp | 59 24 | - - | 7 10 | - 9 | - 2 |
| | (1 Ramrod) | Shipping in Le Havre harbour | 91 | - | 25 | 1 | - |
| 15 | (2 Roadsteads 2 Fighter Roadstead 1 Rhubarb 1 Rodeo) | Targets not found E-boats off Dutch coast | 60 23 | 2 - | 2 - | - - | - - |
| | (1 Rhubarb 1 Rodeo) | Barges near Ostend | 2 10 | - - | - - | - - | - - |
| 18 | 2 Rhubarbs | Railway targets near Etaples and Boulogne | 6 | 1 | - | - | - |
| 23 | (3 Feint Sweeps 1 Rodeo) | | 134 | - | 65 | 2 | - |
| 24 | 2 Circuses | Comines power station - Abbeville marshalling yards | 193 | 7 | 90 | 2 | 2 |
| 25 | (1 Circus 2 Rodeos) | Le Trait submarine yards | 48 101 | - 1 | 18 15 | 2 - | - - |
| 26 | 1 Circus | Le Havre docks | 62 | 2 | 12 | 8 | 2 |
| 27 | (1 Ramrod 1 Rodeo) | Ostend power station | 192 | 1 | 80 | 1 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|--------------------------|---------------------------------------------------|--------------------------------------|-----------------|---------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C (Reaction) | Losses (R.A.F. Claims) | Losses (German records) |
| <u>March</u> (Contd.) | | | | | | | |
| 28 | (1 Low Ramrod 3 Rodeos | Railway targets near Etaples | 6 180 | - 6 | - 120 | - 13 | - 2 |
| 29 | 2 Rodeos | | 72 | 1 | 30 | - | - |
| 31 | 1 Phubarb | Train near Gravelines | 2 | - | - | - | 1 |
| <u>April</u> | | | | | | | |
| 1 | 1 Ramrod | Boulogne docks | 120 | - | 4 | - | - |
| 2 | 3 Rodeos | | 77 | - | 40 | - | 1 |
| 3 | (1 Roadstead 1 Fighter Roadstead 1 Rodeo | Target not found Target not found | 22 6 | - - | - - | - - | - - |
| 4 | (1 Phubarb 1 Rodeo | Electric station near Jobourg | 4 172 | - 11 | - 90 | - 5 | - - |
| 8 | 1 Rodeo | | 219 | 1 | 12 | - | - |
| 10 | 3 Rodeos | | 228 | 5 | 55 | 6 | 1 |
| 12 | 1 Circus | Hazebrouck marshalling yards | 254 | 15 | 185 | 4 | 2 |
| 13 | 2 Rodeos | | 237 | - | 95 | 1 | 1 |

SECRET

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|--------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>April</u> (Contd.) | | | | | | | |
| 14 | (1 Circus (1 Feint Sweep (1 Diversion (3 Rodeos | Caen power station) | 490 | 4 | 61 | 4 | 3 |
| 15 | (2 Circuses (1 Div. Sweep (1 Rodeo | Cherbourg docks. Desvres airfield) | 532 | 4 | 240 | 3 | 2 |
| 16 | (1 Circus (2 Ramrods (2 Rodeos | Railway sidings at Dunkirk Le Havre power station Maupertus airfield) | 632 | 4 | 235 | 5 | 2 |
| 17 | (4 Circuses (2 Rodeos | Shell factory at Marquise, parachute factory at Calais, docks at Cherbourg and Grand Quevilly power station) | 653 | 2 | 244 | 2 | - |
| 18 | (1 Ramrod (1 Rodeo | Serqueux marshalling yards) | 221 | - | 25 | - | - |
| 19 | 3 Feint Sweeps | | 102 | - | 64 | - | - |
| 20 | 1 Ramrod | Maupertus airfield | 54 | - | 10 | - | - |
| 22 | 1 Ramrod | Maupertus airfield | 72 | - | 12 | - | - |

SECRET

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|--------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------|-----------------|------------------------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>April</u> (Contd.) | | | | | | | |
| 24 | (1 Circus 1 Feint Sweep 1 Rodeo | Flushing oil installations) | 478 | 10 | 96 | 5 | 3 |
| 25 | (2 Circuses 3 Ramrods 1 Div. Sweep. | Cherbourg docks, Abbeville Marshalling yards Dunkirk, Le Havre docks and silk factory) | 598 | 16 (plus 2 bombers) | 241 | 8 | 3 |
| 26 | (3 Circuses 2 Rodeos | St. Omer railway station, Hazebrouck marshalling yards and silk factory at Calais) | 627 | 4 | 255 | 3 | - |
| 27 | (3 Circuses 2 Rodeos | St. Omer/Longueness airfield, Ostend and Lille Sequidin steel works) | 554 | 13 | 285 | 10 | - |
| 28 | (1 Circus 1 Ramrod 1 Rodeo | St. Omer railway station St. Omer airfield) | 348 | 6 | 160 | 3 | - |
| 29 | 1 Circus | Dunkirk docks | 225 | 2 | 135 | 2 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| April (Contd.) 30 | (3 Circuses { 1 Ramrod { 1 Fighter { Ramrod { 1 Div. Sweep { 2 Rodeos | Le Havre docks, Morlaix airfield and Abbeville marshalling yards Flushing harbour Lannion airfield | 733 | 7 | 333 | 6 | 1 |
| May 1 | (1 Circus { 4 Rodeos | Marquise, St. Omer and Calais | 404 | 8 | 187 | 1 | 1 |
| 3 | (1 Circus { 1 Ramrod { 1 Div. Sweep { 1 Rodeo | Dunkirk docks Abbeville Drucat airfield | 452 | 2 | 114 | 4 | - |
| 4 | (1 Circus { 1 Feint Sweep { 3 Rodeos | Le Havre power station | 351 | 7 | 195 | 9 | 2 |
| 5 | (2 Circuses { 2 Rodeos | Zeebrugge coke ovens and Lille power station | 483 | 8 | 120 | 4 | - |
| 6 | (3 Circuses { 2 Rodeos | Caen power stn. and silk factory at Calais | 487 | 1 | 202 | 1 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| May (Contd.) | | | | | | | |
| 7 | { 2 Circus 1 Rodeo | Zeebrugge coke ovens and Ostend docks } | 255 | - | 106 | - | - |
| 8 | 1 Circus | Dieppe railway yards | 183 | - | 75 | - | 2 |
| 9 | { 2 Circus 2 Rodeos | Bruges oil plant and Hazebrouck marshalling yards } | 538 | 8 | 152 | 1 | - |
| 10 | { 1 Rhubarb 1 Rodeo | No attacks carried out } | 128 | - | - | - | - |
| 11 | 3 Rhubarbs | Gas works at St. Valery en Caux and Cayeaux and Dieppe power station | 9 | - | - | - | - |
| 14 | 4 Rhubarbs | Railways, barges in Bruges/Ostend, canal, Cayeaux gasworks and convoy 15m. S.W. of the Hague | 12 | - | - | - | - |
| 15 | 1 Roadstead | Shipping 4m. N.W. of Querqueville | 43 | - | - | - | - |
| 16 | { 1 Fighter Roadstead 5 Rhubarbs 1 Rodeo | { Shipping between Dieppe and Boulogne and off Dutch coast St. Valery lock gates, Cayeux gas works, train near Rue and gasometer at Ostend } | 74 | - | 25 | - | 1 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------|--------------------------------------|--------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| May (Contd.) | | | | | | | |
| 17 | (1 Ramrod 3 Rodeos | Shipping in Boulogne harbour) | 313 | 9 | 160 | 9 | - |
| 18 | (1 Roadstead 6 Rodeos | Shipping E. of Dunkirk) | 269 | - | 65 | - | - |
| 19 | (1 Circus 3 Rodeos | Railway N.E. of St. Omer) | 206 | 4 | 121 | 4 | - |
| 20 | 1 Fighter Roadstead | Shipping off Flushing | 6 | - | - | - | 1 |
| 21 | 1 Rhubarb | Barges 4m. E. of Ostend | 2 | - | - | - | - |
| 23 | 1 Rodeo | | 140 | 2 | 48 | 1 | - |
| 24 | 1 Rodeo | | 98 | - | 50 | 2 | - |
| 25 | 2 Rodeos | | 176 | 2 | 40 | - | - |
| 26 | (1 Fighter Roadstead 1 Rhubarb | Shipping 4m.W. of Walcheren Loco. at Trouville) | 14 | - | - | - | - |
| 27 | 3 Rodeos | | 255 | 1 | 24 | 2 | 2 |
| 29 | 3 Rodeos | | 405 | 1 | 30 | 3 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>May</u> (Contd.) | | | | | | | |
| 30 | { 1 Rhubarb 3 Rodeos | Shipping off Belgian coast } | 249 | - | 110 | - | - |
| 31 | { 1 Fighter Roadstead 1 Rhubarb 2 Rodeos | Shipping off W. Kappelle Loco. and barges near Dunkirk } | 223 | 8 | 71 | 4 | 4 |
| June 1 | { 3 Circuses 3 Rodeos | Bruges docks, Flushing harbour and silk factory at Calais } | 661 | 10 | 168 | 2 | - |
| 2 | { 2 Circuses 1 Roadstead 1 Rodeo | Dieppe docks and camp in Haut Foret D'Eu Shipping between Ushant and Ile de Vierge } | 499 | 10 | 195 | 3 | 1 |
| 3 | { 3 Circuses 1 Rodeo | Cherbourg and Le Havre docks: Camp in Haut Foret D'Eu } | 549 | 4 | 209 | 3 | - |
| 4 | { 2 Circuses 1 Ramrod 1 Rodeo | Boulogne docks and Dunkirk Maupertus airfield } | 521 | 3 | 114 | 1 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>June</u> (Contd.) | | | | | | | |
| 5 | { 3 Circus 1 Ramrod 2 Div. Sweeps 1 Rodeo | Morlaix airfield, Ostend power station and Le Havre docks Morlaix and Lannion airfields | 492 | 7 | 145 | 7 | 2 |
| 6 | { 2 Circus 1 Ramrod | Le Havre/Fecamp and camp at Bolbec Maupertus airfield | 403 | 2 | 111 | - | 1 |
| 7 | 1 Feint Sweep | | 34 | - | - | - | - |
| 8 | { 1 Circus 1 Fighter Roadstead 1 Feint Sweep 1 Rodeo | Bruges docks Target not found | 482 | 6 | 245 | 4 | 1 |
| 9 | { 1 Fighter Roadstead 1 Rodeo | Shipping off Dutch coast | 77 | - | - | - | 1 |
| 10 | { 2 Fighter Roadsteads 1 Rhubarb | Targets not found Trucks near Bruges | 88 | - | 15 | 2 | 1 |
| 11 | 3 Rodeos | | 123 | - | 40 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>June</u> (Contd.) | | | | | | | |
| 12 | 1 Rhubarb | Le Treport gasworks | 2 | - | - | - | - |
| 13 | 4 Rhubarbs | Railway targets in N.E. France | 10 | - | - | - | - |
| 15 | (2 Fighter Roadsteads 1 Rhubarb | Shipping Dieppe/Le Havre and off the Dutch coast Barges Furnes/Nieuport canal | 24 | - | - | - | - |
| 16 | (2 Fighter Roadsteads 6 Rhubarbs 1 Rodeo | Targets not found Railway targets and barges in N.E. France and Belgium | 46 | - | 12 | - | - |
| 17 | 1 Rodeo | | 76 | - | 38 | - | - |
| 18 | (2 Fighter Roadsteads 1 Rodeo | Shipping off Dieppe and Ostend | 32 | - | - | - | - |
| 19 | (3 Fighter Roadsteads 1 Feint Sweep | Shipping off Knocke and Le Havre | 55 | - | 21 | - | - |
| 20 | (1 Circus 1 Roadstead 2 Fighter Roadsteads | Le Havre power station Shipping off Casquettes Convoy near Boulogne | 362 | 6 | 177 | 4 | 2 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-------------------------|----------------------------------------------------|--------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>June</u> (Contd.) | | | | | | | |
| 21 | 1 Ramrod | Dunkirk docks | 72 | 1 | 40 | - | - |
| 22 | (1 Ramrod 2 Feint Sweeps 1 Rodeo | Dunkirk docks | 226 | - | 90 | - | 1 |
| 23 | (2 Ramrods 2 Rodeos | Dunkirk docks and Morlaix airfield | 326 | 2 | 110 | 2 | 2 |
| 25 | 1 Roadstead | Convoy off Ushant | 40 | 2 | 7 | - | - |
| 26 | (1 Circus 1 Roadstead 1 Fighter Roadstead | Le Havre docks Target not found Shipping 10m. N.E. of Fecamp | 301 | 2 | 30 | 1 | - |
| 28 | 1 Fighter Roadstead | Target not found | 29 | - | 12 | - | - |
| 29 | 1 Circus | Hazebrouck marshalling yards | 264 | 4 | 55 | 3 | - |
| <u>July</u> | | | | | | | |
| 1 | Off. Shipping Rec. | No shipping seen | 2 | - | - | - | - |
| 2 | 1 Rodeo | | 6 | - | - | - | - |
| 7 | 1 Roadstead | Target not found | 38 | - | 3 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| July (Contd.) | | | | | | | |
| 8 | (1 Fighter Roadstead 1 Feint Rodeo | Target not found | 60 | - | 41 | - | - |
| 9 | 1 Fighter Roadstead | Target not found | 6 | - | - | - | - |
| 10 | 2 Rhubarbs | Motor launch near St. Valery-en-Caux and railways targets and gasworks in Dieppe | 4 | - | - | - | - |
| 11 | (1 Fighter Roadstead 1 Rhubarb 1 Feint Rodeo | Target not found Railway targets near Ostend | 10 | - | - | - | - |
| 12 | (1 Circus 1 Roadstead 4 Feint Sweeps | Abbeville/Drucat airfield Target not found | 468 | - | 164 | - | - |
| 13 | (1 Circus 1 Fighter Roadstead 1 Feint Sweep | Boulogne marshalling yards Shipping off Belgian coast | 271 | 3 | 90 | - | 1 |
| 14 | (1 Fighter Roadstead 1 Rhubarb | Shipping off Ostend St. Inglevert airfield and a loco. | 38 | 1 | - | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| July (Contd.) | | | | | | | |
| 15 | { 1 Fighter Roadstead 1 Mass Rhubarb 2 Rodeos | Tug near Walcheren Troops near Fecamp, St. Valery gas-works and other gasworks, railway targets, gun posts etc. in N.E. France | 48 186 109 | - 3 - | - 16 18 | - - 1 | - - 1 |
| 16 | 2 Rhubarbs | Railway targets near Le Treport, Gasometer at Cabourg | 6 | - | - | - | - |
| 17 | { 2 Fighter Roadsteads 1 Rhubarb | Shipping off Flushing. One Target not seen Barges off French coast | 32 | - | 1 | - | 1 |
| 18 | 1 Roadstead | Shipping 8.m.N. of Cap de la Hague | 16 | 1 | 4 | - | 2 |
| 19 | { 2 Roadsteads 1 Bomber Rhubarb 1 Rodeo | Shipping off Ile de Troignon Les Triagoz Bombers escorted but no targets attacked | 278 | 2 | 30 | 1 | 1 |
| 20 | 1 Mass Rhubarb | Military targets in Havre/Cayeux area | 195 | 1 | 36 | - | - |
| 21 | 1 Mass Rhubarb | Military targets in Blankenbergh/ Dunkirk area | 146 | 6 | 12 | - | - |
| 22 | 5 Rhubarbs | Military targets in France, Belgium and Holland | 17 | 1 | - | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| July (Contd.) | | | | | | | |
| 23 | { 1 Fighter Roadstead 2 Rodeos 10 Rhubarbs | Target not found Military targets in France, Belgium and Holland including Lannion airfield | 93 | 7 | 18 | - | - |
| 24 | { 14 Rhubarbs 1 Rodeo | Military targets in France and Belgium | 49 | 2 | 6 | - | - |
| 25 | { 3 Rhubarbs 3 Rodeos | Railway targets in France and camp near Bruges | 52 | 1 | 12 | - | - |
| 26 | { 1 Fighter Roadstead 2 Rodeos | E-boat between Calais and Gravelines | 152 | 3 | 110 | 9 | 2 |
| 27 | 1 Fighter Roadstead | Target not found | 36 | - | - | - | - |
| 28 | { 1 Fighter Roadstead 2 Rodeos | Target not found | 238 | - | 150 | - | 1 |
| 29 | 8 Rhubarbs | Railway targets in France and Belgium | 26 | 3 | - | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| July (Contd.) 30 | (1 Circus { 1 Ramrod { 2 Roadsteads { 2 Rodeos | No attack by bombers owing to weather St. Omer/Fort Rouge airfield Convoy off Sept Isles. One target not found | 437 | 18 | 185 | 7 | 4 |
| 31 | (1 Circus { 1 Ramrod { 1 Feint Sweep | Abbeville airfield St. Malo docks | 391 | 10 | 85 | 11 | 3 |
| August (1) 1 | (1 Circus { 1 Low Ramrod | Flushing docks Trains near Yvetot Station | 212 | 1 (plus 2 bombers) | 70 | - | 1 |
| 2 | 1 Rhubarb | Railway targets in Holland and Belgium | 6 | 1 | - | - | - |
| 3 | 2 Rhubarbs | Railway targets in Holland and Belgium | 14 | 1 | - | - | - |
| 4 | (1 Fighter { Roadstead { 1 Rhubarb { 1 Rodeo | Target not found Railway targets near Furnes | 56 | - | 27 | - | - |

(1) Figures in brackets are proportion of total R.A.F. sorties flown by U.S.A.A.C.

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| August (Contd.) 5 | (1 Roadstead (3 Fighter (Roadsteads (3 Rhubarbs (1 Feint Rodeo | Target not found Targets not found Railway targets in France and Belgium: barges in Holland | 175 | 1 | 5 | - | - |
| 6 | (2 Fighter (Roadsteads (1 Rhubarb | Targets not seen Barges in N. Holland Canal | 20 | - | - | - | - |
| 8 | 2 Fighter Roadsteads | Targets not found | 22 | - | - | - | - |
| 9 | (2 Fighter (Roadsteads (3 Rodeos (2 Feint Rodeos | Targets not found | 196 (12) | 1 | 145 | - | - |
| 10 | 2 Rhubarbs | Camp at Petten and marshalling yards at Haarlem | 8 | - | - | - | 1 |
| 11 | (1 Rhubarb (2 Feint Rodeos | No targets attacked | 72 (12) | - | 57 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|--------------------|------------------------------------------------------------------|---------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| August (Contd.) | | | | | | | |
| 12 | (1 Fighter Roadstead 1 Rodeo 1 Feint Rodeo 1 Rhubarb | Target not found No targets attacked | 63 (13) | - | 6 | - | - |
| 13 | (2 Fighter Roadsteads 2 Rhubarbs | Targets not found Railway and electrical targets in France | 59 | - | 20 | - | 1 |
| 15 | (1 Fighter Roadstead 1 Feint Rodeo | Shipping near Westkapelle | 84 (11) | - | 45 | - | - |
| 16 | 6 Rhubarbs | Railway targets in France and Holland | 16 | 1 | - | - | - |
| 17 | (1 Circus 1 Fighter Roadstead 3 Rodeos | Rouen marshalling yards Target not found | 547 (37) | 3 | 220 | 2 | 1 |
| 18 | 6 Rodeos | | 175 | 3 | 150 | 2 | 2 |
| 19 | Combined Operation against Dieppe (see Chap. 7, p. 124. | | | | | | |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|---------------------------|--------------------------------------------------------|----------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>August</u> (Contd.) | | | | | | | |
| 20 | 1 Circus | Amiens marshalling yards | 483 (49) | - | 200 | 1 | - |
| 21 | 1 Circus | Targets in Rotterdam | 253 (25) | - | 140 | - | - |
| 22 | 8 Rhubarbs | Transport and military targets in France | 55 | 4 | 15 | - | - |
| 23 | (1 Rhubarb (1 Rodeo (1 Feint Rodeo | Train near Anglesqueville and factory at Neville) | 45 | 1 | 16 | - | 1 |
| 24 | (1 Circus (1 Fighter Roadstead | Le Trait shipbuilding yards Target not found) | 138 (24) | 2 | 95 | 2 | - |
| 25 | (1 Fighter Roadstead | Target not found | 6 | - | - | - | - |
| 26 | (1 Fighter Roadstead (1 Rodeo (1 Feint Rodeo | Target not found) | 51 | - | 25 | - | 1 |
| 27 | (2 Circuses (1 Roadstead (1 Fighter Roadstead | Abbeville airfield and Rotterdam) | 454 | 9 | 100 | 3 | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|---------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>August</u> (Contd.) 28 | (1 Circus { 1 Fighter Roadstead (2 Rodeos | Meaulte aircraft factory Target not found | 540 (59) | 1 | 120 | 1 | 2 |
| 29 | (2 Circuses { 1 Rodeo | Ostend docks and Courtrai airfield | 336 (36) | 2 | 144 | 2 | - |
| 31 | 1 Rhubarb | Barges near Knocke | 2 | 1 | - | - | - |
| <u>September</u> 1 | (1 Rhubarb { 1 Rodeo | Barges between Haarlem and Leyden | 58 (32) | 1 | 12 | - | 1 |
| 2 | (1 Rodeo { 3 Feint Rodeos | | 123 (38) | - | 9 | - | 2 |
| 3 | 2 Rodeos | | 135 | - | 6 | - | 1 |
| 5 | 2 Circuses | Le Havre and Rouen marshalling yards | 275 (24) | 6 | 150 | 2 | 1 |
| 6 | 3 Circuses | Abbeville/Drucat airfield, Meaulte aircraft factory and St. Omer/ Longuenesse airfield | 392 (36) | 3 | 204 | 2 | 1 |
| 7 | 1 Circus | Rotterdam docks | 185 (24) | 2 | 50 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------|-----------------------------------------------------------------------|------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| September (Contd.) | | | | | | | |
| 8 | (1 Ramrod { 1 Roadstead { 1 Fighter { Roadstead { 1 Rodeo | Le Havre docks Shipping at Cherbourg Target not found } | 153 | 2 | 38 | - | - |
| 9 | 1 Roadstead | Convoy near Cap de la Hague | 28 | - | - | - | - |
| 10 | (1 Roadstead { 1 Rodeo | Target not found } | 59 (13) | - | 20 | - | - |
| 11 | 1 Rodeo | | 36 | - | 6 | - | - |
| 12 | (2 Fighter { Roadsteads { 1 Rodeo | Targets not found } | 32 | - | - | - | - |
| 15 | (1 Circus { 1 Fighter { Roadstead | Cherbourg docks Target not found } | 176 | 1 | 16 | - | - |
| 16 | 1 Rodeo | | 72 (24) | 1 | 60 | - | - |
| 18 | 1 Fighter Roadstead | Ship off Ostend | 24 | - | - | - | - |
| 19 | 1 Rodeo | | 22 | - | 20 | - | - |

SECRET

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------|-----------------------------------------|----------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| September (Contd.) | | | | | | | |
| 21 | { 1 Fighter Roadstead 1 Rhubarb | E-boats near Flushing Barges at Petten and airfield at de Kooy | 8 | 1 | - | - | - |
| 22 | { 1 Fighter Roadstead 1 Rhubarb | Target not found Train near Morlaix and Lannion airfield | 24 | 1 | - | - | - |
| 26 | 3 Circuses | Le Havre, Maupertus and Morlaix airfields | 197 (77) | 12 | 7 | - | 1 |
| 27 | 1 Fighter Roadstead | Trawlers off Dutch Coast | 12 | - | 15 | - | - |
| 29 | 1 Fighter Roadstead | Target not found | 12 | - | - | - | - |
| October | | | | | | | |
| 1 | { 1 Roadstead 1 Fighter Roadstead | Target not found Minesweepers in Trieux estuary | 28 | - | - | - | - |
| 2 | 3 Circuses | Le Havre, Meaulte aircraft factory and St. Omer/Longuenesse airfield | 404 (97) | 5 | 170 | 5 | 9 |
| 3 | 1 Roadstead | Shipping in Alderney harbour | 21 | - | - | - | - |

SECRET

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------------------|----------------------------------------------------------|---------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>October</u> (Contd.) | | | | | | | |
| 6 | (1 Fighter { Roadstead (1 Rhubarb | Target not found Ship near Berck | 26 | - | - | - | - |
| 9 | 1 Circus | Lille loco. works | 443 (73) | 1 | 135 | 5 | 1 |
| 10 | 1 Roadstead | Target not found | 4 | - | - | - | 1 |
| 11 | 1 Rodeo | | 215 | 3 | 110 | - | - |
| 12 | (1 Fighter escort (2 Roadsteads | For naval force Targets not found | 241 | - | 8 | - | - |
| 13 | 1 Fighter Roadstead | Targets not attacked | 12 | - | - | - | - |
| 14 | (1 Roadstead (1 Fighter { Roadstead (2 Rhubarbs | Target not found Minesweepers near Hook Railway targets near Pecamp | 18 (12) | - | - | - | - |
| 15 | (1 Circus (1 Roadstead | Le Havre docks Trawlers near Lezardrieux | 288 (60) | 1 | 126 | - | 1 |
| 16 | (1 Circus (1 Fighter { Roadstead (1 Rodeo | Le Havre docks No targets attacked | 113 | - | 20 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|---------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| October (Contd.) | | | | | | | |
| 17 | (1 Fighter { Roadstead (1 Rhubarb (1 Rodeo | No targets attacked Railway targets near Fecamp | 85 | - | - | - | 1 |
| 18 | (1 Fighter { Roadstead (3 Rhubarbs | Target not found Railway targets in N. France | 21 | - | - | - | 1 |
| 21 | (2 Circus { Roadstead (1 Roadstead | Lorient shipyards and Maupertus airfield Wreck near Calais | 234 (24) | - | 42 | - | 2 |
| 22 | (2 Fighter { Roadsteads (1 Rhubarb | Trawlers near Ouistreham and ground targets near Ostend No targets attacked | 26 | 1 | - | - | - |
| 23 | (1 Fighter { Roadstead (4 Rhubarbs | Target not found Railway targets near Calais | 14 | 1 | - | - | - |
| 24 | (Bomber escort (1 Roadstead (1 Rhubarb | for Lancasters to Cabourg Target not found Transport in Holland | 54 | - | 12 | - | 1 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| October (Contd.) 25 | { 1 Fighter Roadstead 1 High Alt. Recce 1 Shipping Armed Recce 1 Rhubarb } | Wreck near Calais (Rodeo) Camp at Rolleville | 18 | - | - | - | - |
| 26 | 1 Rhubarb | No targets attacked | 2 | - | - | - | - |
| 27 | { 1 Roadstead 1 Fighter Roadstead 3 Rhubarbs 1 High Alt. Rodeo 3 Rodeos } | Targets not found Camp near Bruges and railway targets in N. France | 97 | 2 | 34 | - | - |
| 28 | 1 Roadstead | Flak and railway targets near Lezardrieux | 38 | - | - | - | 1 |
| 29 | { 1 Fighter Roadstead 1 Rhubarb } | No targets attacked Barges in Selzeete canal | 14 (2) | - | - | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>October</u> (Contd.) | | | | | | | |
| 31 | { 1 Fighter Roadstead 6 Rhubarbs | Target not found Railway targets near French coast | 34 (2) | 5 | - | - | 2 |
| <u>November</u> | | | | | | | |
| 1 | { 1 Ramrod 1 Rhubarb 1 Rodeo | St. Omer/Longuenesse airfield No targets attacked | 53 | 1 | 8 | - | - |
| 2 | 3 Rodeos | | 73 | 2 | 80 | 4 | 1 |
| 3 | { 1 Rodeo 7 Rhubarbs | Factories and transportation targets mainly between Pecamp and Abbeville | 47 | - | 6 | - | 1 |
| 4 | 1 Rhubarb | Huts S. of Noordwijk | 4 | - | - | - | - |
| 6 | { 1 Ramrod 1 Fighter Roadstead 1 Rhubarb | Caen airfield Target not found Gasholder at Bergen-op-Zoom | 240 (22) | - | 50 | - | - |
| 7 | { 2 Ramrods 12 Rhubarbs | Brest docks (both attacks) Railway, electrical and other military targets mainly in N. France | 163 | 1 | 6 | - | 3 |
| 8 | { 1 Circus 1 Rodeo | Lille loco. works | 356 (36) | 7 | 110 | - | 1 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| November (Contd.) | | | | | | | |
| 9 | (1 Circus 3 Rodeos | Le Havre docks | 173 (36) | 1 | 70 | 1 | - |
| 10 | (1 Circus 1 Roadstead 1 Feint Rodeo | Le Havre docks No target attacked | 177 (35) | - | 10 | - | - |
| 11 | 3 Rodeos | | 60 | - | - | - | - |
| 12 | 1 Rhubarb | Train near Guingamp | 2 | - | - | - | - |
| 13 | 3 Rhubarbs | Gasholders, barges and railway targets in France and Holland | 8 | - | - | - | - |
| 14 | (1 Shipping Armed Recce. 1 Divisionary Sweep 2 Rodeos | No shipping seen For U.S.A.A.C. attacks on La Rochelle and La Pallice | 143 (6) | - | 12 | - | - |
| 16 | (1 Fighter Roadstead 10 Rhubarbs | Minesweepers near West Kappelle Tugs, barges, railway and other military targets in France and Low Countries | 44 | - | 3 | 1 | 1 |

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| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>November</u> (Contd.) | | | | | | | |
| 17 | (1 Ramrod (2 Rhubarbs | St. Nazaire Flushing airfield and railway targets and barges near Nieuport | 188 (6) | - | 12 | - | 1 |
| 18 | (2 Feint Sweeps) (1 Div. Sweep) (6 Rhubarbs | For U.S.A.A.C. attacks on Lorient and La Pallice Locos, barges and gunposts in France and Low Countries | 147 (2) | 3 | 6 | - | 1 |
| 19 | (1 Roadstead (16 Rhubarbs | Target not found Barges, airfields, gun positions and railway targets in France and Low Countries | 49 (8) | 2 | 7 | 1 | 1 |
| 20 | (2 Roadsteads (1 Fighter Roadstead (2 Rhubarbs | Convoy off Dutch coast - target not found Target not found Train near Lokeren and camp and barges near Hargen | 38 (8) | 1 | 3 | - | - |
| 21 | (1 Roadstead (3 Rhubarbs | Patrol boat Barges near Rilland and oil tank near Uitgeest | 30 (2) | - | 5 | 1 | - |

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| Date | Type of Operation | Targets Attacked | R.A.F. | | LUFTWAFFE | | |
|-----------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>November</u> (Contd.) | | | | | | | |
| 22 | { 5 Div. Sweeps 1 Rhubarb | For U.S.A.A.C. attack on Lorient submarine base No targets attacked | 172 | - | - | - | - |
| 23 | { 1 Ramrod 2 Rhubarbs | U.S.A.A.C. attack on St. Nazaire Locos. near Ostend | 102 | - | 5 | - | 1 |
| 24 | { 1 Roadstead 1 Rhubarb 2 Rodeos | Target not found Railway targets at Guingamp | 57 | - | 33 | - | - |
| 25 | { 1 Roadstead 1 Fighter Roadstead } { 2 Rhubarbs | Target not found Railway targets near Guingamp and Goderville | 30 | 1 | - | - | - |
| 26 | { 1 Roadstead 6 Rhubarbs | Target not found Locos, barges and gun positions in France and Low Countries | 15 (2) | 1 | - | - | - |
| 27 | { 1 Fighter Roadstead 5 Rhubarbs | Target not found Barges, gun positions, troops and railway targets in France and Low Countries | 25 | - | - | - | 1 |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>November</u> (Contd.) | | | | | | | |
| 28 | (1 Fighter { Roadstead (4 Rhubarbs | Target not found) Locos, huts, barges and gun positions in France and Low Countries) | 14 | 3 | 2 | 1 | - |
| 29 | (1 Fighter { Roadstead (1 Rodeo (3 Rhubarbs | Target not found) Barges and railway targets in France and Low Countries) | 30 | 3 | 9 | - | - |
| 30 | 1 Rodeo | | 36 | - | 25 | - | 2 |
| <u>December</u> 1 | (1 Roadstead (1 Rhubarb (3 Rodeos | Barges near Katwijk) | 86 | - | 45 | 3 | - |
| 2 | (4 Rhubarbs (2 Rodeos | Road and railway targets in France and Holland) | 75 | - | 40 | - | - |
| 3 | (1 Roadstead (1 Fighter (Roadstead | E-boats near Channel Islands) Seaplanes near Brest) | 24 | - | 7 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|-----------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| <u>December</u> (Contd.) | | | | | | | |
| 4 | { 1 Armed Ship. Recce 2 Rodeos | No shipping seen) | 206 (37) | 5 | 60 | 1 | - |
| 5 | { 2 Rhubarbs 2 Rodeos | Barges and railway targets in France and Belgium) | 36 | 1 | 20 | - | - |
| 6 | { 3 Circuses { 1 Armed Shipping Recce. 1 Rhubarb | Lille loco. works, Abbeville/Drucat airfield and Phillips radio works at Eindhoven) No shipping seen) Power station W. of Brieuc) | 351 (36) | 3 | 227 | 2 | 2 |
| 7 | { 1 Roadstead 6 Rhubarbs | Convoy off Bay St. Brelade) Barges, gun positions and railway targets in France and Low Countries) | 74 | 3 | - | - | 1 |
| 8 | { 2 Rhubarbs | Gun positions and railway targets near Knocke and Le Grottoy) | 6 (2) | - | - | - | - |
| 9 | { 1 Rhubarb 6 Rodeos | Goods train and tugs near Goes) | 84 | - | 80 | - | - |
| 10 | { 1 Fighter Roadstead 1 Rhubarb | Convoy off Westkappelle) Grecy-en-Ponthieu airfield) | 10 | 2 | 6 | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| December (Contd.) 11 | (1 Roadstead (2 Rhubarbs (1 Rodeo | Target not found Troops near Knocke and camp near Valkenisse | 8 | - | - | - | 1 |
| 12 | (4 Div. Sweeps (1 Fighter Roadstead (2 Rhubarbs (1 Rodeo (1 Feint Rodeo | For U.S.A.A.C. attack on Romilly air- craft park Target not found Valkenberg airfield and barges in Noordsee Canal | 328 (41) | 4 | 110 | 4 | - |
| 13 | 5 Rhubarbs | Railway targets, tugs and barges in France and Low Countries | 12 | 1 | 2 | - | - |
| 14 | 6 Rodeos | | 156 | - | 46 | - | - |
| 15 | (1 Armed Ship. Recce. (3 Rhubarbs (1 Rodeo | No shipping seen Locos. and tugs in France and Low Countries | 26 (2) | - | 1 | - | - |
| 17 | 1 Rodeo | | 18 | - | - | - | 2 |
| 18 | (1 Rhubarb (1 Rodeo | No targets attacked | 17 | - | - | - | - |

| Date | Type of Operation | Targets Attacked | R.A.F. | | Luftwaffe | | |
|----------------------|---------------------------------------------|-----------------------------------------------------------------|-----------------|--------|--------------------|------------------------|-------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' | Losses (R.A.F. Claims) | Losses (German records) |
| December (Contd.) | | | | | | | |
| 20 | (1 Circus (1 Rhubarb (1 Rodeo | Romilly aircraft park Loco. and barges near Leyden | 348 (36) | - | 150 | - | - |
| 21 | 3 Rhubarbs | Railway targets in France and Belgium | 6 | - | - | - | - |
| 22 | (5 Rhubarbs (3 Rodeos | Tugs, barges and railway targets in France and Low Countries | 40 | 1 | 6 | - | - |
| 23 | (2 Ramrods (1 Rhubarb (2 Rodeos | Den Helder harbour and St. Malo docks No targets attacked | 206 | - | 23 | - | - |
| 24 | 2 Rodeos | | 28 | - | - | - | 2 |
| 27 | (1 Rhubarb (1 Rodeo | Trains near Abancourt and Eu | 14 | - | - | - | - |
| 28 | 1 Day Intruder (1 Day Intruder | No targets attacked | 1 | - | - | - | - |
| 29 | (1 Rhubarb (3 Rodeos | Trains and barges in Belgium | 106 (2) | - | 40 | - | - |
| 30 | (1 Ramrod (1 Rhubarb (2 Rodeos | Lorient docks Train S. of Cappelle | 205 (2) | - | 7 | - | 1 |
| 31 | (1 Day Intruder (3 Rhubarbs (2 Rodeos | Railway Targets in France | 126 | 2 | 50 | 2 | - |

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SUMMARY OF LOSSES⁽¹⁾

| MONTH | R.A.F. | LUFTWAFFE | |
|-------------------------|--------|---------------|----------------|
| | | R.A.F. Claims | German Records |
| January | 4 | 4 | 3 |
| February ⁽²⁾ | 10 | 2 | 7 |
| March | 35 | 53 | 12 |
| April | 104 | 67 | 21 |
| May | 61 | 45 | 13 |
| June | 59 | 32 | 12 |
| July | 62 | 29 | 16 |
| August ⁽²⁾ | 34 | 13 | 30 |
| September | 30 | 4 | 7 |
| October | 19 | 10 | 21 |
| November | 26 | 9 | 14 |
| December | 22 | 12 | 12 |
| TOTAL | 466 | 280 | 168 |

(1) Excluding losses NOT due to enemy action and claims for aircraft probably destroyed.

(2) Excluding operations on 12 February against German naval units in Channel and operations in connection with Operation Jubilee.

FIGHTER COMMAND ANTI-SHIPING SORTIES DURING 1942

(Including Fleet Air Arm and Army Co-operation
aircraft under Fighter Command control)

| Month | No. Despatched (inc. Recce. A/C) | No. Attacked | A/C Losses | Bomb Armament Expended | No. and Tonnage | | Remarks |
|--------|-------------------------------------------|-----------------|---------------|------------------------------|-----------------|--------------------|-----------------------------------------------------------------------------------------|
| | | | | | Vessels Sunk | Vessels Damaged | |
| Jan. | 107 | 16 | 5 | 8 x 250 | - | - | - |
| Feb. | 735 | 89 | 22 | 44 x 250 | 2 - 552 | - | Includes effort against enemy fleet units during escape up the Channel 12 Feb. |
| Mar. | 398 | 37 | 4 | 2 x 250 | - | - | |
| Apr. | 197 | 32 | 1 | 21 x 250 | - | - | - |
| May | 340 | 106 | 4 | 20 x 250 | 3 - 1,617 | - | - |
| June | 514 | 140 | 11 | 52 x 250 | - | 1 - 40 | - |
| July | 521 | 141 | 5 | 56 x 250 | 6 - 1,764 | - | - |
| Aug. | 466 | 84 | 2 | 30 x 250 | 2 - 594 | - | - |
| Sept. | 263 | 68 | 2 | 16 x 250 | 1 - 305 | - | - |
| Oct. | 324 | 41 | 1 | 16 x 250 | 1 - 150 | - | - |
| Nov. | 335 | 37 | 9 | 46 x 250 | - | - | - |
| Dec. | 136 | 55 | 5 | 50 x 250 4 x 100 | 1 - 622 | - | - |
| TOTALS | 4,336 | 846 | 71 | 361 x 250 4 x 100 | 16 - 5,604 | 1 - 40 | Approx. 40 tons of bombs dropped. |

Authorities: Fighter Command Form 'Y', R.A.F. Narrative: 'R.A.F. in
Maritime War,' Volume III, App. XXIX.

FIGHTER OPERATIONS AGAINST GERMAN NAVAL UNITS

IN THE CHANNEL: 12 FEBRUARY 1942. (1)

| Group | Sqdn. | Aircraft | Time Up | Up From | Remarks |
|-------|-------|----------------------------------|------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | (72 | 11 Spits.VB. | 1218 | Gravesend) | Escort for Swordfish. |
| | (124 | 12 " ") | 1220 | Biggin Hill) | Failed to make rendezvous at |
| | (401 | 12 " ") | |) | Manston at 1225 but patrolled |
| | (64 | 9 " " | 1225 | Fairlop) | N. of Calais. |
| 11 | (411 | 8 " " | 1219 | ") | To attack escort vessels. |
| | | | | | Failed to make rendezvous but |
| | | | | | Patrolled Channel. |
| | | | | | |
| 11 | (315 | 12 Spits.VB) | 1230 | Northolt | Patrolled 20m. S. of Hawkinge. |
| | (303 | 11 " ") | to | | |
| | (316 | 12 " ") | 1235 | | |
| 11 | 607 | 10 Hurricane IIB bombers | 1240 | Manston | Patrolled C.Gris Nez, Calais and Boulogne. Damaged 4 trawlers. |
| 12 | (137 | 4 Whirlwinds | 1310) | Matlock | Escort for destroyer attack but |
| | (") | 3 " " | 1340) | | |
| | (") | 3 " " | 1429) | | |
| 11 | (3 | 8 Hurricanes | 1315 | Hunsdon) | Rendezvous Rochester 1335. |
| | (313 | IIC 12 Spits.VB | 1315 | Southend) | |
| 11 | (485 | 14 Spits.VB) | 1320 | Kenley | Beaufort escort. Beauforts not seen. Attacked destroyers, Cruisers and E-boats 1 E-boat damaged. |
| | (452 | 14 " ") | | | |
| | (602 | 12 " ") | | | |
| 11 | (1 | 11 Hurricanes | 1340 | (Tangmere) | To attack E-boats. Attacked enemy shipping 15m. N.E. of Dover. |
| | (129 | IIC 12 Spits.VB. | to 1355 | (Westhamp- nett) | |
| 11 | (111 | 11 Spits.VB. | 1402 | Debden) | To maintain air superiority over target during Bomber and Coastal Command attacks. Target not seen but patrolled coast off Ostend for 35 minutes. |
| | (403 | 9 " " | 1405 | Northweald) | |
| | (65 | 12 " " | 1409 | Debden) | |
| | (222 | 12 " ") | 1405 | Northweald) | |
| | (121 | 9 " ") | | | |
| 10 | (118 | 12 Spits.VB | 1415 | West Malling | To patrol target from 1445 and cover attack by bombers. |
| | (234 | 13 " " | to | | |
| | (501 | 12 " " | 1440 | | |
| 11 | (607 | 8 Hurricanes IIC) | 1420 | Manston | To attack enemy escort vessels. One vessel 600 tons sunk, one of 400 damaged. Cover for above attack. |
| | (32 | bombers) | | | |
| | (41 | 8 Hurricane II) 11 Spits.VB. | 1350 | Westhampnett | |
| 11 | (72 | 10 Spits.VB. | 1445 | Gravesend) | To patrol target area from 1500 and cover attack by bombers. |
| | (124 | 12 " ") | | | |
| | (401 | 12 " ") | 1445 | Biggin Hill) | |

(1) Authority is H.Q. Fighter Command, Forms 'Y', Vol. 9.

| Group | Sqdn. | Aircraft | Time Up | Up From | Remarks |
|-------|--------------|-----------------------|----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 11 | (64 (411 | 9 Spits.VB. 12 " " | 1505) 1520) | Fairlop)) | To patrol target area from as soon as possible after 1433 and cover attack by bombers. Target not seen. Patrolled E. of Southend. |
| 12 | (412 (609 | 9 " ") 10 " ") | 1524 | Biggin Hill) | |
| 12 | 19 | 10 Spits.VB. | 1526 | Ludham | Patrolled Channel but no e/a seen. |
| 12 | 616 | 8 Spits.VB. | 1607 | Matlock | To cover withdrawal of bombers. Patrolled Channel for 47 minutes. |
| 12 | 266 | 9 Spits.VB. | 1635 | Cotishall | Patrolled off Dutch coast. No e/a or ships seen. |
| 12 | 19 | 8 Spits.VB. | 1722 | Ludham | To escort Beauforts. Only 3 Beauforts seen. No. e/a or ships seen. |

ANGLO-AMERICAN AIR PLANNING: 1942 - 1943

In anticipation of the United States entering the War, American and British military staffs were active throughout 1941 shaping strategic plans to govern any future combined Anglo-American operations.⁽¹⁾ It was generally agreed that if Japan were also to enter the war, the destruction of the German armed forces was to take priority over operations against Japan. After the Japanese attack on Pearl Harbour on 6 December 1941, however, this policy was questioned and it was not until the Washington War Conferences of December 1941 and January 1942,⁽²⁾ that it was firmly decided to concentrate American troops and equipment in Europe, even at the expense of further reverses in the Pacific.

In the early months of 1942 discussion and air planning centred round the despatch of certain bomber and fighter units to the United Kingdom. It was hoped that the first of these would arrive in March, although in fact the first fighter squadrons did not arrive until June.

A.H.B./ID3/
1806 (B).
A.H.B./ID/
12/142.
A.H.B./ID8/
407 Pt.II.

The exact role that American units would play and the location of such units became a subject for acute controversy between Major General J. E. Chaney commanding U.S. Army Forces in the British Isles and the Air Staff which was not settled until after the visit of General Arnold to Great Britain at the end of May 1942. The Americans wanted their fighter unit to be based alongside their heavy bomber formations and to operate immediately as escorts to the bombers without any preparatory training. They were not to be used under any circumstances for the defence of Great Britain and were to operate independently of the Fighter Command system of control.

W.S.D./C.24
2 Jan. 1942.

The British Air Staff wanted the U.S. heavy bombers to operate from the Huntingdon area while the fighter units would, to begin with, be responsible for the defence of U.S. military bases in Northern Ireland and North-West Scotland where they would carry out operational training and become acclimatized. Training facilities for operating with U.S. bombers in the Huntingdon area would then become available and after 'graduating' in minor operation (escort of convoys etc.) the U.S. fighters would take over a sector in No. 12 Group. The Air Staff pointed out that offensive as well as defensive operations in Fighter Command were based on the system of sector control and it would therefore be impossible for U.S. units to operate outside this system. Eventually the whole of No. 12 Group would be taken over by U.S. fighter units where they would be alongside the heavy bomber units. The Northern Ireland and Ayr sectors would be used for operational training and recuperation. The question of the three American-manned squadrons in Fighter Command was also raised but the Air Officer Commanding-in-Chief, Fighter Command was pleased to note that there was no immediate demand from the

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- (1) For a full history of Anglo-American air planning up to September 1942 the reader is referred to the R.A.F. Monograph: (Anglo-American Collaboration in the Air War over North-West Europe).
- (2) Known as Arcadia.

personnel of these Eagle squadrons to be either repatriated or incorporated in American units. (1)

A.H.B./ID3/858.
Paper U.N.A.F.
(42) 3

By 28 May it was possible to define certain broad responsibilities. The responsibility for the air defence of Great Britain would remain with the Royal Air Force and the primary role of American pursuit groups stationed in Great Britain would be to escort American bombers and take part in combined offensive operations against the continent. In order to give effect to these agreements, it was arranged that:-

A.H.B./II/
12/42 -
30 May 1942.

(a) On arrival in the United Kingdom all pursuit groups were to be stationed in Northern Ireland, where they would undergo a short period of acclimatisation.

(b) Individual squadrons would then be attached to active Fighter Sectors in order to gain experience of operations.

(c) When sufficiently trained, the American squadrons would take over complete sectors and ultimately assume controls of complete fighter groups.

(d) In addition, the American pursuit groups would ultimately become responsible for the static defence of Northern Ireland and the second two groups to arrive would be allotted this task.

Discussions as to the exact location of the American units continued until 7 June, when it was finally agreed that of the first five groups to arrive, the first one should go to two airfields in Shropshire, the second to two airfields in North Lincolnshire, the third and fourth to Northern Ireland and the fifth to South Lincolnshire.

A.H.B./ID3/
1806 (B).

During May 1942 the possibility of equipping the first American pursuit groups with Spitfires was raised by the U.S. War Department through General Chaney. (2) After some discussion the Air Staff agreed to this, on condition that an equivalent number of P-51 Mustangs were supplied to the Royal Air Force. On 6 June the Chief of the Air Staff received a message from General Arnold which stated that in

A.H.B./ID3/
1806(B).

A.H.B./II/28.
A.D.M. (Stats)
Personnel
Statistics.

- (1) No. 71 Squadron formed at Church Fenton on 19 September 1940. No. 121 Squadron formed at Kirton-in-Lindsay on 14 May 1941. No. 133 Squadron formed at Coltishall on 1 August 1941. These squadrons were transferred to the U.S.A.A.C. on 1 October 1942 becoming Nos. 334, 335, and 336 Pursuit Squadrons. The numbers of Americans involved was not large, being less than 100 at all times between the dates of formation and the transfer to the U.S.A.A.C. In the R.A.F. as a whole there were approximately 145 on 3 September 1941. A peak was reached by 3 September 1942 when there were 404 Americans serving in the R.A.F. This total gradually declined until by 1 September 1945, there were only 83 still in the Service.
- (2) The American P.38 and P.39 fighters had poor high altitude performances and were therefore unsuitable for providing high cover for the American bombers.

exchange for 200 Spitfires, 80 Mustangs would be released to the Royal Air Force immediately and 40 more in each of the three succeeding months.

A.D.O.(U.S.)
Folder Eighth
Air Force, 1942
Papers.

On 10 June Major General Carl Spaatz left Washington to assume in the United Kingdom his responsibilities as Commanding General of the U.S. Eighth Air Force. On 14 June it was decided to take over the Bushy Hall Hotel, near Watford, for the Headquarters of the VIII Fighter Command. Finally on 21 June, the air echelons of the first American fighter group to operate from Great Britain - the 31st Pursuit Group - arrived to join the ground echelons, which were already in the country, and the group was duly equipped with eighty Spitfires.

A.H.B./ID3/
963(A).

For the next twelve months a small but steady stream of aircraft arrived in Great Britain from the United States; it was the heavy bomber force rather than the fighters that gained in strength. By July 1943 there were nine operational Thunderbolt (P.47) squadrons available for working with Fighter Command or for escorting the U.S. heavy bomber force. The latter consisted of 47 squadrons of which there were 39 Fortress and eight Liberator squadrons. Reference to their operations will be found in the chapters on offensive operations in this narrative.

FC/S.28822,
Encl. 48A.

In so far as the relations of the Eighth Air Force with Fighter Command were concerned in 1943 it was agreed that the U.S. fighters should continue to be employed in a strictly offensive capacity. They were not to have any responsibility for sector defence with the proviso that, if heavy enemy air attacks were resumed, U.S. fighters were to reinforce Fighter Command. It was therefore necessary that some training in sector defence should be undertaken. A small proportion of the fighter force (one flight per U.S. Group) was trained in a Fighter Command sector. It was hoped that the scheme would also give an opportunity for the airmen of the two countries to mix and thereby improve relations between the two forces. Initially training was carried out at the Biggin Hill, Tangmere and Kenley Sectors but because of the activity taking place, from the late summer of 1943 onwards in connection with the preparatory operations for a landing on the continent, training was transferred to the Colerne and Hornchurch Sectors.

Ibid,
Encl.80A.

A.H.B./ID3/
963(A).

By 1943 the Eighth U.S. Air Force was firmly established in this country and Anglo U.S. air planning was principally concerned with the Ninth U.S. Tactical Air Force, details of which will be found in R.A.F. Narrative: 'The Liberation of North-West Europe Vol. I'. The following table illustrates the build-up of the U.S.A.A.F. in Great Britain from August 1942 to May 1944. It does not include Transport/Troop carrier aircraft.

| Date | Types of A/C | Sqdns or Groups formed or forming | Sqdns or Groups Operational | U.E. per Unit | No. of A/C in Units | No. of A/C Serviceable |
|------------------|--------------------------------------------------------------------|-----------------------------------|-----------------------------|---------------|---------------------|------------------------|
| 12 August 1942 | (<u>FIGHTERS</u> Lightning (P.38) | 6 Sqdns | - | 25 | 102 ⁽¹⁾ | 56 |
| | Spitfire V | 6 Sqdns | 3 Sqdns | 25 | 148 | 92 |
| | (<u>BOMBERS</u> Fortress (B.17) | 8 Sqdns | - | 8 | 50 | 27 |
| | Boston (A.20) | 1 Sqdn | - | 13 | 14 | 8 |
| 30 December 1942 | (<u>FIGHTERS</u> Lightning (P.38) | 3 Sqdns | - | 25 | 123 | 43 |
| | Thunderbolt (P.47) | - | - | - | 76 | 10 |
| | Spitfire V | 3 Sqdns | 3 Sqdns | 18 | 84 | 59 |
| | (<u>BOMBERS</u> Fortress (B.17) | 20 Sqdns | 20 Sqdns | 8 | 182 | 102 |
| | Liberator (B.24) | 4 Sqdns | 4 Sqdns | 8 | 41 | 26 |
| 2 June 1943 | (<u>FIGHTERS</u> Thunderbolt (P.47) | 9 Sqdns | 9 Sqdns | 25 | 291 | 188 |
| | (<u>HEAVY BOMBERS</u> Fortress (B.17.B.40) | 48 Sqdns | 39 Sqdns | 8 | 611 | 375 |
| | Liberator (B.24) | 8 Sqdns | 8 Sqdns | 8 | 91 | 44 |
| | (<u>MEDIUM BOMBERS</u> Marauder (B.26) | 12 Sqdns | 4 Sqdns | 13 | 119 | 13 |
| | (<u>AIR SUPPORT</u> Spitfire Boston (A.20)) | 4 Sqdns | - | 21 | 183 | 75 |
| | Havoc (A.20) | | | | | |
| | Piper Cub | | | | | |
| 31 December 1943 | (<u>EIGHTH AIR FORCE</u> <u>Fighters</u> Thunderbolt (P.47) | 10 Group ⁽²⁾ | 9 Groups | 75 | 651 | 584 |
| | Lightning (P.38) | 2 Groups | 2 Groups | 75 | 116 | 86 |
| | (<u>Bombers</u> Fortress (B.17) | 19 Groups | 18 Groups | 35 | 594 | 525 |
| | Fortress (P.F.F.) | 1 Group | 1 Group | 36 | 35 | 22 |
| | Liberator (B.24) | 7 Groups | 7 Groups | 35 | 183 | 153 |
| | Photo/Recce | | | | | |
| | Lightning (F.5) | 1 Group | 1 Group | 48 | 21 | 14 |
| | Spitfire | | | | | |

(1) The considerable discrepancy between the number of aircraft in units and the number of aircraft serviceable is partly due to the fact that U.S.A.A.F. states counted not only aircraft in squadrons but those in repair depots and replacement centres.

(2) A Group normally consisted of three Squadrons.

| Date | Types of A/C | Sqdns or Groups formed or forming | Sqdns or Groups Operational | U.E. per Unit | No. of A/C in Units | No. of A/C Serviceable |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------|
| 31 December 1943 Contd. | (<u>NINTH AIR FORCE</u> <u>Fighters</u> Mustangs (P.51) Thunderbolt (P.47) <u>Recce</u> Mustang (P.51) Spitfire Grasshopper (L4B) <u>Bombers</u> Marauder (B.26) | 3 Groups 2 Groups | 1 Group - | 75 75 | 77 15 | 52 - |
| | (<u>EIGHTH AIR FORCE</u> <u>Fighters</u> Thunderbolt (P.47) Lightning (P.38) Mustangs (P.51) <u>Photo/Recce</u> Lightning (F.5) Spitfire <u>Bombers</u> Fortress (B.17) Fort/Lib. (P.F.&B.S.) Liberator (B.24) | 1 Group ⁽¹⁾ 4 Groups 4 Groups 7 Groups 1 Group | 1 Group 4 Groups 4 Groups 7 Groups 1 Group | 72 75 75 75 48 | 57 345 276 501 53 | 57 246 221 362 35 |
| 30 May 1944 | (<u>NINTH AIR FORCE</u> <u>Fighters</u> Lightning (P.38) Mustang (P.51) Thunderbolt (P.47) Blackwidow (P.61/70) Mustang (F.6 Recce) <u>Photo Recce</u> Lightning (F.5) <u>Bombers</u> Marauders (B.26) Boston (A.20) | 21 Groups 2 Groups 19 Groups 3 Groups 2 Groups 13 Groups 3 Sqdns 1 Group 1 Group 8 Groups + 1 Sqdn 3 Groups | 21 Groups 2 Groups 16 Groups 3 Groups 2 Groups 13 Groups - 1 Group 1 Group 8 Groups + 1 Sqdn 3 Groups | 48 36 + 24 48 75 75 75 12 72 48 57 57 | 1240 - 1264 205 130 941 4 107 47 515 188 | 974 - 881 121 118 773 4 87 33 389 109 |

(1) 4 Squadrons (Three squadrons of Fighter/Recce. and one Liaison Squadron)

ORDER OF BATTLE FOR OPERATION JUBILEE: 19 AUGUST 1942.TLM/11G/
3/3.

According to the Air Force Commander's report the number of squadrons available was 67, although only 65 are listed in the Order of Battle attached to the report. In addition a Typhoon Wing of 3 squadrons (Nos. 56, 266 and 609) made diversionary sweeps over France and Belgium. The Squadrons which took part in the operation are as follows:-

| | | |
|----------------------|---------------------|------------------|
| 3 (Close Support) | 245 (Close Support) | |
| 13 (Smoke) | 253 (Close Support) | |
| 19 (Fighter) | 266 (Fighter) | |
| 26 (Army Co-op) | 302 (Fighter) | (Polish) |
| 32 (Close Support) | 303 (") | (") |
| 41 (Fighter) | 306 (") | (") |
| 43 (Close Support) | 308 (") | (") |
| 56 (Fighter) | 310 (") | (Czech) |
| 64 (Fighter) | 312 (") | (") |
| 65 (") | 317 (") | (Polish) |
| 66 (") | 331 (") | (Norwegian) |
| 71 (") | 332 (") | (") |
| 81 (") | 340 (") | (French) |
| 87 (Close Support) | 350 (") | (Belgian) |
| 88 (Bomber) | 400 (Army Co-op) | (RCAF) |
| 91 (Fighter) | 401 (Fighter) | (RCAF) |
| 107 (Bomber) | 402 (") | (") |
| 111 (Fighter) | 403 (") | (") |
| 118 (") | 411 (") | (") |
| 121 (") | 412 (") | (") |
| 122 (") | 414 (Army Co-op) | (RCAF) |
| 124 (") | 416 (Fighter) | (RCAF) |
| 129 (") | 418 (") | (") (Intruder) |
| 130 (") | 485 (") | (RNZAF) |
| 131 (") | 501 (") | |
| 133 (") | 602 (") | |
| 154 (") | 605 (") | (Intruder) |
| 165 (") | 609 (") | |
| 174 (Fighter Bomber) | 610 (") | |
| 175 (") | 611 (") | |
| 222 (Fighter) | 614 (Smoke) | |
| 226 (Smoke) | 616 (Fighter) | |
| 232 (Fighter) | 307 (Fighter) | (U.S.A.) |
| 239 (Army Co-op) | 308 (") | (") |
| 242 (Fighter) | 309 (") | (") |

| Type | No. of squadrons | Aircraft |
|----------------|------------------|---------------------|
| Fighter | 48 | Spitfire |
| | 3 | Typhoon |
| Close Support | 6 | Hurricane |
| Army Co-op | 4 | Mustang |
| Smoke | 3 | Blenheim (2) Boston |
| Fighter Bomber | 2 | Hurricanes |
| Bomber | 2 | Boston |
| Intruder | 2 | Boston |

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In addition to the squadrons listed above, aircraft of Coastal Command maintained patrols throughout the night prior to the attack and patrolled the South Coast the following night covering naval vessels returning from Dieppe (a total of 7 sorties were flown by Nos. 59 (Hudson) and 502 (Whitley) Squadrons). Air/Sea Rescue sorties were flown by No. 277 Squadron throughout the operation.

SUMMARY OF INTRUDER OPERATIONS DURING 1942

| DATE | NO. OF SORTIES | SQDN. | NO. OF ENEMY A/C SEEN | NO. OF ENEMY A/C CLAIMED DESTROYED (1) | NO. OF ATTACKS CARRIED OUT | LOSSES | REMARKS |
|-----------------|----------------|------------------------------------------|-----------------------|----------------------------------------|----------------------------|--------|-------------------------------------------------------------------------------------------------------------|
| <u>JANUARY</u> | 17 | 3 & 23 | 1 | 1 | 11 | NIL | Attention devoted to the patrolling and bombing of enemy airfields. |
| <u>FEBRUARY</u> | 33 | 3 & 23 | NIL | NIL | 15 | NIL | Continuing attention to airfields but railway sidings and marshalling yards also attacked. |
| <u>MARCH</u> | 65 | 3, 23, 418 | 11 | 2 (3 Damaged) | 50 | NIL | Attacks on airfields continued but attention also given to marshalling-yards, transport and oil refineries. |
| <u>APRIL</u> | 192 | 1, 3, 23, 418, 174, 32, 203 | 61 | 9 (11 Damaged) | 137 | 5 | Bombing of airfields continued but increased attention to marshalling yards and rail transport. |
| <u>MAY</u> | 183 | 1, 3, 23, 418, 111, 91, 43, 87, 245, 247 | 40 | 10 (10 Damaged) | 147 | 4 | Continued bombing of airfields but increased number of attacks on road and rail transport. |
| <u>JUNE</u> | 336 | 1, 3, 23, 418, 87, 245, 247, 485, 403 | 63 | 15 (10 Damaged) | 169 | 9 | Airfields, marshalling yards factories and trains securing equal attention. |

(1) German records do not list losses due to 'Intruders' separately, so that no direct comparison with enemy loss totals is possible.

| DATE | NO. OF SORTIES | SQDN. | NO. OF ENEMY A/C SEEN | NO. OF ENEMY A/C CLAIMED DESTROYED (1) | NO. OF ATTACKS CARRIED OUT | LOSSES | REMARKS |
|------------------|----------------|---------------------------------------------|-----------------------|----------------------------------------|----------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>JULY</u> | 280 | 1,3,23, 418,247, 605,87, 43,245,32 | 45 | 9 (8 Damaged) | 103 | 6 | Bombing of airfields taking secondary place to attacks on marshalling yards, trains and road transport. First Mosquito sortie by No.23 Squadron on 5/6 July. |
| <u>AUGUST</u> | 147 | 3,23,418, 605,247, 87,32,43, 245 | 37 | 2 (4 Damaged) | 53 | 5 | Much reduced activity, chiefly concentrated against enemy transport. |
| <u>SEPTEMBER</u> | 92 | 3,23,418 | 15 | NIL (1 Damaged) | 34 | 5 | Very limited activity almost entirely devoted to attacks on railway transport. |
| <u>OCTOBER</u> | 62 | 3,23,418, 605 | 7 | NIL | 17 | NIL | Bad weather and technical trouble contributing greatly to very limited activity against railway rolling stock. |
| <u>NOVEMBER</u> | 93 | 3,23,418, 605,609, 137 | 11 | NIL | 49 | 3 | Slight increase of activity. Effort mainly devoted to attacks on trains and to the dropping of leaflets. Typhoons and Whirli-bombers employed by Nos.609 and 137 Squadrons respectively. |

(55692)453

| DATE | NO. OF SORTIES | SQDN. | NO. OF ENEMY A/C SEEN | NO. OF ENEMY A/C CLAIMED DESTROYED (1) | NO. OF ATTACKS CARRIED OUT | LOSSES | REMARKS |
|-----------------|-------------------|------------------------------|-----------------------------|-------------------------------------------------|-------------------------------------|--------|--------------------------------------------------------------------------------|
| <u>DECEMBER</u> | 98 | 3,23, 418,605, 609,137 | 18 | NIL (1 Damaged) | 44 | 1 | Effort devoted for the greater part to attacks on trains and leaflet dropping. |
| TOTAL 1942 | 1508 | - | 299 | 48 (48 Damaged) | 825 | 38 | |

Authority: Fighter Command Form 'Y'.

SECRET

SECRET

SECRET

APPENDIX NO. 16

1

ORDER OF BATTLE OF FIGHTER COMMAND

TO 2200 HOURS 7 JANUARY 1943

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|-----------------|-------------------------------|
| <u>No. 9 GROUP</u> | | | | |
| Woodvale | 317 (Polish) | Spitfire VB | Woodvale | Day |
| " | 256 | Beaufighter VI | Woodvale | Night |
| Valley | 456 (RAAF) | Beaufighter VI | Valley | Night (re-equipping Mosquito) |
| " | 41 | Spitfire VB | Llanbedr | Day |
| Atcham | 247 | Hurricane II | High Ercall | Day (re-equipping Typhoon) |
| " | 535 (Turbinlite) | Hurricane & Boston | High Ercall | Night |
| Honiley | 96 | Beaufighter VI | Honiley | Night |
| Summary: S.E. Day Squadrons 3; Turbinlite Squadrons 1; T.E. Night Squadrons 3. | | | | |
| <u>No. 10 GROUP</u> | | | | |
| Fairwood Common | 421 (RCAF) | Spitfire VB | Angle | Day |
| " | 125 (Newfoundland) | Beaufighter VI | Fairwood Common | Night |
| " | 536 (Turbinlite) | Boston & Hurricane | Fairwood Common | Night |
| Colerne | 533 (Turbinlite) | Boston & Hurricane | Charmy Down | Night |
| " | 245 | Typhoon | Charmy Down | Day |
| " | 264 | Mosquito | Colerne | Night (6 a/o at Trebalzue) |
| " | 184 (Army Support) | Hurricane IID | Colerne | Day (Forming) |
| Portreath | 604 | Beaufighter I | Predannack | Night |
| " | 149 Flight | Hurricane I | St. Mary's | Day |
| " | 19 | Spitfire VB | Perranporth | Day (Long Range) |
| " | 130 | Spitfire VB | Perranporth | Day (L.R.) |
| " | 234 | Spitfire VB | Perranporth | Day (L.R.) |
| Exeter | 307 (Polish) | Mosquito | Exeter | Night |
| " | 310 (Czech) | Spitfire V & VC | Exeter | Day (L.R.) |
| " | 257 | Typhoon | Exeter | Day |
| " | 175 (A.S.) | Hurricane Bombers | Harrowbeer | Day |
| " | 193 | Typhoon | Harrowbeer | Day (Forming) |
| " | 313 (Czech) | Spitfire VB | Church Stanton | Day (L.R.) |
| " | 312 (Czech) | Spitfire VB & VC | Church Stanton | Day (L.R.) |
| Middle Wallop | 406 (RCAF) | Beaufighter VI | Middle Wallop | Night |
| " | 537 (Turbinlite) | Boston & Hurricane | Middle Wallop | Night |
| " | 504 | Spitfire VB & VC | Ibsley | Day (L.R.) |
| " | 616 | Spitfire VI | Ibsley | Day (L.R.) |
| " | 66 | Spitfire VB & VC | Ibsley | Day (L.R.) |
| " | 266 | Typhoon | Warmwell | Day |
| " | 263 (A.S.) | Whirlwind Bombers | Warmwell | Day |
| Summary: S.E. Day Squadrons 14; T.E. Day Squadrons 1; Turbinlite Squadrons 3; T.E. Night Squadrons 5; Day Squadrons forming 2. | | | | |
| <u>No. 11 GROUP</u> | | | | |
| Tangmere | 165 | Spitfire VB | Tangmere | Day |
| " | 534 (Turbinlite) | Hurricane & Boston | Tangmere | Night |
| " | 486 (RNZAF) | Typhoon | Tangmere | Day |
| " | 485 (RNZAF) | Spitfire VB | Westhampnett | Day |
| " | 131 | Spitfire VB | Westhampnett | Day (L.R.) |
| " | 141 | Beaufighters I | Ford | Night |
| " | 605 (Intruder) | Boston III | Ford | Night |
| " | F.I.U. | Beaufighter | Ford | Night |
| Kenley | 402 (RCAF) | Spitfire IX | Kenley | Day |
| " | 401 (RCAF) | Spitfire IX | Kenley | Day |
| " | 412 (RCAF) | Spitfire VB | Redhill | Day |
| " | 416 (RCAF) | Spitfire VB | Redhill | Day |
| Biggin Hill | 340 (Free French) | Spitfire IX | Biggin Hill | Day |
| " | 611 | Spitfire IX | Biggin Hill | Day |
| " | 91 | Spitfire VB & VI | Lympe | Day |
| " | 29 | Beaufighter I | West Malling | Night |
| " | 531 (Turbinlite) | Boston & Hurricane | West Malling | Night |
| Hornchurch | 453 (RAAF) | Spitfire VB | Southend | Day |
| " | 122 | Spitfire IX | Fairlop | Day |
| " | 64 | Spitfire IX | Fairlop | Day |
| " | 137 (A.S.) | Whirlwind Bomber | Manston | Day/Night |
| " | 174 (A.S.) | Hurricane Bomber | Manston | Day |
| " | 609 | Typhoon | Manston | Day |
| " | 350 (Belgian) | Spitfire VB | Hornchurch | Day |
| " | 418 (RCAF/Intruder) | Boston III | Bradwell Bay | Night |

(55692) 455

SECRET

SECRET

APPENDIX NO. 16

2

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|------------------------------|------------------|--------------------|--------------|-----------|
| <u>No. 11 GROUP (Contd.)</u> | | | | |
| North Weald | 331 (Norwegian) | Spitfire IX | North Weald | Day |
| " | 332 (Norwegian) | Spitfire IX | North Weald | Day |
| " | 3 | Hurricane IIC | Hunsdon | Day/Night |
| " | 530 (Turbinlite) | Boston & Hurricane | Hunsdon | Night |
| " | 85 | Mosquito | Hunsdon | Night |
| Northolt | 315 (Polish) | Spitfire IX | Northolt | Day |
| " | 306 (Polish) | Spitfire IX | Northolt | Day |
| " | 308 (Polish) | Spitfire VB | Northolt | Day |
| " | 302 (Polish) | Spitfire VB | Heston | Day |
| Debden | 157 | Mosquito | Castle Camps | Night |
| " | 132 | Spitfire VB | Martlesham | Day |
| " | 182 (A.S.) | Typhoon | Martlesham | Day |
| " | 334 (USAAF) | Spitfire VB | Debden | Day |
| " | 336 (USAAF) | Spitfire VB | Debden | Day |
| " | 335 (USAAF) | Spitfire VB | Debden | Day |

Summary: S.E. Day Squadrons 29; T.E. Day Squadrons 1;
Turbinlite Squadrons 3; T.E. Night Squadrons 4;
Intruder Squadrons 2; F.I.U.

| | | | | |
|---------------------|------------------|--------------------|------------------|---------------|
| <u>No. 12 GROUP</u> | | | | |
| Duxford | 181 (A.S.) | Typhoon | Duxford | Day |
| Coltishall | 68 | Beaufighter I | Coltishall | Night |
| " | 167 | Spitfire VB & VC | Ludham | Day (L.R.) |
| " | 56 | Typhoon | Matlask | Day |
| Wittering | 118 | Spitfire VB | Kingscliffe | Day (L.R.) |
| " | 151 | Mosquito | Wittering | Night |
| " | 532 (Turbinlite) | Hurricane & Boston | Wittering | Night |
| Digby | 198 | Typhoon | Digby | Day (Forming) |
| " | 411 (RCAF) | Spitfire VB | Digby | Day |
| " | 409 (RCAF) | Beaufighter VI | Coleby Grange | Night |
| Kirton | 303 (Polish) | Spitfire VB | Kirton | Day |
| " | 538 (Turbinlite) | Hurricane & Boston | Hibaldstow | Night |
| Church Fenton | 316 (Polish) | Spitfire VB | Hutton Cranswick | Day |
| " | 195 | Typhoon | Hutton Cranswick | Day (Forming) |
| " | 25 | Mosquito | Church Fenton | Night |
| " | 183 (A.S.) | Typhoon | Church Fenton | Day (Forming) |

Summary: S.E. Day Squadrons 7; Turbinlite Squadrons 2;
T.E. Night Squadrons 4; Day Squadrons forming 3.

| | | | | |
|---------------------|------------------|--------------------|------------|---------------------------------|
| <u>No. 13 GROUP</u> | | | | |
| Catterick | 403 (RCAF) | Spitfire VB | Catterick | Day |
| " | 219 | Beaufighter VI | Scorton | Night |
| Custon | 410 (RCAF) | Mosquito | Acklington | Night |
| " | 1 | Typhoon | Acklington | Day |
| " | 539 (Turbinlite) | Hurricane & Boston | Acklington | Night |
| Turnhouse | 65 | Spitfire VB | Drem | Day |
| " | 124 | Spitfire VI | Drem | Day (Re-equipping Spitfire VII) |
| " | 197 | Typhoon | Drem | Day (Forming) |
| Ayr | 222 | Spitfire VB | Ayr | Day |
| " | 488 (RNZAF) | Beaufighter II | Ayr | Night (Re-equipping Beau. VI) |

Summary: S.E. Day Squadrons 5; Turbinlite Squadrons 1;
T.E. Night Squadrons 3; Day Squadrons forming 1.

| | | | | |
|---------------------|-----|------------------|------------|------------|
| <u>No. 14 GROUP</u> | | | | |
| Kirkwall | 602 | Spitfire VB | Skeabrae | Day |
| " | 610 | Spitfire VB | Castletown | Day |
| " | 129 | Spitfire VB & VI | Grimsetter | Day (L.R.) |
| Peterhead | 164 | Spitfire VB | Peterhead | Day |

Summary: Day Squadrons 4.

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------|----------|-----------|-----------|---------|
|--------|----------|-----------|-----------|---------|

R.A.F. NORTHERN IRELAND

| | | | | |
|--------------|-----|----------------|--------------|-------|
| Ballyhalbert | 153 | Beaufighters I | Ballyhalbert | Night |
| " | 501 | Spitfire VB | Ballyhalbert | Day |

Summary: Day 1; Night 1.U.S.A.A.F. Squadrons (Non-Operational)

| | | | | |
|----------|------------|------|----------|-----|
| Kirton | 82 Pursuit | P.38 | Coxhill | Day |
| " | 83 Pursuit | P.38 | Coxhill | Day |
| " | 84 Pursuit | P.38 | Coxhill | Day |
| Eglinton | 95 Pursuit | P.38 | Eglinton | Day |
| " | 96 Pursuit | P.38 | Eglinton | Day |
| " | 97 Pursuit | P.38 | Eglinton | Day |

FLEET AIR ARM SQUADRONS OPERATING UNDER
FIGHTER COMMAND

| | | | | |
|------------|-----|---------------|------------|-------|
| Kirkwall | 800 | Sea Hurricane | Grimsetter | Night |
| Ouston | 804 | Sea Hurricane | Ouston | Night |
| Hornchurch | 841 | Albacore | Manston | Night |
| " | 823 | Albacore | Manston | Night |
| Turnhouse | 884 | Seafire | Turnhouse | Day |
| " | 886 | Fulmars | Turnhouse | Day |

SUMMARY FOR FIGHTER COMMAND

| | Day | Squadrons | | Night | Squadrons | | Total |
|--------------------------------------|-------------|-------------|-------------------|-------------|-----------------|--|-------|
| | <u>S.E.</u> | <u>T.E.</u> | <u>Turbinlite</u> | <u>T.E.</u> | <u>Intruder</u> | | |
| No. 9 Group | 3 | - | 1 | 3 | - | | 7 |
| No.10 Group | 14½ | 1 | 3 | 5 | - | | 23½ |
| No.11 Group (excluding F.I.U.) | 29 | 1 | 2 | 4 | 2 | | 38 |
| No.12 Group | 7 | - | 2 | 4 | - | | 13 |
| No.13 Group | 5 | - | 1 | 3 | - | | 9 |
| No.14 Group | 4 | - | - | - | - | | 4 |
| R.A.F.N.I. | 1 | - | 1 | - | - | | 2 |
| Total of Squadrons formed | 63½ | 2 | 10 | 19 | 2 | | 96½ |
| Squadrons forming | 6 | - | - | - | - | | 6 |
| | 69½ | 2 | 10 | 19 | 2 | | 102½ |

ORDER OF BATTLE OF FIGHTER COMMAND TO 2500 HOURS 3 JUNE 1943

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------|----------|-----------|-----------|---------|
|--------|----------|-----------|-----------|---------|

NO. 9 GROUP

| | | | | |
|----------|------------|----------------|----------|-------|
| Woodvale | 198 | Typhoons | Woodvale | Day |
| Valley | 406 (RCAF) | Beaufighter VI | Valley | Night |
| Honiley | 96 | Beaufighter VI | Honiley | Night |

Summary: S.E. Day Squadrons 1; T.E. Night Squadrons 2.

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------------|--------------------|------------------|-----------------|---------------|
| <u>NO. 10 GROUP</u> | | | | |
| Fairwood Common | 307 (Polish) | Mosquito II | Fairwood Common | Night |
| Colerne | 151 | Mosquito II | Colerne | Night |
| " | 183 (AS) | Typhoon Bomber | Colerne | Day |
| Portreath | 264 | Mosquito II | Fredannack | Night |
| " | 1449 Flight | Hurricane IIB | St. Mary's | Day |
| " | 610 | Spitfire V | Perranporth | Day (L.R.) |
| " | 132 (Mobile) | Spitfire V | Perranporth | Day (L.R.) |
| " | 412 (RCAF) | Spitfire V | Perranporth | Day (L.R.) |
| " | 414 (RCAF) | Mustang I | Harrowbeer | Day |
| Exeter | 125 (Newfoundland) | Beaufighter VI | Exeter | Night |
| " | 310 (Czech.) | Spitfire V | Exeter | Day (L.R.) |
| " | 266 | Typhoon | Exeter | Day |
| " | 193 | Typhoon | Harrowbeer | Day |
| " | 312 (Czech.) | Spitfire V | Church Stanton | Day (L.R.) |
| " | 313 (Czech.) | Spitfire V | Church Stanton | Day (L.R.) |
| Middle Wallop | 456 (RAAF) | Mosquito II | Middle Wallop | Night |
| " | 164 (AS) | Hurricane IV | Middle Wallop | Day |
| " | 16 | Mustang I | Middle Wallop | Day |
| " | 504 | Spitfire V | Ibsley | Day (L.R.) |
| " | 616 | Spitfire VI | Ibsley | Day |
| " | 129 | Spitfire V | Ibsley | Day (L.R.) |
| " | 257 | Typhoon | Warmwell | Day |
| " | 263 (AS) | Whirlwind Bomber | Warmwell | Day |
| " | 169 | Mustang I | Andover | Day |
| No. 36 Wing | 658 (AOP) | Auster III | Old Sarum | Day (Forming) |

Summary: S.E. Day Squadrons 17½; T.E. Night Squadrons 5; T.E. Day Squadrons 1;
1 Auster Squadron Forming.

NO. 11 GROUP

| | | | | |
|-------------|-------------------|------------------|---------------|----------------------|
| Tangmere | 197 | Typhoon | Tangmere | Day |
| " | 486 (RNZAF) | Typhoon | Tangmere | Day |
| " | 485 (RNZAF) | Spitfire VB | Merston | Day (Low Flying) |
| " | 167 | Spitfire VB | West Hampnett | Day (L.F.) |
| " | 256 | Mosquito XII | Ford | Night |
| " | 418 (RCAF) | Boston III | Ford | Night (Re-equipping) |
| " | | | | Mosquito VI) |
| " | F.I.U. | Beaufighter | Ford | Night |
| " | 268 | Mustang I | Odiham | Day (Re-equipping) |
| " | | | | Mustang IA) |
| " | 168 | Mustang I | Odiham | Day (Re-equipping) |
| " | | | | Mustang IA) |
| Kenley | 421 (RCAF) | Spitfire IX | Kenley | Day |
| " | 403 (RCAF) | Spitfire IX | Kenley | Day |
| " | 401 (RCAF) | Spitfire VB | Redhill | Day |
| " | 411 (RCAF) | Spitfire VB | Redhill | Day (L.F.) |
| " | 400 (RCAF) | Mustang I | Dunsfold | Day |
| " | 430 (RCAF) | Mustang I | Dunsfold | Day |
| Biggin Hill | 341 (Free French) | Spitfire IX | Biggin Hill | Day |
| " | 611 | Spitfire IX | Biggin Hill | Day (L.F.) |
| " | 41 | Spitfire XII | Friston | Day |
| " | 1 | Typhoon | Lympne | Day |
| " | 91 | Spitfire XII | Hawkinge | Day |
| " | 174 (AS) | Typhoon Bomber | Gravesend | Day |
| " | 85 | Mosquito XII | West Malling | Night |
| " | 3 | Typhoon | West Malling | Day |
| " | 318 (Polish) | Hurricane I | Detling | Day (Forming) |
| Hornchurch | 222 | Spitfire IX | Hornchurch | Day |
| " | 453 (RAAF) | Spitfire IX | Hornchurch | Day |
| " | 137 (AS) | Whirlwind Bomber | Manston | Day (Re-equipping) |
| " | | | | Hurricane IV) |
| " | 609 | Typhoon | Manston | Day |
| North Weald | 29 | Beaufighter I | Bradwell Bay | Night (Re-equipping) |
| " | | | | Mosquito XII) |
| " | 247 (Mobile) | Typhoon | Bradwell Bay | Day |
| " | 124 | Spitfire VI | North Weald | Day (Re-equipping) |
| " | | | | Spitfire VII) |
| " | 331 (Norwegian) | Spitfire IX | North Weald | Day |
| " | 332 (") | Spitfire IX | North Weald | Day |
| " | 157 | Mosquito II | Hunsdon | Night |
| " | 515 | Defiant II | Hunsdon | Night (Re-equipping) |
| " | | | | Beaufighter II) |
| Northolt | 303 (Polish) | Spitfire IX | Northolt | Day |
| " | 316 (") | Spitfire IX | Northolt | Day |
| " | 317 (") | Spitfire VB | Heston | Day |
| " | 302 (") | Spitfire VB | Heston | Day |

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-------------|--------------|--------------|--------------|---------------------------------------|
| Debden | 605 (Int.) | Mosquito II | Castle Camps | Night (Re-equip- ping Mosquito VI) |
| Debden | 501 | Spitfire VB | Martlesham | Day (L.F.) |
| No. 35 Wing | 655 (A.O.P.) | Auster III | Detling | Day |
| " " | 653 (") | Auster III | Penshurst | Day |
| " " | 1 (CACU) | Spitfire IIB | Detling | Day |

Summary: S.E. Day Squadrons 32; T.E. Night Squadrons 5; T.E. Day Squadrons 1;
F.I.U.; Intruder Squadrons 2; A.O.P. Squadrons 2; Hurricane Squadron
Forming 1.

NO. 12 GROUP

| | | | | |
|---------------|--------------|----------------|------------------|----------------------------------------|
| Coltishall | 68 | Beaufighter VI | Coltishall | Night |
| " | 195 | Typhoon | Ludham | Day |
| " | 56 | Typhoon | Matlock | Day |
| " | 118 | Spitfire V | Coltishall | Day (L.R.) |
| Wittering | 141 | Beaufighter I | Wittering | Night (Re-equipping Beaufighter VI) |
| Digby | 19 (Mobile) | Spitfire V | Digby | Day (L.R.) |
| " | 402 (RCAF) | Spitfire V | Digby | Day (L.R.) |
| " | 416 (") | Spitfire V | Wellington | Day (L.R.) |
| " | 410 (") | Mosquito II | Coleby Grange | Night |
| Church Fenton | 315 (Polish) | Spitfire VB | Hutton Cranswick | Day |
| " | 25 | Mosquito II | Church Fenton | Night |
| " | 308 (Polish) | Spitfire VB | " " | Day |
| " | 613 | Mustang I | York | Day |
| " | 231 | Tomahawk I | York | Day (Re-equipping Mustang I) |
| Duxford | 2 | Mustang I | Sawbridgeworth | Day |
| " | 4 | Mustang I | Bottisham | Day |
| " | 309 (Polish) | Mustang I | Snailwell | Day |
| " | 170 | Mustang I | Snailwell | Day |
| No. 33 Wing | 659 (A.O.P.) | Auster III | Firbeck | Day (Forming) |
| No. 34 Wing | 656 (A.O.P.) | Auster III | Stapleford | Day |
| " " | 657 (A.O.P.) | Auster III | Tawney | Day |
| " " | | | Westley | Day |

Summary: S.E. Day Squadrons 14; T.E. Night Squadrons 4; A.O.P. Squadrons 2;
Auster Squadron Forming 1.

NO. 13 GROUP

| | | | | |
|-------------|-------------------|----------------|------------|-------|
| Catterick | 306 (Polish) | Spitfire VB | Catterick | Day |
| " | 604 | Beaufighter VI | Scorton | Night |
| Ouston | 409 (RCAF) | Beaufighter VI | Acklington | Night |
| " | 350 (Belgian) | Spitfire VB | Acklington | Day |
| Turnhouse | 340 (Free French) | Spitfire VB | Drem | Day |
| " | 64 | Spitfire VB | Ayr | Day |
| " | 488 (RNZAF) | Beaufighter VI | Ayr | Night |
| " | 63 | Mustang I | Macmerry | Day |
| No. 32 Wing | 652 (A.O.P.) | Auster III | Methven | Day |

Summary: S.E. Day Squadrons 6; T.E. Night Squadrons 3; A.O.P. Squadrons 1.

NO. 14 GROUP

| | | | | |
|-----------|-----|-----------------|------------|------------|
| Kirkwall | 66 | Spitfire VB & V | Skeabrae | Day (L.R.) |
| " | 131 | Spitfire VB | Castletown | Day |
| " | 234 | Spitfire VB | Skeabrae | Day |
| Peterhead | 165 | Spitfire VB | Peterhead | Day |

Summary: S.E. Day Squadrons 4.

R.A.F. NORTHERN IRELAND

| | | | |
|--------------|-----|-------------|------------------|
| Ballyhalbert | 130 | Spitfire VB | Ballyhalbert Day |
|--------------|-----|-------------|------------------|

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------------------|-----------------|-------------|------------------|--------------------------------|
| <u>TACTICAL AIR FORCE</u> | | | | |
| <u>NO. 2 GROUP</u> | | | | |
| Feltwell | 464 (RAAF) | Ventura II | Methwold | Day |
| " | 487 (RNZAF) | Ventura II | Methwold | Day |
| Foulsham | 98 | Mitchell II | Foulsham | Day |
| " | 180 | Mitchell II | Foulsham | Day |
| " | 320 (Dutch) * | Mitchell II | Attlebridge | Day |
| Swanton Morley | 88 | Boston III | Swanton Morley | Day |
| " | 226* | Mitchell II | Swanton Morley | Day |
| " | 21 | Ventura | Oulton | Day (Re-equipping Mitchell II) |
| West Raynham | 107 | Boston III | Great Massingham | Day |
| " | 342* (Lorraine) | Boston III | Sculthorpe | Day |

Summary: T.E. Day Squadrons 10; Non-Operational T.E. Day Squadrons 3.

* Temporarily non-operational.

| | | | | |
|---------------------|-----------------------|----------------|---------------------------------|-----|
| <u>NO. 83 GROUP</u> | | | | |
| 121 Airfield | 245 (Detachment) | Typhoon | Selsey (Advance Landing Ground) | Day |
| " | 65 (") | Spitfire VB | Selsey (A.L.G.) | Day |
| 122 Airfield | 602 (Mobile) | Spitfire VB | Bognor (A.L.G.) | Day |
| " | 122 (Detachment) | Spitfire VB | Bognor (A.L.G.) | Day |
| " | 184 (AS) (Mobile) | Hurricane IV | Merston | Day |
| 123 Airfield | 26 | Mustang | Gatwick | Day |
| " | 239 | Mustang | Gatwick | Day |
| 124 Airfield | 181 (AS) (Detachment) | Typhoon Bomber | Appledram (A.L.G.) | Day |
| " | 182 (AS) (Mobile) | Typhoon Bomber | Appledram A.L.G. | Day |
| 124 Airfield | 175 (AS) (Mobile) | Typhoon Bomber | Appledram A.L.G. | Day |

Summary: S.E. Day Squadrons 10.

| | | | | |
|-----------------------------|-----|-------------------|-----------------|----------------------------------|
| <u>NO. 38 AIRBORNE WING</u> | | | | |
| Netheravon | 295 | Halifax/Whitley V | Holmsley South | Tug A/c (Re-equipping Albemarle) |
| Hurn | 296 | Albemarle | Hurn | Tug A/c |
| Netheravon | 297 | Whitley V | Thruxton | Tug A/c (Re-equipping Albemarle) |
| Odiham | 140 | Spitfire IV & VII | Hartford Bridge | Photo/Recce. |

FLEET AIR ARM SQUADRONS OPERATING UNDER FIGHTER COMMAND

| | | | | |
|------------|-----|----------|---------|-------|
| Hornchurch | 841 | Albacore | Manston | Night |
|------------|-----|----------|---------|-------|

OTHER COMMAND SQUADRONS OPERATING FROM FIGHTER COMMAND AERODROMES

| | | | | |
|------------|---------------|-------------|------------|-------|
| Exeter | 816 (F.A.A.) | Swordfish | Exeter | Night |
| Turnhouse | 884 (F.A.A.) | Seafire | Turnhouse | Day |
| " | 886 (F.A.A.) | Fulmar | Turnhouse | Day |
| Portsmouth | 248 (Coastal) | Beaufighter | Predannack | Day |

U.S.A.A.F. SQUADRONS

| | | | | |
|--------|--------------|------|-----------|-----|
| Debden | 82 (Pursuit) | P.47 | Duxford | Day |
| " | 83 (") | P.47 | Duxford | Day |
| " | 84 (") | P.47 | Duxford | Day |
| " | 61 (Pursuit) | P.47 | Horsham | Day |
| " | 62 (") | P.47 | St. Faith | |
| " | 63 (") | P.47 | " | Day |
| " | 334 (") | P.47 | " | Day |
| " | 335 (") | P.47 | Debden | Day |
| " | 336 (") | P.47 | Debden | Day |

Summary: S.E. Day Squadrons 9.

SUMMARY FOR FIGHTER COMMAND
(EXCLUDING NO. 38 AIRBORNE WING)

| | <u>Day Squadrons</u> | | | <u>Night Squadrons</u> | | | <u>Total</u> |
|---------------------------------------|----------------------|-------------|---------------|------------------------|-------------|-----------------|--------------|
| | <u>S.E.</u> | <u>T.E.</u> | <u>Auster</u> | <u>S.E.</u> | <u>T.E.</u> | <u>Intruder</u> | |
| No. 9 Group | 1 | - | - | - | 2 | - | 3 |
| No. 10 Group | 17½ | 1 | - | - | 5 | - | 23½ |
| No. 11 Group (excluding F.I.U.) | 32 | 1 | 2 | - | 5 | 2 | 42 |
| No. 12 Group | 14 | - | 1 | - | 4 | - | 19 |
| No. 13 Group | 6 | - | 1 | - | 3 | - | 10 |
| No. 14 Group | 4 | - | - | - | - | - | 4 |
| R.A.F. N.I. | 1 | - | - | - | - | - | 1 |
| T.A.F. No. 2 Group | - | 10* | - | - | - | - | 10 |
| No. 83 Group | 10 | - | - | - | - | - | 10 |
| Total of Squadrons Formed | 85½ | 12 | 4 | - | 19 | 2 | 122½ |
| Squadrons Forming | 1 | - | 2 | - | - | - | 3 |
| | 86½ | 12 | 6 | - | 21 | 2 | 125½ |

* 3 Squadrons Temporarily Non-operational.

ORDER OF BATTLE OF AIR DEFENCE GREAT BRITAIN TO

2200 HOURS 30 DECEMBER 1943

| <u>Sector</u> | <u>Squadron</u> | <u>Equipment</u> | <u>Aerodrome</u> | <u>Remarks</u> |
|---------------|--------------------|--------------------|------------------|--------------------------------------------------|
| | | <u>NO. 9 GROUP</u> | | |
| Woodvale | 222 (Mobile) * | Spitfire VB | Woodvale | Day (L.R.) |
| " | 125 (Newfoundland) | Beaufighter VI | Valley | Night |
| " | 275 Air/Sea Rescue | Anson/Walrus | Valley | Day (Flights at Valley, Eglinton, Andreas) |

Summary: S.E. Day Squadrons 1; T.E. Night Squadrons 1; A/S.R. Squadron 1.

* 2nd T.A.F. Squadron.

NO. 10 GROUP

| | | | | |
|-----------------|-----------------------------|-------------------------------|-----------------|---------------------------------------------------------|
| Fairwood Common | 456 (RAAF) | Mosquito II | Fairwood Common | Night (to re-equip Mosquito XVII) |
| Colerne | 151 | Mosquito XII/XIII | Colerne | Night |
| Portreath | 157 | Mosquito II | Predannack | Night (to re-equip- Mosquito XVII) |
| " | 183 Ground Attack (G.A.) | Typhoon Bomber | Predannack | Day |
| " | 1449 Flight | Hurricane IIB | St. Mary's | Day |
| " | 340 (Free French) | Spitfire V | Ferranporth | Day (L.R.) |
| " | 341 (Free French) | Spitfire V | Ferranporth | Day (L.R.) |
| Exeter | 406 (RCAF) | Beaufighter VI | Exeter | Night |
| " | 616 | Spitfire VII | Exeter | Day |
| " | 266 | Typhoon | Harrowbeer | Day |
| " | 193 | Typhoon | Harrowbeer | Day |
| " | 276 (A/S.R.) | Anson/Walrus/ Spitfire IIA | Harrowbeer | Day Flights at Harrowbeer, Warmwell and Portreath |

NO.10 GROUP contd.

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------|--------------------|--------------|-----------|-------------------------------------|
| Exeter | 610 | Spitfire V | Bolt Head | Day (L.R.) (Re-equipping Spit. XIV) |
| " | 131 | Spitfire IXF | Culmhead | Day |
| " | 165 | Spitfire IX | Culmhead | Day |
| Middle Wallop | 310 (Czech) Mobile | Spitfire V | Ibsley | Day (L.R.) (Forming |
| " | 312 (Czech) Mobile | Spitfire V | Ibsley | Day (L.R.) (in No. 84 |
| " | 313 (Czech) Mobile | Spitfire V | Ibsley | Day (L.R.) (Group |
| " | 257 | Typhoon | Warmwell | Day |
| " | 263 (G.A.) | Whirlwind | Ibsley | Day (Re-equipping Typhoon Bomber) |

Summary: S.E. Day Squadrons 9½; T.E. Day Squadrons 1; T.E. Night Squadrons 4½;
A/S.R. Squadron 1; S.E. Day Squadrons forming 3.

NO.11 GROUP

| | | | | |
|-------------|-----------------|-------------------------------|--------------|----------------------------------------------------|
| Tangmere | 486 (RNZAF) | Typhoon | Tangmere | Day (To re-equip Tempest V) |
| " | 197 | Typhoon | Tangmere | Day |
| " | 41 | Spitfire XII | Tangmere | Day |
| " | 91 | Spitfire XII | Tangmere | Day |
| " | 418 (RCAF) Int. | Mosquito VI | Ford | Night |
| " | 29 | Mosquito XII/XIII | Ford | Night |
| " | F.I.U. | Beaufighter/Mosq. | Ford | Night |
| Biggin Hill | 1 | Typhoon | Lympe | Day (to re-equip Welkin I) |
| " | 137 (G.A.) | Hurricane IV | Lympe | Day (re-equipping Typhoon) |
| " | 501 | Spitfire V & IXF | Hawkinge | Day (L.F.) |
| " | 322 (Dutch) | Spitfire V | Hawkinge | Day (L.F.) |
| " | 85 | Mosquito XII/XIII | West Malling | Night (re-equipping Mosquito XVII) |
| " | 124 | Spitfire VII | West Malling | Day |
| " | 96 | Mosquito XII/XIII | West Malling | Night |
| " | 277 (A/S.R.) | Lysander/Walrus/ Spitfire IIA | Gravesend | Day (Flights at Martlesham, Shoreham and Hawkinge) |
| Hornchurch | 350 (Belgian) | Spitfire IX | Hornchurch | Day (L.F.) (Forming |
| " | 129 (Mobile) | Spitfire IX | Hornchurch | Day (L.F.) (in No. 84 |
| " | 66 (Mobile) | Spitfire IX | Hornchurch | Day (L.R.) (Group |
| " | 609 | Typhoon | Manston | Day |
| " | 198 | Typhoon | Manston | Day |
| " | 164 (G.A.) | Hurricane IV | Fairlop | Day (to re-equip |
| " | 195 | Typhoon | Fairlop | Day Typhoon) (Forming in No. 84 Group) |
| North Weald | 56 | Typhoon | Martlesham | Day |
| " | 488 (RNZAF) | Mosquito XII/XIII | Bradwell Bay | Night |
| " | 605 (Int) | Mosquito VI | Bradwell Bay | Night |
| " | 410 (RCAF) | Mosquito II | Castle Camps | Night (re-equipping Mosquito XII/XIII) |
| Kenley | 349 (Belgian) | Spitfire V | Friston | Day (L.F.) (L.R.) |

Summary: S.E. Day Squadrons 13; T.E. Night Squadrons 5; Intruder Squadrons 2; F.I.U.;
A/S.R. Squadron 1; Day Squadrons forming 4.

NO.12 GROUP

| | | | | |
|---------------|--------------|----------------|------------------|-----------------------------------------------------------------|
| Coltishall | 64 | Spitfire V | Coltishall | Day (L.F.) (L.R.) |
| " | 68 | Beaufighter VI | Coltishall | Night |
| " | 611 | Spitfire V | Coltishall | Day (L.F.) (L.R.) |
| " | 278 (A/S.R.) | Anson/Walrus | Coltishall | Day (Flights at Coltishall and Hutton Cranswick) |
| " | 3 | Typhoon | Swanton Morley | Day |
| Digby | 316 (Polish) | Spitfire V | Digby | Day (L.F.) (L.R.) |
| " | 402 (RCAF) | Spitfire V | Digby | Day (L.F.) (L.R.) |
| " | 416 (RCAF) | Spitfire V | Digby | Day (L.F.) (L.R.) |
| " | 409 (RCAF) | Beaufighter VI | Coleby Grange | Night |
| " | 438 (RCAF) * | Hurricane IV | Wittering | Day |
| " | 439 (RCAF) * | Hurricane IV | Digby | Day (Forming) |
| " | 309 (Polish) | Mustang I | Snailwell | Day (F.R.) |
| Church Fenton | 26 | Mustang I | Hutton Cranswick | Day (F.R.) (to re-equip Must. II) |
| " | 264 (Mobile) | Mosquito II | Church Fenton | Night (re-equipping Mosquito XII/XIII (Forming in No. 85 Group) |

NO. 12 GROUP contd

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------|--------------|----------------|---------------|---------------------------------------|
| Church Fenton | 234 (Mobile) | Spitfire VB | Church Fenton | Day (L.F.) |
| Newcastle | 130 (Mobile) | Spitfire VB | Acklington | Day (L.F.) (Forming in |
| " | 604 (Mobile) | Beaufighter VI | Secrton | Night (No. 85 Group |
| " | 25 | Mosquito II | Acklington | Night (re-equipping Mosquito XVII) |

Summary: S.E. Day Squadrons 9; T.E. Night Squadrons 3; A/S.R. Squadrons 1; Day Squadrons forming 3; T.E. Night Squadrons forming 2.

* Non-operational

NO. 13 GROUP

| | | | | |
|-----------|--------------|----------------|------------|-------------------------------------------------------------------------|
| Turnhouse | 307 (Polish) | Mosquito II | Drem | Night (to re-equip Mosquito XII/XIII) |
| " | 485 (RNZAF) | Spitfire VB | Drem | Day (L.F.) |
| " | 186 (G.A.) | Typhoon Bomber | Ayr | Day |
| " | 268 (F.R.) * | Mustang I | Turnhouse | Day (to re-equip Mustang II) |
| Peterhead | 504 | Spitfire VB | Peterhead | Day (L.F.) |
| Kirkwall | 453 (RAAF) | Spitfire VB | Skeabrae | Day (L.F.) |
| " | 118 | Spitfire VB | Castletown | Day (L.F.) |
| " | 282 (A/S.R.) | Anson/Walrus | Castletown | Day (Flights at Castletown, Sumburgh, Peterhead, Drem and Ayr) |

Summary: S.E. Day Squadrons 6; A/S.R. Squadron 1; T.E. Night Squadron 1.

* 2nd T.A.F. Squadron.

R.A.F. NORTHERN IRELAND

| | | | | |
|----------|----------------|-------------|--------------|------------|
| Stormont | 303 (Polish) * | Spitfire VB | Ballyhalbert | Day (L.F.) |
|----------|----------------|-------------|--------------|------------|

* 2nd T.A.F. Squadron

OTHER COMMAND SQUADRONS OPERATING UNDER
A.D.G.B.

| | | | | |
|------------|---------------|-----------|---------|-------|
| Hornchurch | 415 (Coastal) | Albacores | Manston | Night |
|------------|---------------|-----------|---------|-------|

OTHER COMMAND SQUADRONS OPERATING FROM
A.D.G.B. AIRFIELDS

| | | | | |
|---------------|---------------|---------------------|--------------|----|
| Portreath | 235 (Coastal) | Beaufighter X | Portreath | -- |
| " | 243 (Coastal) | Beaufighter | Portreath | -- |
| " | 248 (Coastal) | Beaufighter | Predannack | -- |
| " | 304 (Coastal) | Wellington | Predannack | -- |
| Middle Wallop | 807 (F.A.A.) | Seafire | Andover | -- |
| " | 801 (F.A.A.) | Seafire | Andover | -- |
| Turnhouse | 784 (F.A.A.) | Fulmar | Drem | -- |
| " | 768 (F.A.A.) | Swordfish/Hurricane | Ayr | -- |
| Stormont | 880 (F.A.A.) | Seafire | Ballyhalbert | -- |
| " | 881 (F.A.A.) | Seafire | Ballyhalbert | -- |

SUMMARY FOR AIR DEFENCE GREAT BRITAIN

| | Day | Squadrons | A/Sea Rescue | Night | Squadrons | Intruder | Total |
|------------------------------------|---------|-----------|--------------|-------|-----------|----------|-------|
| | S.E. | T.E. | | S.E. | T.E. | | |
| No. 9 Group | 1 | - | 1 | - | 1 | - | 3 |
| No. 10 Group | 9½ | 1 | 1 | - | 4 | - | 15½ |
| No. 11 Group (excluding F.I.U.) | 13 | - | 1 | - | 5 | 2 | 21 |
| No. 12 Group | 9 | - | 1 | - | 3 | - | 13 |
| No. 13 Group | 6 | - | 1 | - | 1 | - | 8 |
| R.A.F.N.I. | 1 | - | - | - | - | - | 1 |
| Total of squadrons formed | 39½ (1) | 1 | 5 | - | 14 | 2 | 61½ |
| Squadrons forming | 12 (11) | - | - | - | 2 | - | 13 |
| | 51½ | 1 | 5 | - | 16 | 2 | 74½ |

(1) Including 3 squadrons in 2nd T.A.F. and 2 squadrons non-operational.

(11) Squadrons forming for 2nd T.A.F.

ORDER OF BATTLE OF AIR DEFENCE GREAT BRITAIN

TO 2200 HOURS 25 MAY 1944

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|-------------------------------------------------------------------------------|--------------------|-------------------------------|--------------------|-----------------------------------|
| <u>NO. 9 GROUP</u> | | | | |
| Woodvale | 63 | Spitfire V | Woodvale | Day (L.F.) (L.R.) |
| <u>Summary: Day Squadrons 1.</u> | | | | |
| <u>NO. 10 GROUP</u> | | | | |
| Fairwood Common | 68 | Beaufighter VI | Fairwood Common | Night (to re-equip Mos. XVII/XIX) |
| Portreath | 165 | Spitfire IX | Predannack | Day (L.F.) |
| " | 1 | Spitfire IX | Predannack | Day (L.F.) |
| " | 151 | Mosquito XII/XIII | Predannack | Night |
| " | 1449 Flight | Hurricane IIB | St. Mary's | Day |
| " | 276 (A/S.R.) | Warwick/Walrus/ Spitfire V | Portreath | Day |
| Exeter | 406 (RCAF) | Beaufighter VI | Winkleigh | Night (to re-equip Mos. XXX) |
| " | 131 | Spitfire VII | Culmhead | Day |
| " | 616 | Spitfire VII | Culmhead | Day |
| " | 126 | Spitfire IX | Culmhead | Day (L.F.) |
| " | 610 | Spitfire XIV | Harrowbeer | Day |
| " | 263 | Typhoon | Harrowbeer | Day |
| " | 41 | Spitfire XII | Bolt Head | Day |
| <u>Summary: Day Squadrons 8½; T.E. Night Squadrons 3; A/S.R. Squadrons 1.</u> | | | | |
| <u>NO. 11 GROUP</u> | | | | |
| Middle Wallop | 488 (RNZAF)* | Mosquito XII/XIII | No. 147 Wing H.Q.* | Night |
| " | 125 (Newfoundland) | Mosquito XVII | Zeals | |
| " | 604* | Mosquito XII/XIII | Hurn | Night |
| " | 418 (RCAF) Int. | Mosquito VI | Hurn | Night |
| | | | Holmesley South | Night |

SECRET

11

APPENDIX NO. 16

No. 11 Group contd.

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|---------------|----------------|---------------------------|---------------------------------------|-----------------------------------------------|
| Middle Wallop | 1320 Flight | Typhoon IB | Holmesley South | Day (under opnl. control of 2nd T.A.F.) |
| " | 275 (A/S.R.) | Walrus/Spitfire V | Warmwell | Day |
| Tangmere | 26 | Spitfire V | Lee-on-Solent | Day (L.R.) under opnl. control of 2nd T.A.F.) |
| " | 264* | Mosquito XII/XIII | Hartford Bridge* | Night |
| " | 322 (Dutch)* | Spitfire XIV | Hartford Bridge* | Day |
| " | 456 (RAAF) | Mosquito XVII | Ford | Night (to re-equip Mos. XXX) |
| " | 501* | Spitfire V | Friston | Day (L.F.) (L.R.) |
| " | 350* (Belgian) | Spitfire V | Friston | Day (L.F.) (L.R.) |
| " | 345* (French) | Spitfire V | Shoreham | Day (L.F.) (L.R.) |
| " | 277 (A/S.R.) | Walrus/Spitfire V | Shoreham | Day |
| " | 234* | Spitfire V | Deanland A.L.G. (No. 149 Wing H.Q.) | Day (L.F.) (L.R.) |
| " | 64* | Spitfire V | Deanland A.L.G. (No. 149 Wing H.Q.) | Day (L.F.) (L.R.) |
| " | 611* | Spitfire V | Deanland A.L.G. (No. 149 Wing H.Q.) | Day (L.F.) (L.R.) |
| " | 130* | Spitfire V | Horne A.L.G. (No. 142 Wing H.Q.)* | Day (L.F.) (L.R.) |
| " | 303* (Polish) | Spitfire V | Horne A.L.G. (No. 142 Wing H.Q.)* | Day (L.F.) (L.R.) |
| " | 402* (RCAF) | Spitfire V | Horne A.L.G. (No. 142 Wing H.Q.)* | Day (L.F.) (L.R.) |
| Biggin Hill | 96 | Mosquito XII/XIII | West Malling | Night |
| " | 409 (RCAF)* | Mosquito XII/XIII | West Malling (No. 148 Wing H.Q.)* | Night |
| " | 29* | Mosquito XII/XIII | West Malling (No. 148 Wing H.Q.)* | Night |
| " | 91* | Spitfire XIV | West Malling (No. 148 Wing H.Q.)* | Day |
| " | 3* | Tempest V | Newchurch A.L.G. (No. 150 Wing H.Q.)* | Day |
| " | 56* | Spitfire IX | Newchurch A.L.G. (No. 150 Wing H.Q.)* | Day (L.F.) |
| " | 486 (RNZAF)* | Tempest V | Newchurch A.L.G. (No. 150 Wing H.Q.)* | Day |
| " | 33* | Spitfire IX* | Lympne | Day |
| " | 74* | Spitfire IX HF | Lympne | Day |
| " | 127* | Spitfire IX HF | Lympne | Day |
| " | 229* | Spitfire IX F | Detling | Day |
| " | 274* | Spitfire IX F | Detling | Day |
| " | 80* | Spitfire IX F | Detling | Day |
| North Weald | 137 | Typhoon | Manston | Day |
| " | 605 (Int.) | Mosquito VI | Manston | Night |
| " | 278 (A/S.R.) | Warwick/Walrus/Spitfire V | Bradwell Bay | Day |
| " | 124* | Spitfire VII | Bradwell Bay | Day |
| " | 219 | Mosquito XVII/XIX | Bradwell Bay | Night (to re-equip Mos. XXX) |
| " | 410 (RCAF)* | Mosquito XII/XIII | Hunsdon | Night |

Summary: S.E. Day Squadrons 23½ (15 under control of 2nd T.A.F.; 6 in No. 85 (Base) Group but under A.D.G.E. for operations only); T.E. Night Squadrons 10 (6 in No. 85 (Base) Group); Intruder Squadrons 2; A/S.R. Squadrons 3.

No. 12 GROUP

| | | | | |
|---------------|--------------|----------------------|---------------|------------------------------|
| Coltishall | 25 | Mosquito XVII | Coltishall | Night |
| " | 316 (Polish) | Mustang III | Coltishall | Day |
| Digby | 504 | Spitfire V | Digby | Day (L.F.) (L.R.) |
| " | F.I.U. | Beaufighter/Mosquito | Wittering | Night |
| Church Fenton | 307 (Polish) | Mosquito XII/XIII | Church Fenton | Night (to re-equip Mos. XXX) |

Summary: Day Squadrons 2; T.E. Night Squadrons 2 F.I.U.

(55692) 465

SECRET

| Sector | Squadron | Equipment | Aerodrome | Remarks |
|--------|----------|-----------|-----------|---------|
|--------|----------|-----------|-----------|---------|

No. 13 GROUP

| | | | | |
|-----------|--------------|---------------|----------|-------------------|
| Turnhouse | 309 (Polish) | Hurricane IIC | Drem | Day |
| Kirkwall | 118 | Spitfire V | Skeabrae | Day (L.F.) (L.R.) |

Summary: S.E. Day Squadrons 2.

No. 38 GROUP

| | | | | |
|-----------------|-----|-------------|-----------------|---------|
| Harwell | 295 | Albemarle | Harwell | Tug a/c |
| " | 570 | Albemarle | Harwell | Tug a/c |
| Brize Norton | 296 | Albemarle | Brize Norton | Tug a/c |
| " | 297 | Albemarle | Brize Norton | Tug a/c |
| Keevil | 299 | Stirling IV | Keevil | Tug a/c |
| " | 196 | Stirling IV | Keevil | Tug a/c |
| Tarrant Rushton | 298 | Halifax V | Tarrant Rushton | Tug a/c |
| " | 644 | Halifax V | Tarrant Rushton | Tug a/c |
| Fairford | 620 | Stirling IV | Fairford | Tug a/c |
| " | 190 | Stirling IV | Fairford | Tug a/c |

OTHER COMMAND SQUADRONS OPERATING
FROM A.D.G.B. AIRFIELDS

| | | | | |
|-------------|------------------|-------------|--------------|---|
| Portreath | 235 (Coastal) | Beaufighter | Portreath | - |
| " | 248 (Coastal) | Mosquito | Portreath | - |
| " | 311 (Coastal) | Liberator | Predannack | - |
| " | 179 (Coastal) | Wellington | Predannack | - |
| Exeter | 415 (RCAF) | Albacore | Winkleigh | - |
| " | (Coastal) 1 Flt. | | | |
| " | (Coastal) | | | |
| " | 838 (F.A.A.) | Swordfish | Harrowbeer | - |
| " | (Coastal) | | | |
| North Weald | 143 (Coastal) | Beaufighter | Manston | - |
| " | 819 (F.A.A.) | Swordfish | Manston | - |
| " | (Coastal) | | | |
| " | 848 (F.A.A.) | Avenger | Manston | - |
| " | (Coastal) | | | |
| " | 415 (RCAF) | Albacore | Manston | - |
| " | (Coastal) 1 Flt. | | | |
| Biggin Hill | 854 (F.A.A.) | Seafire | Hawkinge | - |
| " | (Coastal) | | | |
| Kirkwall | 801 (F.A.A.) | Seafire | Skeabrae | - |
| Turnhouse | 784 (F.A.A.) | Fulmar | Drem | - |
| Stormont | 887 (F.A.A.) | Seafire | Ballyhalbert | - |
| " | 894 (F.A.A.) | Seafire | Ballyhalbert | - |

(* = No. 85 (Base) Group, Squadron or Unit under A.D.G.B. for operations only. + = Squadrons placed under control of 2nd T.A.F. for operations supporting Overlord).

SUMMARY FOR AIR DEFENCE GREAT BRITAIN
(Excluding No. 38 Group)

| | Day Squadrons | | A/Sea Rescue | Night Squadrons | | Intruder | Total |
|------------------------------------|---------------|------|--------------|-----------------|---------|----------|-------|
| | S.E. | T.E. | | S.E. | T.E. | | |
| No. 9 Group | 1 | - | - | - | - | - | 1 |
| No. 10 Group | 8½ | - | 1 | - | 3 | - | 12½ |
| No. 11 Group | 23½ (1) | - | 3 | - | 10 (11) | 2 | 38½ |
| No. 12 Group (excluding F.I.U.) | 2 | - | - | - | 2 | - | 4 |
| No. 13 Group | 2 | - | - | - | - | - | 2 |
| Total of Squadrons formed | 37 | - | 4 | - | 15 | 2 | 58 |
| Squadrons forming | - | - | - | - | - | - | - |
| | 37 | - | 4 | - | 15 | 2 | 58 |

(1) 15 squadrons under control of 2nd T.A.F.; 6 in No. 85 (Base) Group but under A.D.G.B. for operations only.

(11) 6 squadrons in No. 85 (Base) Group.

Authority: Fighter Command/Air Defence Great Britain Orders of Battle.

(55692)466

LUFTHLOTTE 3: ORDER OF BATTLE - 10 JUNE 1943

| Unit | Location | A/C Type | Strength Serviceable | | Remarks |
|----------------------------|---------------------------|----------------|----------------------|-----|---------------------------------------------------------|
| N.A.Gr.13 | | FW.190 | 4 | 3 | Close Recce |
| 1/13 | N.W. France | FW.190 | 14 | 11 | |
| 2/13 | St. Brieuc | FW.190 | 13 | 5 | |
| | | | 31 | 19 | |
| 1(F) 33) | Marseilles | Ju. 88 | 15 | 6 | Long Range Recce |
| 3(F) 33) | Area | Ju. 88 | 12 | 8 | |
| 3(F)122 | Amsterdam/Schipol & Creil | Ju. 88 | 13 | 10 | |
| 1(F)123 | Buc | Ju. 88 | 8 | 5 | |
| 3(F)123 | Rennes/St. Jacques | Ju. 88 | 13 | 8 | |
| 4(F)123 | Cherbourg area | Me.109G:FW.190 | 14 | 11 | |
| 5(F)123 | Monchy le Breton | Me.109G:FW.190 | 19 | 15 | |
| | | | 94 | 63 | |
| Stab.JG.2) | | Me.109 | 13 | 10 | S.E. Fighters |
| I/JG.2) | Holland | Me.109 | 58 | 48 | |
| II/JG.2) | | Me.109 | 74 | 59 | |
| III/JG.2) | | FW.190 | 63 | 55 | |
| Stab.JG.26) | | FW.190 | 7 | 4 | |
| II/JG.26) | Pas de Calais Area | FW.190 | 55 | 49 | |
| 8/JG.26) | | Me.109G:FW.190 | 14 | 12 | |
| I/JG.27 (less 2nd Staffel) | N.W. France & Holland | Me.109G | 26 | 26 | |
| 10/JG.54) | Pas de Calais | FW.190 | 14 | 14 | |
| 12/JG.54) | | Me.109G | 17 | 15 | |
| | | | 341 | 292 | |
| Stab.SK.G.10 | | FW.190 | 4 | 3 | Fighter Bombers |
| I/SK.G.10 | S.E. Andre de L'Eure | FW.190 | 36 | 20 | |
| II/SK.G.10 | Rennes/St.Jacques (1) | FW.190 | 36 | 27 | |
| | | | 76 | 50 | |
| V/KG.40 | Bordeaux/Merignac | Ju.88G6 | 49 | 26 | T.E. Fighters |
| Stab.KG.2 | Soesterberg | Do.217 | 4 | 2 | Bombers |
| I/KG.2 | Eindhoven | Do.217 | 30 | 24 | |
| II/KG.2 | Paris area (?) | Do.217 | 24 | 23 | ordered to move to Istres to operate under Luftflotte 2 |
| Stab.KG.6 | Creil | Ju.88 A4 | 5 | 4 | |
| I/KG.6 | Chievres | Ju.88 A4 | 31 | 23 | |
| III/KG.6 | Brussels/Melsbroeck | Ju.88 A4 | 38 | 31 | |
| III/KG.40 | Cognac/Bordeaux | FW.200 | 28 | 16 | |
| (less 8th Staffel) | | | 160 | 123 | |
| part of 1/128 | Brest | (Ar.196 | 18 | 17 | Coastal |
| Aufkl Fl.St | Biscarosse | (FW.190 | 5 | 2 | |
| (See) 222 | | (BV.222 | 5 | 3 | |
| | | (BV.138 | 5 | 5 | |
| | | | 33 | 27 | |

(1) Almost immediately after this date this unit moved to the Mediterranean Theatre and was operational there on 14 June.

Authority: Enemy Doc. A.H.B.6. Trans.

ANGRIFFSFUHRER ENGLAND: BOMBER UNITS UNDER COMMAND20 JANUARY 1944

| <u>UNIT</u> | <u>LOCATION</u> | <u>EQUIPMENT</u> | <u>STRENGTH</u> | <u>AIRCRAFT SERVICEABLE</u> |
|-----------------------------------|----------------------------------|------------------|-----------------|---------------------------------|
| Stab KG.2 | Soesterberg | Do. 217 | 3 | 3 |
| I/KG.2 | Eindhoven | Do. 217 | 35 | 35 |
| II/KG.2 | Soesterberg & Munster/Handorf | Ju. 188 | 35 | 31 |
| III/KG.2 | Gilze-Rijen | Do. 217 | 38 | 36 |
| V/KG.2 | Lille-Cambrai Area | Me. 410 | 27 | 25 |
| Stab KG.6 | Brussels | Ju. 88 | 3 | 3 |
| I/KG.6 | Chievres | Ju. 88 | 41 | 41 |
| II/KG.6 | Le Culot | Ju. 88 | 39 | 39 |
| III/KG.6 | Brussels/Melsbroeck | Ju. 88 | 41 | 37 |
| II/KG.30 | Unknown | Ju. 88 | 36 | 31 |
| * part of I/KG/.40 | Unknown | He. 177 | 15 | 15 |
| Stab KG.54 | Unknown | Ju. 88 | 3 | 3 |
| I/KG.54 | | Ju. 88 | 36 | 25 |
| II/KG.54 | Marx | Ju. 88 | 33 | 33 |
| I/KG.66 | Montdidier | Do. 217 | 45 | 23 |
| Stab KG.76 | | JU. 88 | 5 | 4 |
| I/KG.76 | Varrelbusch | Ju. 88 | 33 | 31 |
| I/KG.100 (less 3rd Staffel) | Unknown | He. 177 | 31 | 27 |
| I/SKG.10 | N.E. France | FW. 190 | 25 | 20 |
| | | | <u>524</u> | <u>462</u> |

* This information has been derived from British intelligence reports and confirmed from German loss returns for this particular unit. It is curious that official Luftwaffe strength returns showed the unit to be non-operational at Fassberg, Germany throughout this period.

(55692) 471

SECRET

TOTAL NUMBER OF SORTIES FLOWN BY FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN AND 2ND T.A.F.
FROM JANUARY 1943 TO MAY 1944 (INCLUSIVE) (1)

| MONTH | DAY (INCLUSIVE DAWN) | | | | | | | NIGHT (INCLUSIVE DUSK) | | | | | | |
|-------------|----------------------|-----------------------|------------------------------|-----------------------------|-----------------|---------------|---------|------------------------|-----------------------|------------------------------|-----------------------------|-----------------|--------|--------------|
| | SHIPPING PATROLS | INTER-CEPTION PATROLS | OFFENSIVE FIGHTER OPERATIONS | OFFENSIVE BOMBER OPERATIONS | SPECIAL PATROLS | PHOTO RECCES. | TOTALS | SHIPPING PATROLS | INTER-CEPTION PATROLS | OFFENSIVE FIGHTER OPERATIONS | OFFENSIVE BOMBER OPERATIONS | SPECIAL PATROLS | TOTALS | GRAND TOTALS |
| <u>1943</u> | | | | | | | | | | | | | | |
| Jan. | 1,306 | 2,823 | 2,952 | - | 641 | - | 7,722 | 40 | 737 | 124 | - | 30 | 931 | 8,653 |
| Feb. | 1,310 | 3,354 | 2,903 | - | 883 | - | 8,450 | 45 | 798 | 141 | - | 44 | 1,028 | 9,478 |
| Mar. | 1,208 | 5,434 | 2,315 | - | 990 | - | 9,947 | 25 | 1,115 | 153 | - | 59 | 1,321 | 11,299 |
| Apr. | 1,968 | 6,493 | 4,528 | - | 1,216 | - | 14,205 | 25 | 873 | 290 | - | 133 | 1,321 | 15,526 |
| May | 2,349 | 3,891 | 5,384 | - | 1,167 | - | 12,791 | 78 | 1,186 | 483 | - | 104 | 1,851 | 14,642 |
| June (11) | 2,375 | 3,926 | 5,974 | 251 | 1,208 | 190 | 13,924 | 48 | 929 | 414 | - | 132 | 1,523 | 15,447 |
| July | 1,128 | 1,525 | 8,204 | 267 | 1,663 | 271 | 13,058 | 32 | 738 | 431 | - | 104 | 1,305 | 14,363 |
| Aug. | 610 | 1,536 | 10,612 | 409 | 1,338 | 299 | 14,804 | 6 | 975 | 634 | - | 61 | 1,676 | 16,480 |
| Sept. | 1,303 | 1,182 | 14,900 | 783 | 1,347 | 191 | 19,706 | 2 | 845 | 405 | - | 32 | 1,284 | 20,990 |
| Oct. | 567 | 773 | 7,046 | 334 | 955 | 102 | 9,777 | 6 | 906 | 325 | - | 24 | 1,261 | 11,038 |
| Nov. (111) | 390 | 538 | 8,644 | 709 | 862 | 194 | 11,337 | 4 | 970 | 329 | 11 | 20 | 1,334 | 12,671 |
| Dec. | 188 | 367 | 6,922 | 837 | 707 | 279 | 9,300 | 2 | 564 | 127 | - | 19 | 712 | 10,012 |
| TOTALS | 14,702 | 31,842 | 80,384 | 3,590 | 12,977 | 1,526 | 145,021 | 313 | 10,636 | 3,856 | 11 | 762 | 15,578 | 160,599 |
| <u>1944</u> | | | | | | | | | | | | | | |
| Jan. | 244 | 386 | 7,618 | 1,137 | 1,048 | 433 | 10,866 | - | 763 | 169 | 28 | 30 | 990 | 11,856 |
| Feb. | 378 | 407 | 8,291 | 1,167 | 1,118 | 485 | 11,646 | 6 | 1,136 | 227 | 25 | 24 | 1,418 | 13,264 |
| Mar. | 591 | 820 | 4,885 | 833 | 1,281 | 686 | 9,096 | 4 | 1,501 | 379 | 86 | 22 | 1,992 | 11,088 |
| Apr. | 214 | 155 | 6,831 | 1,166 | 1,884 | 890 | 11,140 | 34 | 948 | 260 | 206 | 586 | 2,034 | 13,174 |
| May | 752 | 1,628 | 17,495 | 1,399 | 3,391 | 1,320 | 26,204 | 81 | 827 | 424 | 219 | 1,809 | 3,360 | 29,564 |
| TOTALS | 2,179 | 3,396 | 45,120 | 5,702 | 8,722 | 3,814 | 69,152 | 125 | 5,175 | 1,459 | 564 | 2,471 | 9,794 | 78,946 |

- (1) These figures are taken from Fighter Command Form 'Y' (A.H.B. Ref. IIM/A2/3A) and ARAF/S.22075/OR. They include some sorties which were not completed owing to bad weather, engine trouble and other causes.
- (11) From 1 June onwards, all sorties flown by the Tactical Air Force are also included.
- (111) From 15 November, Fighter Command became Air Defence Great Britain and was a component of the Allied Expeditionary Air Force. The Form 'Y' contains figures for Air Defence Great Britain and 2nd T.A.F. until March 1944. For the last two months the figures for 2nd T.A.F. are derived from A.E.A.F. operations records.

SECRET

APPENDIX NO. 19

(55692)473

SECRET

TOTAL NUMBER OF SORTIES FLOWN BY VIIIITH U.S. FIGHTER COMMAND AND IXTH U.S. FIGHTER COMMAND
IN CONNECTION WITH CROSS CHANNEL OPERATIONS

JANUARY 1943 - MAY 1944 (INCLUSIVE)⁽¹⁾

| DAY (INCLUSIVE DAWN) | | | | | | |
|----------------------|---------------------|------------------------------|------------------------------------|-------------------------|-------------------------|--------|
| MONTH | SHIPPING PATROLS | INTER- CEPTION PATROLS | OFFENSIVE FIGHTER OPERATIONS | SPECIAL PATROLS | PHOTO RECCE. | TOTALS |
| <u>1943</u> | | | | | | |
| Jan. | 10 | 22 | 255 | - | - | 287 |
| Feb. | 263 | 33 | 203 | 2 | - | 501 |
| Mar. | 288 | 89 | 169 | 5 | - | 551 |
| Apr. | 18 | 2 | 451 | - | - | 471 |
| May | - | 30 | 2,296 | - | - | 2,326 |
| June | - | 20 | 2,016 | - | - | 2,036 |
| July | - | - | 3,326 | - | - | 3,326 |
| Aug. | - | - | 2,121 | - | - | 2,121 |
| Sept. | - | - | 3,192 | - | - | 3,192 |
| Oct. | - | - | 2,909 | - | - | 2,909 |
| Nov. | - | - | 4,349 | - | - | 4,349 |
| Dec. | - | - | 5,263 | - | - | 5,263 |
| TOTALS | 579 | 196 | 26,550 | 7 | - | 27,332 |
| <u>1944</u> | | | | | | |
| Jan. | - | - | 5,602 | - | - | 5,602 |
| Feb. | - | - | 1,137 | - | 70 | 1,207 |
| Mar. | - | - | 6,286 | 8 | 90 | 6,384 |
| Apr. | - | - | 12,281 | 117 (Weather/ Recce) | 392 | 12,790 |
| May | - | - | 27,237 | 200 (Weather/ Recce) | 945 (inc. Vis Recce) | 28,382 |
| TOTALS | - | - | 52,543 | 325 | 1,497 | 54,365 |

(1) These figures are taken from Fighter Command Form 'Y' (A.H.B. Ref. IIM/A2/3A), AEA/S.22075/OR and VIIIITH Air Force Monthly Summary of Operations. They include some sorties which were not completed owing to bad weather, engine trouble and other causes.

NOTE: Sorties flown by the VIIIth U.S. Air Support Command, later IXth U.S. Bomber Command, have not been included in this table.

SECRET

APPENDIX NO. 20

NOTABLE DAY ATTACKS BY GERMAN FIGHTER BOMBERS 1943

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------|------------------------|------------|------|-------|-----------|----------------------------------|
| DAY | TARGET | AIRCRAFT | | BOMBS | | Col. (6) as % of Col. 5 |
| | | Despatched | Lost | Aimed | On Target | |
| 20 Jan. | London | 28 | 3(a) | 28 | 22 | 79 |
| 7 Mar. | Eastbourne | 18 | - | 16 | 16 | 100 |
| 11 Mar. | Hastings | 27 | - | 27 | 25 | 93 |
| 12 Mar. | London | 19 | -(b) | 17 | 16 | 94 |
| 24 Mar. | Ashford | 17 | 1 | 15 | 14 | 93 |
| 3 Apr. | Eastbourne | 16 | - | 12 | 12 | 100 |
| 7 May | Yarmouth | 20 | 1 | 19 | 7(c) | 37 |
| 11 May | Yarmouth | 20(d) | 1 | 20 | 14 | 70 |
| 12 May | Lowestoft | 3 | - | 3 | 1 | 33 |
| 12 May | Lowestoft | 24(e) | - | 24 | 15 | 63 |
| 15 May | Felixstowe-Southwold | 26 | 2 | 25 | 8 | 32 |
| 23 May | Hastings | 20 | 2 | 17 | 15 | 88 |
| 23 May | Bournemouth | 26 | 2 | 25 | 22 | 88 |
| 25 May | Folkestone | 19(f) | 1 | 4 | -(g) | - |
| 25 May | Brighton | 24 | 1 | 24 | 16(h) | 67 |
| 30 May | Frinton-Walton(i) | 21 | 2 | 19 | 19 | 100 |
| 30 May | Torquay | 26 | 5 | 22 | 18 | 82 |
| 1 June | Niton (I.O.W.) (f) | 10 | - | 9 | 9 | 100 |
| 1 June | Margate | 20 | 1 | 19 | 17 | 89 |
| 2 June | Ipswich-Felixstowe (k) | 17 | 1 | 17 | 6(l) | 35 |
| 4 June | Eastbourne | 17 | 1 | 15 | 14 | 93 |
| 6 June | Eastbourne | 16 | 1 | 13 | 13 | 100 |

NOTES

- (a) Six escort fighters also lost.
 (b) Two escort fighters lost.
 (c) In addition 12 bombs fell on neighbouring villages.
 (d) In addition 8 aircraft attacked patrol vessels.
 (e) In addition 26 aircraft completed task.
 (f) Only four aircraft completed task.
 (g) One bomb fell in swimming pool.
 (h) In addition four bombs hit land but bounced into Sea.
 (i) Alternative to Colchester.
 (j) Alternative to Ventnor.
 (k) Alternatives to Harwich, where balloon barrage prevented attack.
 (l) In addition 10 bombs fell on neighbouring villages.

Source. A.W.A.S. Repts. A.H.B./IIB/47/3.

PRINCIPAL GERMAN NIGHT ATTACKS 1943

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------|--------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------|-----------|------------------------------------|------------------------------------|
| Night | Primary Target (Figures in brackets show total effort on each night and number of aircraft lost) | TONNAGES | | | Col. (5) as % of Col. (4) | Col. (5) as % of Col. (3) |
| | | Aimed at Target | On Target or on Land within 50 miles | On Target | | |
| 17 Jan. | London (118 - 6) | 115 | 91 | 43 | 48 | 37 |
| 13 Feb. | Plymouth (28 - 0) | 30 | 15 | 3.4 | 22 | 11 |
| 16 Feb. | Swansea (37-4) | 27 | 12 | 6.4 | 55 | 24 |
| 3 Mar. | London (117 - 6) | 108 | 70 | 12 | 17 | 11 |
| 7 Mar. | Southampton (37 - 3) | 33 | 31 | - | 0 | 0 |
| 11 Mar. | Newcastle (51 - 5) | 30 | 93(bombs) | - | 0 | 0 |
| 18 Mar. | Norwich (41 - 1) | 36 | 27 | 3.3 | 12 | 9 |
| 27 Mar. | Norwich (45 - 2) | 17 | 13 | - | 0 | 0 |
| 14 Apr. | Chelmsford (91 - 6) | 17 | 54 | 9 | 17 | 12 |
| 16 Apr. | London (30 - 6) | 13.5 | 12 | 1 | 8 | 7 |
| 21 Apr. | Aberdeen (29-0) | 58.5 | 54 | 39 | 72 | 67 |
| 4 May | Norwich (79 - 5) | 103 | 55 | 4 | 7 | 4 |
| 13 May | Chelmsford (85 - 4) | 113 | 80 | 16 | 20 | 14 |
| 15 May | Sunderland (77 - 2) | 93 | 47 | 31 | 66 | 33 |
| 17 May | Cardiff (89 - 6) | 92 | 50 | 20 | 40 | 22 |
| 23 May | Sunderland (73 - 3) | 93 | 42 | 27 | 64 | 30 |
| 12 June | Plymouth (86 - 5) | 75 | 45 | 23 | 52 | 31 |
| 23 June | Hull (33 - 0) | 31 | 19 | 15 | 79 | 48 |
| 13 Jul. | Hull (61 - 4) | 71 | 60 | 34 | 56 | 48 |
| 25 July | Hull (51 - 4) | 70 | 51 | - | 0 | 0 |
| 11 Aug. | Plymouth (71 - 1) | 64 | 52 | 32 | 62 | 50 |
| 15 Aug. | Portsmouth (91 - 5) | 77 | 37 | 14 | 37 | 18 |
| 17 Aug. | Lincoln (88 - 11) | 28 | 33(b) | - | 0 | 0 |
| 7 Oct. | London) | | | | | |
| |) (75 - 5) | 33 | 22 | 8 | 36 | 24 |
| 7 Oct. | Norwich) | 49 | 34 | - | 0 | 0 |
| 20 Oct. | Hull) (89 - 1) | 61.5 | 37 | - | 0 | 0 |
| 20 Oct. | London) | 24 | 19 | 0.5 | 0.25 | 0.20 |
| 23 Oct. | Yarmouth (39 - 3) | 47 | 17 | 0.25 | 1.5 | 0.5 |
| 3 Nov. | Ipswich (40 - 0) | 55 | 40 | 16 | 40 | 29 |
| 15 Nov. | Plymouth (46-2) | 44 | 27 | 12 | 44 | 27 |
| 10 Dec. | Chelmsford (56 - 4) | 20 | 62(b) | - | 0 | 0 |

(a) Figures in Cols. 3-5 exclude small incendiaries.

(b) Includes some bombs aimed at secondary targets.

Note. Column (2) is compiled from German records (A.H.B.6. Trans.);
Columns (3) to (7) on A.W.A.S. Repts. (A.H.B./IIB/47/3.).

PRINCIPAL GERMAN NIGHT ATTACKS 1944

| (1) | (2) | (3) | (4) | (5) | (6) |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------|---------------------------|
| Night | <u>PRIMARY TARGET</u> Figures in brackets show total effort on each night and number of aircraft lost including those destroyed on operations but not by Allied action | TONNAGES | | | Col. (5) as % of Col. (4) |
| | | Aimed at Target Metric Tons | On Target or on Land within 50 miles | On Target Metric Tons | |
| 21 Jan. | London (447-43) | 310.65 and 2,359 incendiaries and 321 marker bombs and flares | 301.39 | 37.37 | 12.40 |
| 29 Jan. | London (285-17) | | 170.70 | 39.94 | 22.23 |
| 3 Feb. | London (240-18) | 837.9 and 4,315 incendiaries plus 354 marker bombs and flares | 183.83 | 28.79 | 15.66 |
| 13 Feb. | London (230-13) | | 173.85 | 4.04 | 2.32 |
| 18 Feb. | London (200-11) | | 197.33 | 145.43 | 73.70 |
| 20 Feb. | London (200-12) | | 173.41 | 127.34 | 73.43 |
| 22 Feb. | London (185-12) | | 175.00 | 79.33 | 45.33 |
| 23 Feb. | London (161-3) | | 126.08 | 54.40 | 43.15 |
| 24 Feb. | London (170-8) | | 136.98 | 95.15 | 69.46 |
| 1 March | London (120-6) | | 171.25 | 55.33 | 32.31 |
| 14 March | London (187-17) | 391.4 plus 2,958 incendiaries and 505 marker bombs and flares | 170.40 | 85.56 | 50.21 |
| 19 March | Hull (131-9) | | 92.63 | - | 0 |
| 21 March | London (144-12) | | 142.25 | 92.34 | 64.91 |
| 24 March | London (143-16) | | 116.09 | 66.73 | 57.48 |
| 27 March | Bristol (139-10) | | 101.63 | - | 0 |
| 18 April | London (125-10) | 737.06 and 382.89 metric tons of markers and incendiaries and 16.8 tons of special missiles and 207.0 tons of aircraft mines. | 128.61 | 54.54 | 43.41 |
| 20 April | Hull (130-2) | | 51.43 | - | 0 |
| 23 April | Bristol (117-11) | | 76.98 | - | 0 |
| 25 April | Portsmouth (193-7) | | 52.02 | 5.30 | 10.19 |
| 26 April | Portsmouth (78-8) | | 35.38 | 8.70 | 24.59 |
| 29 April | Plymouth (101-0) | | 55.53 | 7.89 | 14.21 |
| 14 May | Bristol (807-14) | ? | 97.54 | 3.5 | 3.59 |
| 15 May | Portsmouth (957-7) | ? | 44.08 | 1.35 | 3.06 |
| 22 May | Portsmouth (607-5) | ? | 16.76 | 6.46 | 38.54 |

Note: Columns (2) to (3) are based on German records (A.H.B.6 Trans.)

Columns (4) to (6) on A.W.A.S. Repts. (A.H.B./IIB/47/3).

SUMMARY OF THE RESULTS OF NIGHT INTERCEPTION FROM
JANUARY 1943 TO MAY 1944

| 1943 Month | SORTIES (Inc. Dusk) | RESULTS CLAIMED | | | |
|--------------------------|-------------------------------------------------|--------------------|-------------|---------|----|
| | | Destroyed | Poss. Dest. | Damaged | |
| Jan. | A.I. Fighters | 610 | 10 | -- | 8 |
| | Catseye Fighters | 125 | -- | -- | -- |
| | Total sorties flown in response to Enemy A/C | 260 ⁽¹⁾ | | | |
| | Intruders etc v Enemy A/C | 34 | -- | -- | 2 |
| | Other Offensive Ops. | 91 | -- | -- | -- |
| Out of 311 enemy sorties | | | | | |
| Feb. | A.I. Fighters | 590 | 7 | 2 | 2 |
| | Catseye Fighters | 139 | 1 | -- | -- |
| | Total sorties flown in response to Enemy A/C | 165 | | | |
| | Intruders etc v enemy A/C | 22 | 2 | 1 | 2 |
| | Other Offensive Ops. | 121 | -- | -- | -- |
| Out of 176 enemy sorties | | | | | |
| Mar. | A.I. Fighters | 806 | 21½ | 5 | 2 |
| | Catseye Fighters | 121 | -- | -- | -- |
| | Total sorties flown in response to Enemy A/C | 330 | | | |
| | Intruders etc v enemy A/C | 62 | 2 | 1 | -- |
| | Other Offensive Ops | 87 | -- | -- | -- |
| Out of 415 enemy sorties | | | | | |
| Apr. | A.I. Fighters | 567 | 6 | -- | 2 |
| | Catseye Fighters | 160 | -- | -- | -- |
| | Total sorties flown in response to Enemy A/C | 170 | | | |
| | Intruders etc v enemy A/C | 57 | 4 | -- | 1 |
| | Other Offensive Ops | 232 | -- | -- | -- |
| Out of 260 enemy sorties | | | | | |
| May | A.I. Fighters | 757 | 11 | 1 | 1 |
| | Catseye Fighters | 200 | 1 | 1 | 1 |
| | Total sorties flown in response to Enemy A/C | 310 | | | |
| | Intruders etc v enemy A/C | 285 | 5 | -- | 8 |
| | Other Offensive Ops | 165 | 1 | -- | -- |
| Out of 395 enemy sorties | | | | | |
| June | A.I. Fighters | 690 | 9 | 1 | 4 |
| | Catseye Fighters | 77 | -- | -- | -- |
| | Total sorties flown in response to enemy A/C | 190 | | | |
| | Intruders etc v enemy A/C | 313 | 12 | 1 | 7 |
| | Other Offensive Ops | 65 | -- | -- | -- |
| Out of 287 enemy sorties | | | | | |
| July | A.I. Fighters | 512 | 11 | -- | 3 |
| | Catseye Fighters | 88 | -- | -- | -- |
| | Total sorties flown in response to enemy A/C | 164 | | | |
| | Intruders etc v enemy A/C | 347 | 8 | -- | 7 |
| | Other Offensive Ops | 75 | -- | -- | -- |
| Out of 326 enemy sorties | | | | | |

(1) Other defensive patrols include routine patrols in Groups in which no enemy activity occurred during the night, sorties to investigate unidentified activity, protection of shipping patrols and other routine patrols.

| 1943 Month | SORTIES (Inc. Dusk) | RESULTS CLAIMED | | |
|--------------------------|----------------------------------------------|-----------------|-------------|---------|
| | | Destroyed | Poss. Dest. | Damaged |
| Aug. | A.I. Fighters | 860 | 16 | 4 |
| | Catseye Fighters | 87 | - | - |
| | Total sorties flown in response to enemy A/C | 138 | - | - |
| | Intruders etc v enemy A/C | 456 | 11 | 2 |
| | Other Offensive Ops | 187 | 1 | 7 |
| Out of 308 enemy sorties | | | | |
| Sept. | A.I. Fighters | 765 | 11 | 1 |
| | Catseye Fighters | 44 | - | - |
| | Total sorties flown in response to enemy A/C | 197 | - | - |
| | Intruders etc v enemy A/C | 303 | 20 | 1 |
| | Other Offensive Ops | 114 | - | 2 |
| Out of 386 enemy sorties | | | | |
| Oct. | A.I. Fighters | 799 | 13 | 4 |
| | Catseye Fighters | 60 | - | - |
| | Total sorties flown in response to enemy A/C | 406 | - | - |
| | Intruders etc v enemy A/C | 261 | 1 | 1 |
| | Other Offensive Ops | 51 | - | 3 |
| Out of 537 enemy sorties | | | | |
| Nov. | A.I. Fighters | 866 | 11 | - |
| | Catseye Fighters | 49 | - | - |
| | Total sorties flown in response to enemy A/C | 241 | - | - |
| | Intruders etc v enemy A/C | 256 | 2 | 1 |
| | Other Offensive Ops | 83 | - | 3 |
| Out of 324 enemy sorties | | | | |
| Dec. | A.I. Fighters | 495 | 4 | 3 |
| | Catseye Fighters | 40 | - | - |
| | Total sorties flown in response to enemy A/C | 133 | - | - |
| | Intruders etc v enemy A/C | 103 | 3 | 1 |
| | Other Offensive Ops | 13 | - | 2 |
| Out of 190 enemy sorties | | | | |

| 1944 Month | SORTIES (inc. Dusk) | RESULTS CLAIMED | | |
|---------------------------|----------------------------------------------|-----------------|-------------|---------|
| | | Destroyed | Poss. Dest. | Damaged |
| Jan. | A.I. Fighters | 755 | 16 | 3 |
| | Catseye Fighters | 4 | - | 4 |
| | Total sorties flown in response to enemy A/C | 201 | - | - |
| | Intruders etc v enemy A/C | 189 | 2 | - |
| | Other Offensive Ops | 1 | - | 3 |
| Out of 611 enemy sorties | | | | |
| Feb. | A.I. Fighters | 1102 | 26 | 6 |
| | Catseye Fighters | 30 | - | 10 |
| | Total sorties flown in response to enemy A/C | 517 | - | - |
| | Intruders etc v enemy A/C | 225 | 15 | - |
| | Other Offensive Ops | 25 | 2 | 9 |
| Out of 1248 enemy sorties | | | | |
| Mar. | A.I. Fighters | 1402 | 44 | 2 |
| | Catseye Fighters | 52 | - | 6 |
| | Total sorties flown in response to enemy A/C | 603 | - | - |
| | Intruders etc v enemy A/C | 430 | 18 | - |
| | Other Offensive Ops | 9 | - | 15 |
| Out of 1070 enemy sorties | | | | |
| Apr. | A.I. Fighters | 1521 | 32 | 4 |
| | Catseye Fighters | 101 | 1 | 4 |
| | Total sorties flown in response to enemy A/C | 535 | - | - |
| | Intruders etc v enemy A/C | 244 | 11 | 6 |
| | Other Offensive Ops | 6 | - | 8 |
| Out of 888 enemy sorties | | | | |
| 1/2 May- 5/6 June | A.I. Fighters | 2230 | 26 | 6 |
| | Catseye Fighters | 364 | - | 6 |
| | Total sorties flown in response to enemy A/C | 456 | - | - |
| | Intruders etc v enemy A/C | 266 | 14 | - |
| | Other Offensive Ops | - | - | 16 |
| Out of 694 enemy sorties | | | | |

Authority Fighter Command/A.D.G.B. O.R.S. Reports
 'Fighter Interception System and Operations' 1943-1944.

AIR ATTACKS ON AND DEFENCE OF ALLIED SHIPPING IN HOME WATERS
JANUARY 1943 - MAY 1944

| 1943 | Enemy Sorties ⁽¹⁾ (excluding minelaying) | | Enemy Attacks | | Group Areas | | | | | | Allied Merchant ships sunk by direct attack at sea | | Enemy Losses | | | | Fighter Cmd/ A.D.G.B. Sorties | |
|-------------------|--------------------------------------------------------|--------------|---------------|------------|-------------|------------|------------|------------|------------|------------|----------------------------------------------------|-----------------|-------------------|-------------|-----------|-------------|----------------------------------|-----------|
| | Day | Night | Day | Night | 9 | 10 | 11 | 12 | 13 | 14 | No. | Tonnage (Gross) | Claims by FC/ADGB | Poss. Dest. | Dest. | Poss. Dest. | Day | Night |
| January | 362 | 41 | 5 | - | - | 3 | 2 | - | - | - | - | - | - | - | 1 | - | 1,384 | 2 |
| February | 323 | 25 | 2 | 1 | - | 1 | 2 | - | - | - | - | - | 4 | 3 | - | - | 1,599 | 5 |
| March | 565 | 75 | 7 | 2 | - | 3 | 4 | - | 2 | - | - | - | - | - | 1 | 1 | 1,596 | - |
| April | 443 | 110 | - | - | - | - | - | - | - | - | - | - | - | - | 6 | 1 | 770 | 3 |
| May | 339 | 119 | 2 | - | - | - | - | 2 | - | - | - | - | - | - | 5 | - | 269 | - |
| June | 413 | 114 | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 768 | - |
| July | 465 | 146 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 571 | - |
| August | 530 | 96 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 300 | - |
| September | 474 | 74 | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | 322 | - |
| October | 387 | 97 | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 1 | 298 | - |
| November | 423 | 90 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 374 | 10 |
| December | 354 | 95 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 188 | 2 |
| TOTAL 1943 | 5,078 | 1,082 | 17 | 3 | N11 | 7 | 8 | 3 | 2 | N11 | N11 | N11 | 4 | 3 | 18 | 4 | 8,439 | 22 |
| January | 379 | 37 | - | - | - | - | - | - | - | - | - | - | - | - | 1½ | - | 244 | - |
| February | 446 | 10 | - | - | - | - | - | - | - | - | - | - | 1 | - | 2 | 1 | 376 | 2 |
| March | 553 | 45 | - | - | - | - | - | - | - | - | - | - | 1 | - | 2 | - | 587 | 6 |
| April | 435 | 31 | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | 194 | - |
| May | 535 | 97 | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | 188 | - |
| TOTAL | 2,348 | 220 | N11 | N11 | N11 | N11 | N11 | N11 | N11 | N11 | N11 | N11 | 5 | N11 | 6½ | 1 | 1,589 | 8 |

(1) Figures for the German Air Force are Fighter Command/Air Defence Great Britain estimates, since German records do not give a breakdown into types of operation.

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APPENDIX NO. 25

PRESENT NIGHT FIGHTER TACTICS

(Extract from 'Notes on Night Fighting'
Fighter Command O.R.S. 29 Sept. 1943)

(a) General. Early warning of the approach of raids by Radar etc. is not normally obtained early enough to enable night fighters to be ordered off in time to intercept them. This is largely due to their habit of attacking coastal targets and minelaying. It is therefore necessary to have patrols of night fighters at strategic points on suitable nights: for example when weather conditions are favourable, and intelligence reports indicate that enemy activity is likely. These patrols however cannot economically be numerous enough for intercepting large forces of enemy bombers, and so many more fighters must be ready to take off if necessary.

Present day enemy activity is on rather a small scale, and A.I. of limited range. It is therefore necessary to give the fighters A.I. contact by means of Ground Control.

Two systems are in current use: GOI and Searchlight Control.

GOI is efficient in conditions of low raid density. Searchlight control is good over land in clear weather for low or medium raid density.

For mass raids, such as those carried out at present by the R.A.F. over Germany, it would probably be best to have the maximum possible number of A.I. fighters patrolling in the stream and getting chance contacts. If sufficient fighters are available this free lancing procedure should result in more chases than those which could be expected from accurate ground control, which saturates rather easily in high raid densities. There is no experience available on this point as the enemy have not carried out mass raids since our fighter force has been efficient enough to cope with freelancing. Freelancing is quite hopeless however in conditions of low raid density. With a large number of fighters the proportion of fighters to targets is high and fighters will get contacts on each other: with few fighters an insufficient number of A.I. contacts will be obtained.

(b) The A.I. Chase. General. To appreciate the problems involved in the A.I. chase it is necessary to have a clear idea of the operational conditions.

The A.I. gives an indication of the bomber's instantaneous position relative to the axes of the fighter, the accuracy of this indication varying with the different marks of A.I. This is fundamentally different from the information presented to a day fighter pilot who can see both the bomber's relative position, and also its aspect and heading. In other words the day fighter pilot can see where the bomber is and which way it is going: the A.I. operator can only see where the target is.

The weather conditions may be anything from complete darkness with no horizon, stars or other indications, to bright moonlight with a clearly visible horizon. In conditions darker than bright moonlight, the flying of an aircraft becomes very much more difficult than by day. In consequence the flying becomes much less precise and the maximum rate of turn, the maintenance of constant altitude in the course of a turn, and similar factors all show a marked deterioration. Furthermore the aircrew may be flying in conditions of intense cold, and low

atmospheric pressure: their speed of reaction, ability to think and general efficiency is then much reduced.

When an A.I. contact is made on a target whose course etc. is unknown, the tactics adopted will of course depend to some extent on the performance of the A.I. The main principles will however apply to all marks and these will now be described.

(a) The stages of the A.I. chase. The A.I. chase may be said to consist of two stages:

(i) Getting roughly behind the bomber and going roughly the same way,

(ii) the approach to visual contact.

The following paragraph describes the conditions which both stages have to fulfil.

A normal complete A.I. chase takes about 5 or 10 minutes from the time of initial A.I. contact to combat. During this time the bomber usually changes its conditions of flight several times by substantial amounts, and may well be continuously changing these conditions. Clearly in the approach to visual contact the A.I. technique employed must be able to cope with these changes if interception is to be successful. However, as these changes are occurring throughout the chase it is obviously without advantage to employ a technique in the first stage capable of dealing with them as they would only have to be dealt with again in the second stage. It follows therefore that the first stage need only be very approximately accurate, and nothing is gained by attempts at precision at this stage, because residual errors can be conveniently corrected in the second stage.

To give a rough idea of the amounts involved, the following is tentatively suggested as a criterion of the condition which must be satisfied for the first stage to be considered to be satisfactorily concluded.

A line joining the fighter and bomber should be at not more than about 40° from the bomber's course: the course differences should be not more than about 30° ; difference in height should not exceed 2,000 ft. or 20° elevation whichever is the less: and the best range is about two miles for slow bombers and one mile for fast ones. An excess of height is desirable when the range is long and the bomber speed high, and vice versa.

For the second stage there is an obvious criterion of accuracy, namely that it must be sufficient to achieve a visual contact which is of a type which the pilot can hold. Another important condition, which the second stage must fulfil, is that this result must be achieved at the earliest possible moment, and must not be affected by evasive action on the part of the target. In other words, you have to get your visual on the target while it is jinking: you cannot afford to wait until it stops because it is very unlikely to oblige.

(d) First stage. With existing A.I. equipment its performance is not good enough to make interceptions at large course angles easy except for unusually capable aircrews and the first stage is normally carried out by ground control. This policy is influenced to a very large extent by the small number of enemy bombers operating - with an increase in these numbers A.I. freelance would become efficient and the first stage of the chase would be done under A.I. instead of ground control.

It should be mentioned that the existing searchlight control of A.I. fighters often causes the initial A.I. contact to be made at a large course angle, often in the region of 180° . The initial stages of the interception are then performed on A.I. but with the provision that the fighter aircrew know roughly from the searchlights which way the bomber is going, which is a help in the interpretation of the A.I. indications.

As A.I. improves the first stage will be undertaken more and more by A.I., ground control being only very approximate and tending to increase in speed at the expense of precision.

The A.I. technique in the first stage varies with many factors, chiefly the initial course angle and the relative position of bomber and fighter at the time of initial contact.

If the range only changes slowly, then procedure is simple: the fighter simply increases speed and turns towards the target, completing the turn when the A.I. indication approaches line ahead. In short, trying to achieve a condition of flight by the fighter such that the A.I. indication, if not line ahead, is drifting slowly towards the middle. A long stern chase will then be expected.

If the bomber range is diminishing more rapidly than would be caused by a high overtaking speed at the time of initial contact, the course angle must be large, the problem is more difficult, and the conditions are different with the different types of A.I. With all types there is the difficulty of time lag between the A.I. operator deciding that a change in the rate of turn is needed, and the time when the fighter takes up the new rate of turn. The interception is also limited by the maximum rate of turn that the fighter can undertake. A fairly violent manoeuvre is required at some stage and it is desirable to keep the bomber well in the A.I. coverage all the time, even during this manoeuvre, in case it jinks when the A.I. operator is not looking. Attempts at a curve of pursuit from large initial course angles usually prevent this as the fighter lags seriously behind the required rate of turn and so points, at some stage, well behind the bomber.

In general the bomber is first picked up on the side of the fighter from which it is coming; The aim of the fighter must then be to ensure that the target crosses in front of the fighter, rather than vice versa, and at a range and course angle such that the maximum rate of turn available to the fighter is enough to hold the bomber in the coverage of the A.I. as the fighter follows it round. This can be achieved, in the manner indicated below.

- (i) If the bomber is near to line ahead at long range, the range decreasing and the azimuth rapidly changing, it should be followed round in a curve of pursuit, as near as can be achieved.
- (ii) If the bomber is on one side and the azimuth is rapidly increasing, it should also be followed round in a curve or pursuit.
- (iii) If the bomber is on one side, the azimuth is decreasing or staying roughly constant, and the range is rapidly diminishing, the fighter should turn towards it, leaving it on the opposite side, when condition (ii) should apply. If however the range is short it may pay to turn away from the indication immediately.
- (iv) If the bomber is in line ahead, the range is rapidly diminishing but the bearing staying roughly steady, the bomber must be coming head on. This may happen halfway through (iii) above.

In this case the fighter should turn away from the bomber, when it will drift off to the side and when it has got well out to the side, the fighter should turn towards it as hard as possible and follow it round. If the range at which it is realised that the contact is head-on is less than about two miles, however, it will pay to start turning immediately on to the reciprocal, when contact will be lost and rapidly regained.

These principles are, of course, rough and ready and are included here as an indication of the sort of manoeuvre which is executed: they are by no means rules which are invariably observed. They almost always work if skilfully applied. When A.I. contact on the bomber is lost in the course of the turn the fighter should continue the turn when the target should be picked up again. It is very desirable, however, for the A.I. operator to make an estimate of the angle through which it will be necessary to turn, so that the pilot will be able to stop the turn in about the right place and to search, in case for any reason A.I. contact is not regained immediately. The pilot will probably have to gauge the angle of turn by means of external indications such as stars, because in violent manoeuvres the gyro direction indicators tend to spin. The ideal is, of course, to follow the target round on the A.I. indications, and to stop turning when they show that the required angle has been turned through: this procedure allows for changes in the conditions of flight of the bomber during the course of the turn. The correct timing of these manoeuvres comes with practice.

(e) Second stage. The aim of this stage must be to give the pilot (or whoever is looking out) a visual contact at the earliest possible moment with the fighter's conditions of flight such that an approach can easily be made to a position for shooting. (The possibility of blind firing on A.I. is not considered here because there is at the moment no suitable means of carrying it out: perhaps the worst difficulty being identification.)

This object is not in the least affected by the bomber's behaviour: the aim must be to get the visual contact as soon as possible while it is doing whatever it is doing. Thus any technique which only works when the bomber is flying straight and level is of little use because bombers in practice hardly ever fly like this in areas where there are night fighters.

The reasons why it is necessary to get visual contact at the greatest possible range is that closing in to shoot is so much easier, quicker and more certain if the pilot can see the target, and by studying its attitude predict changes in relative position. Range should be given by A.I. even after the visual contact as range and overtaking speed are difficult to assess visually at night.

In order to make sure that the fighter sees the bomber before the bomber sees the fighter, it is necessary for the fighter to take advantage of the prevailing light conditions. This is done by approaching from an angle such that the target is silhouetted against wherever the light is brightest. This is made even more necessary by the fact that the rear gunners in the bomber are better night-adapted than the fighter pilot who has to refer to his instruments.

A description of the technique is made difficult by the fact that there are various types of A.I., some of which give indications to the A.I. operator, and others to the pilot as well. The basic principles of approach are the same but details will vary. There is no real experience yet on the use of the pilot's indicator because it is only in operational use in conjunction with A.I. Mark V in which D/F indications are not very definite. The other marks with pilot's indicators (SCR.720, A.I. Mark IX etc.) are not yet in operational use.

The basic principles of the approach are as follows. The fighter flies as fast as possible to a position displaced from the bomber in the right direction to take advantage of what light there is, and at a range rather greater than that at which a visual can be expected in the prevailing conditions of light. This position must be reached with an overtaking speed which can subsequently be lost before firing; more overtaking speed is not really feasible when the approach is from beneath the bomber, as it usually is, than when it is from above.

The fighter then approaches the bomber keeping its bearing as constant as possible, and the pilot (or observer if there is one) concentrates on looking out in the direction of the bomber as indicated on the A.I. This necessitates the A.I. operator passing a continuous commentary of the bomber's position to the pilot (and/or observer).

With a pilot's indicator, although adequate data based on operational experience are not available it seems that in general the pilot must still spend most of the time looking out, with quick glances at the A.I. and so that an A.I. operator is still required to study the tubes, to inform the pilot of any sudden changes in the target's relative position when the pilot is looking out.

If there is an observer, he needs a commentary from somebody, presumably the A.I. operator.

This approach, at constant angle to suit the light, can of course only be carried out with anything approaching prevision when the target flies straight and level. With a practical target taking evasive action, the fighter does its best to achieve this effect and if it is successful the result is that the target passes from time to time through the required relative position a little closer each time. The pilot will then see the target as it goes across. In this case of continually changing relative position the commentary of bomber position, and the way the position is changing, is of vital importance in enabling the pilot (or observer) to get a visual contact.

In order to achieve this result it is necessary to make due allowance for time lags and aircraft performance. These considerably complicate the approach and prevent the use of a straightforward homing approach, i.e. attempting to keep the fighter heading directly towards the bomber. The difficulties increase with decreasing range, and are of course most serious when the target is taking violent evasive action.

It is difficult to give an adequate description of the technique: it is very largely a matter of experience and judgment. Broadly, however, the principle is to turn towards the bomber until the A.I. indication moves toward the line ahead position, and to stop turning before it gets there. In this way, it is arranged that if the bomber is not line ahead, it is drifting slowly towards the line ahead position. Should the bomber come in quickly towards line ahead it may be necessary to turn away from it. The amount of "anticipation" required in stopping the turn, i.e. the angle off centre of the bomber when the turn towards it is stopped, varies with range, getting greater as the range decreases. The effect of relative position on range must also be considered. If the target moves well to one side, the range will increase: on turning towards the target the first indication the fighter receives that it has turned nearly far enough may be diminishing range. This is particularly the case with types of A.I. whose D/F accuracy is not high with the target displaced to the side.

Really accurate alignment of course with that of the bomber is neither possible nor desirable. It is impossible because the bomber never keeps a steady course for long, and undesirable because even if the bomber flew straight accurate alignment of course would involve

considerable effort at short ranges which would distract the pilot from the main job of seeing the target. Perfect alignment also might in many cases delay the time when visual contact was obtained, because the bomber is frequently first seen when it obscures stars and a gentle relative movement helps this effect. Of course, relative movement demands a good commentary of position but this is necessary in any case.

In the approach to visual contact, the most difficult part is early recognition of changes in the bomber's conditions of flight: if these are recognised late the fighter has to alter its conditions of flight by a greater amount than the bomber did, in order to catch up with the new conditions and then make a change in the opposite direction. This requires that somebody should study the A.I. indications continually, and must not look away to perform other duties. In a normal night fighter with pilot and A.I. operator the latter must undertake this duty: the pilot cannot do it even if he has one, because when the range is short he must spend most of the time looking out to see the target.

Speed control is found to be a stumbling block: the bomber must be approached more and more slowly as the range gets less. If this is not properly carried out, the fighter will overshoot and very likely lose the bomber altogether. In order to prevent this it is found necessary for air-crews under training to synchronise the fighter's speed with that of the target at a considerable range, and then increase it by a small amount to close in: experienced aircrews should be able to recognise a suitable closing speed for the range concerned by study of the A.I. indication. Changes in target airspeed cause additional difficulties: They are perhaps the most difficult manoeuvres to follow without lag, because the fighter's accelerations and retardation is not very great. Lack of adequate retardation is particularly troublesome. An ideal night fighter should have airbrakes but at present no operational night fighters are so equipped. It is often found necessary to add to the available acceleration or retardation by climbing or diving. For example, if A.I. contact is obtained on a slow flying bomber below the fighter it may be necessary to pull the fighter's nose up to start with until the excess speed is lost, before coming down to the target's level.

Attention must also be paid to relative altitude in the course of turns. The fighter should follow the target round its jinks and orbits at the proper relative position, i.e. below if the best light is above. If the turn is a long one, e.g. an orbit, the bomber or the fighter or both may well gain or lose height. If the range is short the elevation may change considerably in magnitude and even sign. It is therefore desirable to be able to give elevation corrections in the course of turns. This is readily possible in A.I. Marks VII and VIII because the ground returns give a line of reference. On other marks it is more difficult because indications are relative to the fighter's axes, and the A.I. operator must bear the fighter's attitude in mind when interpreting the A.I. indications.

With old marks of A.I. the fighter seldom got to visual range during turns. With Mark VII and subsequent marks it is possible to close to visual range during target turns. It is therefore necessary for the A.I. operator to continue his commentary of the target's position, and for the pilot to look out, even when turning, if the range is suitable. The target often crosses the best patch of light in the course of turns enabling the pilot to get an early visual contact, and possibly recognise the bomber.

DAY FIGHTER SQUADRONS IN THE LINE UNDER CONTROL OF
FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN

JANUARY 1943 - MAY 1944⁽¹⁾

| Figures are given for last week in each month | Spitfires VB | Spitfires V Long Range | Spitfires VI | Spitfires IV & VII | Spitfires IX | Spitfires XII | Spitfires XIV | Total Spitfires | Typhoons | Mustangs | Tempests | Whirlwinds | Hurricanes IIB, IIC, IID & IV | Grand Total |
|-----------------------------------------------|--------------|------------------------|--------------|--------------------|--------------|---------------|---------------|-----------------|----------|----------|----------|------------|-------------------------------|-------------|
| <u>1943</u> | | | | | | | | | | | | | | |
| Jan. | 23 | 12 | 2 | - | 10 | - | - | 47 | 13 | 3 | - | 2 | 3 | 68 |
| Feb. | 22 | 12 | 1 | - | 10 | - | - | 45 | 14 | 3 | - | 2 | 4 | 68 |
| Mar. | 21 | 10 | 1 | - | 10 | - | - | 42 | 15 | 4 | - | 2 | 1 | 64 |
| Apr. | 21 | 11 | 1 | - | 10 | 1 | - | 44 | 18 | 4 | - | 2 | 2 | 70 |
| May | 21 | 11 | 1 | - | 10 | 2 | - | 45 | 18 | 3 | - | 2 | 2 | 70 |
| June (ii) | 19 | 12 | 2 | 1 | 10 | 2 | - | 46 | 18 | 13 | - | 1 | 2 | 80 |
| July | 17 | 12 | 2 | 1 | 10 | 2 | - | 44 | 18 | 14 | - | 1 | 3 | 80 |
| Aug. | 18 | 12 | 1 | 2 | 13 | 2 | - | 48 | 18 | 13 | - | 1 | 3 | 83 |
| Sept. | 12 | 10 | 1 | 2 | 14 | 2 | - | 41 | 18 | 11 | - | 1 | 3 | 74 |
| Oct. | 12 | 11 | 1 | 2 | 18 | 2 | - | 46 | 18 | 13 | - | 1 | 4 | 82 |
| Nov. (iii) | 8 | 9 | - | 1 | 2 | 2 | - | 22 | 11 | 3 | - | 1 | 1 | 38 |
| Dec. | 6 | 10 | - | 2 | 2 | 2 | - | 22 | 12 | 3 | - | - | 1 | 38 |
| <u>1944</u> | | | | | | | | | | | | | | |
| Jan. | 4 | 8 | - | 2 | 2 | 2 | - | 18 | 13 | 3 | - | - | - | 34 |
| Feb. | 3 | 10 | - | 2 | 3 | 1 | 1 | 20 | 6 | 2 | - | - | 1 | 29 |
| Mar. | - | 11 | - | 3 | 1 | 1 | 3 | 19 | 5 | - | - | - | 1 | 25 |
| Apr. | - | 13 | - | 3 | 2 | 1 | 3 | 22 | 2 | 1 | 2 | - | 1 | 28 |
| May | - | 13 | - | 3 | 10 | 1 | 3 | 30 | 3 | 1 | 2 | - | 1 | 37 |

Authority:- Fighter Command Orders of Battle
A.H.B. Ref. IIM/A2/3-5A.

- (1) This Table includes Operational Squadrons which may not have been engaged in active operations at the time, but it does not include Squadrons which were re-equipping, forming, or those classed as Non-Operational.
- (ii) Squadrons of the Tactical Air Force came under control of Fighter Command with effect from 1 June 1943.
- (iii) After the formation of the Allied Expeditionary Air Force in November, only those Squadrons belonging to Air Defence Great Britain are included.

FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN OPERATIONAL LOSSES DURING 1943

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------|-----------------------------------------------------|-------------------|
| | <u>Dest.</u> | <u>Dam.</u> | <u>Aircrew</u> | <u>Dest.</u> | <u>Dam.</u> | <u>Aircrew</u> |
| <u>January</u> | 23 Spit. 3 Typh. 2 Whirl. 1 Hurr. 1 Mos. 1 Beau. | 9 Spit. | 30 | 6 Spit. 1 Typh. 1 Whirl. 1 Hurr. 1 Mos. 1 Beau. 2 Def. | 11 Spit. 2 Typh. 1 Mos. 1 Beau. 2 Bost. | 2 |
| | 31 A/C | 9 A/C | 30 | 13 A/C | 17 A/C | 2 |
| <u>February</u> | 38 Spit. 4 Typh. 1 Whirl. 2 Beau. 1 Bost. | 8 Spit. | 49 | 11 Spit. 3 Typh. 2 Whirl. 1 Hurr. 1 Beau. | 7 Spit. 2 Typh. 1 Mos. | 11 |
| | 46 A/C | 8 A/C | 49 | 18 A/C | 10 A/C | 11 |
| <u>March</u> | 24 Spit. 4 Typh. 1 Whirl. 4 Mos. 4 Beau. | 9 Spit. 3 Typh. 1 Mos. 1 Beau. | 42 | 5 Spit. 3 Typh. 1 Mos. | 9 Spit. 3 Typh. 1 Beau. | 6 |
| | 37 A/C | 14 A/C | 42 | 9 A/C | 13 A/C | 6 |
| <u>April</u> | 43 Spit. 10 Typh. 6 Whirl. 4 Th'bolt. 4 Mos. 4 Beau. 1 Def. 1 Bost. | 11 Spit. 5 Typh. 1 Whirl. 3 Beau. | 79 | 8 Spit. 9 Typh. 1 Whirl. 1 Th'bolt. 3 Mos. 1 Wal. | 11 Spit. 6 Typh. 1 Mos. 2 Beau. | 17 |
| | 69 A/C RAF 4 A/C USAAF | | 75 RAF 4 USAAF | 22 A/C RAF 1 A/C USAAF | 20 A/C RAF | 17 RAF |
| | 73 A/C | 20 A/C | 79 | 23 A/C | 20 A/C | 17 |
| <u>May</u> | 37 Spit. 8 Typh. 1 Whirl. 9 Th'bolt. 8 Mos. 1 Beau. | 13 Spit. 3 Whirl. 1 Th'bolt. 4 Mos. 1 Beau. | 65 | 6 Spit. 3 Typh. 1 Whirl. 2 Th'bolt. 1 Mos. 2 Beau. 1 Def. | 14 Spit. 4 Typh. 1 Bost. 1 Wal. | 16 |
| | 55 A/C RAF 9 A/C USAAF | 21 A/C RAF 1 A/C USAAF | 56 RAF 9 USAAF | 14 A/C RAF 2 A/C USAAF | 20 A/C RAF | 14 RAF 2 USAAF |
| | 64 A/C | 22 A/C | 65 | 16 A/C | 20 A/C | 16 |
| <u>June</u> | 57 Spit. 7 Typh. 1 Whirl. 7 Mustang. 7 Th'bolt. 1 Hurr. 5 Mos. 2 Beau. 1 Bost. 3 Mitch. 3 Vent. | 7 Spit. 6 Typh. 2 Mustang. 4 Mos. 1 Mitch. 1 Vent. | 95 | 10 Spit. 5 Typh. 3 Mustang. 3 Th'bolt. 1 Hurr. 3 Mos. | 9 Spit. 7 Typh. 2 Mustang. 1 Whirl. | 12 |
| | 67 A/C RAF 7 A/C USAAF | 21 A/C RAF | 89 RAF 6 USAAF | 22 A/C RAF 3 A/C USAAF | 19 A/C RAF | 12 RAF |
| | 74 A/C | 21 A/C | 95 | 25 A/C | 19 A/C | 12 |

NOTE: U.S.A.A.F. Aircraft losses in the course of the fighter offensive are also included.
 Authority: Fighter Command Form 'Y'.

FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN OPERATIONAL LOSSES DURING 1943

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|--------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------|
| | Dest. | Dam. | Aircrew | Dest. | Dam. | Aircrew |
| July | 30 Spit. 19 Typh. 16 Must. 12 Th'bolt. 2 Hurr. 4 Mos. 1 Def. 5 Bost. 1 Mitch. | 14 Spit. 9 Typh. 6 Must. 4 Th'bolt. 1 Mos. | 104 | 6 Spit. 3 Typh. 2 Must. 2 Mos. 1 Ans. | 7 Spit. 5 Typh. 3 Must. 1 Mos. | 8 |
| | 78 A/C RAF 12 A/C USAAF | 30 A/C RAF 4 A/C USAAF | 94 RAF 10 USAAF | 14 A/C RAF | 16 A/C RAF | 8 RAF |
| | 90 A/C | 34 A/C | 104 | 14 A/C | 16 A/C | 8 |
| August | 39 Spit. 16 Typh. 7 Must. 9 Th'bolt. 8 Mos. 1 Beau. 14 Bost. 2 Mitch. | 5 Spit. 4 Typh. 1 Must. 3 Mos. | 135 | 4 Spit. 2 Typh. 1 Must. 2 Th'bolt. 2 Hurr. 3 Beau. | 6 Spit. 2 Typh. 1 Must. 1 Th'bolt. 1 Mos. 2 Walr. | 10 |
| | 87 A/C RAF 9 A/C USAAF | 13 A/C RAF | 126 RAF 9 USAAF | 12 A/C RAF 2 A/C USAAF | 12 A/C RAF 1 A/C USAAF | 9 RAF 1 USAAF |
| | 96 A/C | 13 A/C | 135 | 14 A/C | 13 A/C | 10 |
| Sept. | 50 Spit. 20 Typh. 9 Must. 13 Th'bolt. 1 Whirl. 4 Hurr. 8 Mos. 2 Beau. 1 Bost. 3 Mitch. 2 Vent. | 8 Spit. 4 Typh. 3 Must. 4 Mos. 1 Mitch. | 115 | 9 Spit. 3 Typh. 2 Th'bolt. 2 Mos. | 9 Spit. 3 Typh. 1 Th'bolt. | 8 |
| | 100 A/C RAF 13 A/C USAAF | 20 A/C RAF | 105 RAF 12 USAAF | 14 A/C RAF 2 A/C USAAF | 12 A/C RAF 1 A/C USAAF | 7 RAF 1 USAAF |
| | 113 A/C | 20 A/C | 115 | 16 A/C | 13 A/C | 8 |
| Oct. | 19 Spit. 21 Typh. 2 Must. 10 Th'bolt. 2 Whirl. 2 Hurr. 1 Lightn. 8 Mos. 10 Bost. 4 Mitch. | 4 Spit. 4 Typh. 2 Must. 2 Th'bolt. 3 Whirl. 1 Mos. 1 Beau. 2 Mitch. | 121 | 6 Spit. 2 Typh. 1 Must. 1 Th'bolt. 1 Whirl. 3 Mos. 2 Beau. | 7 Spit. 1 Typh. 3 Th'bolt. 1 Whirl. 1 Mitch. 1 Walr. | 16 |
| | 68 A/C RAF 11 A/C USAAF | 17 A/C RAF 2 A/C USAAF | 110 RAF 11 USAAF | 15 A/C RAF 1 A/C USAAF | 11 A/C RAF 3 A/C USAAF | 15 RAF 1 USAAF |
| | 79 A/C | 19 A/C | 121 A/C | 16 A/C | 14 A/C | 16 |

Note. With the formation of A.E.A.F. in November losses of 2nd T.A.F. and IXth U.S. Air Force are included with those of A.D.G.B.

FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN OPERATIONAL LOSSES DURING 1943

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------|
| | Dest. | Dam. | Aircrew | Dest. | Dam. | Aircrew |
| Nov. | 21 Spit. 20 Typh. 7 Must. 35 Th'bolt. 11 Lightn. 7 Mos. 1 Beau. 6 Mitch. | 6 Spit. 2 Typh. 7 Must. 2 Mos. | 133 | 7 Spit. 4 Typh. 1 Th'bolt. 5 Mos. | 5 Spit. 5 Typh. 2 Mos. 1 Bost. | 15 |
| | 62 A/C RAF 46 A/C USAAF | 17 A/C RAF | 96 RAF 37 USAAF | 16 A/C RAF 1 A/C USAAF | 13 A/C RAF | 15 RAF |
| | 108 A/C | 17 A/C | 133 | 17 A/C | 13 A/C | 15 |
| Dec. | 15 Spit. 13 Typh. 7 Must. (Inc. 5 US) 22 Th'bolt. 4 Lightn. 2 Hurr. 8 Mos. 1 Bost. | 1 Spit. 6 Typh. 5 Th'bolt. 1 Lightn. 1 Mos. | 80 | 4 Spit. 5 Typh. 4 Must. 4 Th'bolt. 4 Lightn. 1 Mos. 1 Beau. 2 Bost. | 9 Spit. 6 Typh. 2 Must. 3 Th'bolt. 1 Mos. 3 Hurr. | 22 |
| | 41 A/C RAF 31 A/C USAAF | 8 A/C RAF 6 A/C USAAF | 52 RAF 28 USAAF | 17 A/C RAF 8 A/C USAAF | 21 A/C RAF 3 A/C USAAF | 16 RAF 6 USAAF |
| | 72 A/C | 14 A/C | 80 | 25 A/C | 24 A/C | 22 |

CASUALTIES TO AIRCRAFT AND AIRCREW ON OPERATIONS 1943

| CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Dest. | Dam. | Aircrew | Dest. | Dam. | Aircrew |
| 376 Spit. 145 Typh. 55 Must. (Inc. 5 US) 121 Th'bolt. (US) 16 Lightn. (US) 15 Whirl. 12 Hurr. 65 Mos. 18 Beau. 34 Bost. 19 Mitch. 5 Vent. 2 Def. | 95 Spit. 43 Typh. 21 Must. 12 Th'bolt. (US) 1 Lightn. (US) 7 Whirl. - 21 Mos. 6 Beau. - 4 Mitch. 1 Vent. - | 1,048 | 82 Spit. 43 Typh. 11 Must. 16 Th'bolt. (US) 4 Lightn. (US) 6 Whirl. 5 Hurr. 22 Mos. 10 Beau. 2 Bost. - - 3 Def. 1 Walr. 1 Ans. | 104 Spit. 46 Typh. 6 Must. 8 Th'bolt. (US) - 2 Whirl. 3 Hurr. 10 Mos. 4 Beau. 4 Bost. 1 Mitch. - - 4 Walr. | 143 |
| 741 A/C RAF 142 A/C USAAF | 198 A/C RAF 13 A/C USAAF | 922 RAF 126 USAAF | 186 A/C RAF 20 A/C USAAF | 184 A/C RAF 8 A/C USAAF | 132 RAF 11 USAAF |
| 883 A/C | 211 A/C | 1,048 | 206 A/C | 192 A/C | 143 |

NOTE. With the formation of AFAF in November losses of 2nd T.A.F. and IXth U.S. Air Force are included with those of ADGB.

ALLIED EXPEDITIONARY AIR FORCE OPERATIONAL LOSSES JANUARY TO MAY 1944

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------|
| | Dest. | Dam. | Aircrew | Dest. | Dam. | Aircrew |
| <u>Jan.</u> | 21 Spit. 31 Typh. 6 Must. (inc. 4 US) 27 Th'bolt. 27 Lightn. 2 Hurr. 15 Mos. 1 Bost. 1 Mitch. | 5 Spit. 9 Typh. 3 Must. 1 Hurr. 2 Mos. 1 Bost. | 140 | 6 Spit. 2 Typh. 2 Must. 2 Th'bolt. 2 Lightn. 5 Mos. 2 Beau. 1 Bost. 2 Mitch. | 12 Spit. 3 Typh. 2 Must. 1 Mos. | 24 |
| | 73 A/C RAF 58 A/C USAAF | | 84 RAF 56 USAAF | 20 A/C RAF 4 A/C USAAF | | 22 RAF 2 USAAF |
| | 131 A/C | 21 A/C | 140 | 24 A/C | 18 A/C | 24 |
| <u>Feb.</u> | 6 Spit. 31 Typh. 22 Must. (inc. 18 US) 40 Th'bolt. 25 Lightn. 1 Hurr. 10 Mos. 2 Bost. 3 Mitch. 17 Mar. | 3 Spit. 8 Typh. 2 Must. 1 Th'bolt. 7 Mos. | 251 | 8 Spit. 6 Typh. 2 Must. 2 Th'bolt. 4 Lightn. 3 Mos. 2 Mar. | 4 Spit. 5 Typh. 1 Must. 1 Th'bolt. 1 Mos. | 18 |
| | 57 A/C RAF 100 A/C USAAF | 20 A/C RAF 1 A/C USAAF | 88 RAF (1) 163 USAAF | 19 A/C RAF 8 A/C USAAF | 11 A/C RAF 1 A/C USAAF | 16 RAF 2 USAAF |
| | 157 A/C | 21 A/C | 251 | 27 A/C | 12 A/C | 18 |
| <u>Mar.</u> | 12 Spit. 13 Typh. 35 Must. (inc. 28 US) 7 Th'bolt. 13 Mos. 2 Bost. 5 Mitch. 10 Mar. | 8 Spit. 3 Typh. 9 Mos. 1 Mar. | 166 | 3 Spit. 3 Typh. 2 Must. 1 Mos. 3 Mar. | 5 Spit. 6 Typh. 1 Mar. | 22 |
| | 52 A/C RAF 45 A/C USAAF | 20 A/C RAF 1 A/C USAAF | 76 RAF (91) 90 USAAF | 9 A/C RAF 3 A/C USAAF | 11 A/C RAF 1 A/C USAAF | 4 RAF 18 USAAF |
| | 97 A/C | 21 A/C | 166 | 12 A/C | 12 A/C | 22 |
| <u>Apr.</u> | 22 Spit. 4 Typh. 49 Must (incl. 39 US) 15 Th'bolt. 6 Mos. 2 Mitch. 17 Mar. 5 Bost (US) | 3 Spit. 3 Typh. 6 Must (incl. 2 US) 7 Th'bolt. 5 Mos. 16 Mitch. 33 Bost. (incl. 22 US) 55 Mar. | 230 | 12 Spit. 1 Typh. 7 Must (US) 2 Th'bolt. 3 Mos. 1 Beau. 1 Bost. 1 Mitch 4 Mar. | 1 Spit. 1 Th'bolt. 1 Mos. 3 Bost (US) | 7 (?) |
| | 34 A/C RAF 76 A/C USAAF | 43 A/C RAF 86 A/C USAAF | 54 RAF 176 USAAF | 19 A/C R F 13 A/C USAAF | 2 A/C RAF 4 A/C USAAF | 7 RAF (?) |
| | 120 A/C | 129 A/C | 230 | 32 A/C | 6 A/C | 7 (?) |

(1) Includes 94 Mar. aircrew.

(11) Includes 55 Mar. aircrew.

ALLIED EXPEDITIONARY AIR FORCE OPERATIONAL LOSSES JANUARY TO MAY 1944

| | CASUALTIES DUE TO ENEMY ACTION | | | NOT DUE TO ENEMY ACTION | | |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| | Dest. | Dam. | Aircrew | Dest. | Dam. | Aircrew |
| May. | 52 Spit. 34 Typh. 2 Seafire. 2 Temp. 27 Must (incl. 20 US) 44 Th'bolt. 23 Lightn. 7 Mos. 2 Mitch 23 Mar. 10 Bost (US) | 32 Spit. 16 Typh. 4 Temp. 3 Must. 33 Thun. 16 Mos. 19 Mitch. 69 Mar. 53 Bost (incl. 41 US) | 379 | 13 Spit. 3 Typh. 6 Must (incl. 1 US) 1 Seafire. 13 Th'bolt. 3 Lightn. 4 Mos. 1 Mitch. 2 Bost (incl. 1 US) 5 Mar. 1 Mar. 1 Sea Otter | 41 Spit. 18 Typh. 7 Must (incl. 2 US) 1 Seafire. 15 Th'bolt. 12 Lightn. 5 Mos. 3 Mar. 7 Bost (US) 1 Walr. | 4 (?) |
| | 106 A/C RAF 120 A/C USAAF | 102 A/C RAF 143 A/C USAAF | 114 RAF 265 USAAF | 30 A/C RAF 23 A/C USAAF | 71 A/C RAF 39 A/C USAAF | 4 RAF (?) |
| | 226 A/C | 245 A/C | 379 | 53 A/C | 110, A/C | 4 (?) |
| Summary of Casualties January to May 1944 | 113 Spit. 113 Typh. 30 Must (RAF) 109 Must. (US) 133 Th'bolt (US) 75 Lightn. (US) 3 Hurr. 51 Mos. 67 Mar (US) 5 Bost (RAF) 15 Bost (US) 13 Mitch. 2 Seafire. 2 Temp. | 52 Spit. 39 Typh. 12 Must. (RAF) 2 Must (US) 41 Th'bolt (US) 1 Hurr. 39 Mos. 125 Mar (US) 36 Mitch 24 Bost (RAF) 63 Bost (US) 4 Temp | 1,166 | 42 Spit. 15 Typh. 11 Must (RAF) 8 Must (US) 19 Th'bolt (US) 9 Lightn. 16 Mos. 3 Beau. 3 Bost (RAF) 1 Bost (US) 4 Mitch. 14 Mar (US) 1 Seafire 1 Walr. 1 Sea Otter. | 63 Spit. 32 Typh. 8 Must (RAF) 2 Must (US) 17 Th'bolt. (US) 12 Lightn. (US) 8 Mos. 10 Bost (US) 4 Mar (US) 1 Seafire 1 Walr. | 75 (?) |
| | 332 A/C RAF 399 A/C USAAF | 207 A/C RAF 231 A/C USAAF | 416 RAF 750 USAAF | 97 A/C RAF 51 A/C USAAF | 113 A/C RAF 45 A/C USAAF | 53 RAF 22 USAAF |
| | 731 A/C | 438 | 1,166 | 148 | 158 | 75 (?) |

NOTE: Casualties of 2nd T.A.F. and IXth U.S.A.A.F. aircraft for April and May have been taken from A.E.A.F. Int/Ops. Summaries (A.H.B./I B1/A49/ID). The number of casualties for aircrew of 2nd T.A.F. and IXth U.S. Air Force are not available for April and May. In addition from March to May 1944 the VIIth U.S. Fighter Command's casualties while operating in support of attacks on targets in France and the Low Countries were as follows:

Dest.
50 Must.
27 Th'bolt.
28 Lightn.

105 A/C USAAF

Dam.
11 Must.
20 Th'bolt.
4 Lightn.

35 A/C USAAF.

OFFENSIVE FIGHTER OPERATIONS BY DAY JANUARY 1943 TO MAY 1944⁽¹⁾

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| January | | | | | | | |
| 2 | 1 Rodeo 1 Rhubarb | Ile Brehat-Les Sept Iles Fontaine-Le-Dun | 36 | - | 23 | - | - |
| 3 | 1 Bomber Support 2 Rodeos 1 Instep 1 Rhubarb | St. Nazaire Submarine Base Cherbourg Peninsula, Le Crotoy/Wimereux West of Brest Le Touquet - Le Treport | 276 | - | 45 | - | - |
| 4 | 1 Rhubarb 1 Rodeo | Railway and Camp Bolbec Flushing - Ostend | 11 | - | - | - | - |
| 5 | 2 Rhubarbs 1 Instep | Transportation North France West of Brest | 18 | - | - | - | - |
| 6 | 1 Rhubarb 1 Instep | Transportation North France West of Brest | 10 | - | - | - | - |

- (1) This is a summary of all offensive operations actually carried out. Sorties flown by U.S. fighter aircraft are shown in brackets. The authorities are H.Q. Fighter Command/Air Defence Great Britain Forms 'Y', Vols. 13-18. It does not include operations which were abandoned, for weather or other reasons, before reaching the enemy occupied coast, although these were included on the original Forms 'Y'. It includes operations carried out at dawn.
- (2) This is an estimate of the enemy 'reaction' to Allied offensive operations. It does not include routine enemy patrols but it includes aircraft which may not have been seen by Allied pilots, e.g., enemy fighters which were put up too late.
- (3) This only includes aircraft claimed as definitely destroyed.
- (4) These figures are taken from German records (A.H.B.6). They include all single-engined fighter operational losses suffered by Luftflotte 3, except the few which are definitely known to have taken place over the United Kingdom. They also include aircraft destroyed on the ground by bombs or machine gun/cannon fire. It should also be noted that some German fighters were destroyed by U.S. Day bombers whose claims are not recorded here.

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 7 | 1 Roadstead 1 Instep | Minesweepers North of Ile Vierge West of Brest | 36 | - | - | - | - |
| 8 | 1 Rhubarb 2 Rodeos | Clothing Factory Hesdin North France | 40 | - | 2 | - | - |
| 9 | 1 Bomber Support | Ijmuiden Steel Works | 30 | 1 | 40 | 1 | 2 |
| 10 | 1 Rodeo 1 Instep | Minesweepers North of Ile Vierge West of Brest | 25 | - | - | - | - |
| 11 | 2 Rhubarbs 2 Rodeos 1 Instep | Transportation North France Pas de Calais West of Brest | 79 | 1 | 12 | - | - |
| 12 | 2 Rhubarbs 1 Offensive Shipping Recce 1 Ranger 1 Fighter Roadstead | Transportation North France Ostend - Calais Ushant - Pas de Raz Flushing | 21 | - | - | - | - |
| 13 | 3 Bomber Support 1 Rhubarb 1 Instep 1 Ranger | St. Omer/Fort Rouge, Abbeville/Drucat airfields, Lille Loco Works Transportation North France West of Brest North West France | 360 (71) | 2 | 125 | 3 | 3 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|--------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 14 | 5 Rhubarbs 1 Fighter Roadstead 1 Instep | Transportation North France Flushing West of Brest | 24 (8) | - | - | 2 | - |
| 15 | 1 Bomber Support 1 Fighter Roadstead 1 Instep 2 Fighter Ramrods | Cherbourg Docks Flushing West of Brest Railways North France | 140 | 4 | 6 | - | - |
| 16 | 2 Rhubarbs | Transportation North France | 4 | - | - | - | - |
| 17 | 6 Rodeos 1 Fighter Roadstead 2 Rhubarbs | North France Cherbourg Transportation North France | 165 | 4 | 40 | 5 | - |
| 18 | 1 Rhubarb 1 Instep 1 Offensive Shipping Recce. | Transportation North France West of Brest Ile de Batz-Ile Vierge | 20 | 1 | - | - | - |
| 19/20 | 1 Rhubarb | Transportation North France | 2 | - | - | - | - |
| 20 | 3 Rhubarbs 1 Instep 1 Rodeo | Transportation North France West of Brest Pas de Calais | 41 | - | 21 | 1 | 2 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| January | | | | | | | |
| 21 | 4 Bomber Support 3 Rodeos 1 Instep | Caen, Tricqueville Airfields, Cherbourg Docks, Flushing Harbour Pas de Calais West of Brest | 388 (24) | - | 109 | 3 | 2 |
| 22 | 4 Bomber Support 1 Rhubarb 1 Instep | Maupertus, Abbeville/Drucat, St. Omer/ Fort Rouge Airfields, Ghent Oil Transportation North France West of Brest | 286 (25) | 2 | 91 | 6 | - |
| 23 | 1 Bomber Support 6 Rhubarbs 1 Instep 2 Rodeos | Lorient Submarine Base, Brest Docks Transportation North France West of Brest North France | 174 | 4 (1 Pilot saved) | 12 | - | 2 |
| 24 | 1 Instep | West of Brest | 6 | - | - | - | - |
| 25 | 1 Bomber Support 1 Instep | Flushing Docks West of Brest | 127 | 1 (1 Pilot saved) | - | - | - |
| 26 | 1 Bomber Support 1 Rodeo 1 Instep | Bruges Railway Centre Abbeville West of Brest | 203 (22) | 4 | 52 | 3 | 2 |
| 27 | 2 Rhubarbs 1 Instep | Transportation North France West of Brest | 7 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 28 | 7 Rhubarbs 1 Fighter Roadstead 1 Offensive Shipping Recce | Transportation North France Ostend - Flushing Blankenbergh-Calais | 25 | 2 (1 Pilot saved) | - | - | - |
| 29 | 2 Bomber Support 2 Rhubarbs 1 Fighter Roadstead | Morlaix Railway Viaduct, Ijmuiden Docks Transportation North France Ostend - Schouwen | 119 | 3 | 2 | 3 | 1 |
| 30 | 1 Rhubarb | Transportation Netherlands | 2 | - | - | - | - |
| <u>February</u> | | | | | | | |
| 1 | 1 Instep | South West of Brest | 2 | - | - | - | - |
| 2 | 2 Bomber Support 1 Instep | Abbeville Railway Yards, Railway Bruges South West of Brest | 129 (25) | - | 40 | 1 | 1 |
| 3 | 4 Bomber Support 1 Rodeo | Courtrai/Wevelghem, St. Omer/Fort Rouge Airfields, Abbeville Railway Yards, Ijmuiden Steel Works Cherbourg | 324 (47) | 8 | 108 | 3 | 1 |
| 4 | 2 Rodeos 1 Instep | Cherbourg, Pas de Calais South West of Brest | 110 | - | 53 | 1 | 2 |
| 5 | 1 Fighter Roadstead 2 Rhubarbs 2 Offensive Shipping Recce 1 Ranger | Dutch Coast Transportation North France Boulogne, Gris Nez/Somme Industrial Target North West France | 13 (6) | 1 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February: | | | | | | | |
| 6 | 5 Rhubarbs 1 Ranger 1 Offensive Shipping Recce | Transportation North France North West France Motor Vessel Ostend | 14 | 2 | - | - | - |
| 7 | 2 Rhubarbs 1 Ranger | Transportation North France North West France | 5 | 1 | - | - | - |
| 8 | 1 Instep 2 Rodeos | South West of Brest North France | 51 | - | 36 | - | - |
| 9 | 2 Rhubarbs | Transportation North France | 4 | 2 | - | - | - |
| 10 | 1 Bomber Support 3 Rodeos 1 Offensive Shipping Recce | Caen Railway Yards Pas de Calais, Belgium and Dutch Coasts Dutch Coast | 150 | 3 | 65 | - | 1 |
| 11 | 1 Rhubarb 1 Ranger 1 Offensive Shipping Recce | Transportation North France Cholet Power Station Boulogne | 11 | 1 | 3 | - | - |
| 12 | 4 Rhubarbs 1 Offensive Shipping Recce | Transportation North France Hook/Ijmuiden | 12 | 1 | - | - | - |
| 13 | 5 Bomber Support (1 abortive) 1 Rodeo | Boulogne Harbour, Ijmuiden Coke Ovens, St. Malo Docks Boulogne | 385 | 6 | 186 | 3 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February | | | | | | | |
| 14 | 1 Fighter Roadstead 1 Rodeo 1 Offensive Shipping Recce 2 Rangers | Walcheren (no shipping seen) Pas de Calais Hook/Ijmuiden (no shipping seen) Transportation North France | 34 | - | - | - | - |
| 15 | 2 Bomber Support 1 Ranger 1 Rhubarb | Dunkirk Harbour Nantes Transportation North France | 175 | 1 | 129 | 10 | - |
| 16 | 6 Rodeos 1 Bomber Support 1 Roadstead 1 Instep | Pas de Calais, Caen St. Nazaire Docks Ijmuiden/Texel (no shipping seen) South West of Brest | 252 | - | 115 | 1 | - |
| 17 | 2 Rhubarbs | Transportation North France | 82 | 4 | 50 | - | - |
| 18 | 4 Rhubarbs 3 Rangers 1 Offensive Shipping Recce | Transportation North France Power Stations North France, Transportation Hook/Ijmuiden (no shipping seen) | 67 | - | - | - | - |
| 19 | 1 Roadstead 1 Bomber Support 1 Rodeo | Hook/Ijmuiden Den Helder Docks Pas de Calais | 53 (25) | 1 | - | - | - |
| 21 | 1 Rhubarb | Transportation North France | 2 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>February</u> | | | | | | | |
| 24 | 1 Rhubarb 2 Instep | Transportation Holland South West of Brest | 7 | 2 (1 Pilot saved) | - | - | - |
| 25 | 1 Instep | South West of Brest | 3 | - | - | - | - |
| 26 | 7 Bomber Support 1 Instep 1 Rhubarb | Shipping Dunkirk, Wilhelmshaven (withdrawal only), Maupertus Airfield South West of Brest Transportation Holland | 555 (76) | 2 | 82 | 4 | 3 |
| 27 | 3 Bomber Support | Brest, Shipping Dunkirk Harbour, Maupertus Airfield | 192 (24) | 4 | 54 | 3 | 1 |
| 28 | 1 Rhubarb 1 Instep 2 Bomber Support | Transportation North France South West of Brest Maupertus Airfield | 99 | - | 30 | 1 | - |
| <u>March</u> | | | | | | | |
| 1 | 1 Instep 1 Ranger 1 Rodeo | North West of Brest Transportation North France Dutch Islands and Belgian Coast | 26 | - | - | 1 | - |
| 2 | 5 Rhubarbs | Transportation North France | 9 | 1 | - | - | - |
| 3 | 3 Rhubarbs 1 Ranger | Transportation Belgium, Holland Transformer Station North France | 9 | - | - | - | - |
| 4 | 2 Rodeos | Pas de Calais | 40 | - | 51 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 5 | 2 Fighter Roadstead | Shipping Dutch Coast | 6 | - | - | - | - |
| 6 | 2 Rhubarbs 1 Bomber Support | Transportation Holland Brest Docks | 56 | 2 | 15 | - | - |
| 7 | 1 Rodeo 1 Fighter Roadstead | Pas de Calais Somme - Boulogne (no shipping seen) | 117 | - | 30 | - | - |
| 8 | 1 Ranger 2 Bomber Support | Bay of Biscay Rouen, Rennes Railway Centres | 185 (27) | 3 | 75 | 5 | 1 |
| 9 | 2 Rodeos | Pas de Calais | 110 (24) | - | 135 | 2 | - |
| 10 | 4 Rodeos | Pas de Calais, Dutch Islands | 148 (40) | - | 151 | 1 | 1 |
| 11 | 3 Rangers 1 Roadstead 1 Rhubarb | Power Stations North France Ostend - Dunkirk (no shipping seen) Transportation Dieppe | 21 | 1 | - | 1 | 2 |
| 12 | 1 Offensive Shipping Recce 1 Bomber Support 1 Rodeo | Egmond-Catwijk Rouen Railway Centre Pas de Calais | 121 (51) | 1 | 95 | 3 | 1 |
| 13 | 1 Bomber Support | Amiens Railway Centre | 95 (27) | 6 | 180 | 4 | 2 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 14 | 4 Rodeos 2 Bomber Support 1 Rodeo | Holland, North France Maupertus, Abbeville/Drukat Airfields Pas de Calais | 264 | 4 | 85 | 2 | - |
| 15 | 2 Offensive Shipping Recce 1 Bomber Support | Dutch Coast St. Brieuc Airfield | 61 | 1 | 15 | - | 1 |
| 18 | 1 Bomber Support | Maasluis Oil Refinery | 24 | - | 8 | 2 | - |
| 19 | 1 Fighter Roadstead 1 Ranger | Dutch Coast Transportation North France | 3 | - | - | - | - |
| 20 | 1 Rhubarb | Transportation North France | 4 | - | - | - | - |
| 21 | 1 Rodeo | Cherbourg | 22 | - | - | - | - |
| 22 | 2 Bomber Support 2 Rhubarbs 1 Instep | Maasluis Oil Refinery, Alkmaar Airfield Transportation North France South West of Brest | 47 | - | 25 | 2 | - |
| 23 | 2 Instep | South West of Brest | 6 | - | - | - | - |
| 24 | 4 Rhubarb 2 Instep 1 Fighter Roadstead | Transportation North France South West of Brest Shipping Dutch Islands | 29 | 1 | - | - | - |
| 25 | 1 Bomber Support 4 Rodeos 1 Rhubarb | Abbeville Railway Centre Pas de Calais Transportation Ghent | 126 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------|--------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 26 | 5 Rhubarbs | Transportation and Power Station North France | 41 | - | - | 1 | 1 |
| | 3 Instep | Bay of Biscay, Bordeaux | | | | | |
| | 1 Ranger | North France | | | | | |
| | 1 Rodeo | Cherbourg | | | | | |
| 27 | 2 Rhubarbs | Transportation and Oil Dump Holland | 17 | - | - | - | - |
| | 1 Ranger | Transportation Holland and Germany | | | | | |
| | 2 Instep | Bay of Biscay | | | | | |
| 28 | 2 Bomber Support | Rouen Railway Centre, Rotterdam Docks | 217 | 5 | 120 | 1 | 1 |
| | 2 Instep | South West of Brest | | | | | |
| 29 | 3 Bomber Support | Rotterdam Shipyards, Abbeville Railway Centre | 202 | - | - | - | 2 |
| 30 | 3 Rangers | Transportation and Shipping North France | 15 | - | - | - | - |
| | 1 Offensive | French Coast | | | | | |
| | Shipping Recce | Cayeux - Gris Nez | | | | | |
| | 1 Fighter Roadstead | | | | | | |
| 31 | 1 Bomber Support | Rotterdam Shipyards | 73 | - | - | - | - |
| | 1 Ranger | Transportation North France | | | | | |
| <u>April</u> | | | | | | | |
| 1 | 1 Offensive | Shipping Hook/Texel | 13 | 3 | - | - | - |
| | Shipping Recce | | | | | | |
| | 2 Rangers | Power Stations; Airfields North France | | | | | |
| | 4 Rhubarbs | Transportation North France | | | | | |

SECRET

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April 2 | 1 Ranger 1 Special Escort | North France Naval Force in South West Approaches | 86 | 1 | - | - | - |
| 3 | 1 Roadstead 2 Bomber Support 2 Rodeos 1 Fighter Roadstead | Shipping off Dunkirk (no shipping seen) Abbeville/Drucat, Brest Docks North France Shipping off Petten | 225 | 1 | 60 | 5 | 5 |
| 4 | 2 Roadsteads 5 Bomber Support 1 Offensive Shipping Recce | E-Boats Channel Isles, Shipping Boulogne-Calais (no shipping seen) Renault Works Billancourt, Caen Airfields, St. Brieuc, Abbeville Railway Yards, Rotterdam Docks Dieppe, Belgian Coast | 432 | 12 | 299 | 11 | 5 |
| 5 | 1 Roadstead 2 Bomber Support | Shipping Le Treport (no shipping seen) Motor Works Antwerp, Brest | 196 | 3 | 190 | 3 | 3 |
| 6 | 1 Roadstead 3 Rodeos 2 Bomber Support 1 Ranger 1 Offensive Shipping Recce | Shipping Ostend (no shipping seen) North France St. Omer/Fort Rouge, Steel Works Caen Transportation, Holland and Germany Somme-Calais | 176 | 1 | 103 | - | - |
| 7 | 1 Roadstead | Shipping Ostend - Calais (no shipping seen) | 10 | - | - | - | - |

SECRET

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> | | | | | | | |
| 8 | 2 Rodeos 1 Fighter Roadstead 1 Bomber Support | North of Brest, Abbeville Shipping Le Treport - Le Havre Tricqueville Airfields | 145 (24) | 2 | 94 | - | - |
| 9 | 2 Fighter Roadsteads 1 Roadstead 1 Instep 1 Ranger 2 Rhubarbs | Shipping Ostend - Walcheren, Fecamp-Le Havre Convoy off Pleubian (no shipping seen) Bay of Biscay North of France Transportation North France | 70 (6) | - | - | - | - |
| 10 | 1 Rodeo 2 Offensive Shipping Recces 2 Rangers 7 Rhubarbs | Cap Gris Nez Rade de Brest, Ushant North West Germany Netherlands | 50 | 5 | - | - | - |
| 11 | 1 Roadstead 3 Rodeos 3 Offensive Shipping Recces 1 Rhubarb | Shipping Nieuport Pas de Calais Batz - Ushant, Dutch Coast Transportation North France | 48 (6) | 2 | 2 | - | - |
| 12 | 1 Ranger | Rennes | 1 | - | - | - | - |
| 13 | 5 Bomber Support 2 Offensive Shipping Recces | Abbeville, Caen, Railway Yards Guipavas, St. Omer/Longuenesse, Caen/Carpiquet Airfields Fecamp/Boulogne, Belgian and Dutch Coasts | 354 (53) | 3 | 113 | 2 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------|--------------------|--------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 14 | 2 Roadsteads | Shipping Le Treport, E-Boats Falmouth-Guernsey (no shipping seen) | 206 | 4 | 55 | 5 | 2 |
| | 1 Rodeo | Bayeux | | | | | |
| | 1 Bomber Support | Bruges Railway Yards | | | | | |
| | 1 Offensive Shipping Recces | Ostend | | | | | |
| | 1 Offensive Patrol | Enemy aircraft escorting rescue launch off Barfleur | | | | | |
| 15 | 1 Roadstead | Shipping Channel Isles | 190 (63) | 1 (3) (i) | 82 | 2 | 1 |
| | 3 Bomber Support | Tricqueville Cherbourg Docks | | | | | |
| | 1 Rodeo | Pas de Calais | | | | | |
| | 1 Offensive Shipping Recce | Ijmuiden, Texel | | | | | |
| 16 | 5 Bomber Support | Brest, Ostend Chemical Works, Tricqueville Airfields, Haarlem Workshops | 372 | 5 | 185 | 5 | 6 |
| | 1 Offensive Shipping Recce | E-Boats Ushant | | | | | |
| | 1 Roadstead | E-Boats Cherbourg - Channel Isles | | | | | |
| 17 | 3 Rodeos | Holland, Pas de Calais | 345 (110) | 3 | 160 | 5 | 4 |
| | 3 Bomber Support | Abbeville, Caen Railway Yards, Zeebrugge Coke Ovens | | | | | |
| | 3 Offensive Shipping Recces | Calais - Ostend, Dieppe, French Coast | | | | | |
| (i) Casualties suffered by U.S. fighter pilots. | | | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April 18 | 1 Rodeo 3 Bomber Support 2 Roadsteads | Pas de Calais Dieppe Harbour, Poix, Courtrai Airfields Convoy Den Helder, Casquettes | 296 (16) | 2 (1 Pilot saved) | 155 | 1 | - |
| 19 | 1 Bomber Support 1 Offensive Shipping Recce | Yainville Power Station French and Belgian Coasts | 54 | - | - | - | - |
| 20 | 1 Rodeo 4 Bomber Support 1 Offensive Shipping Recce | Somme Estuary Zeebrugge Coke Ovens, Boulogne Railway Yards, Cherbourg Docks, Tricqueville Airfield French and Dutch Coasts | 322 | - | 109 | 2 | - |
| 21 | 1 Rodeo 1 Bomber Support 2 Offensive Shipping Recces | Holland Abbeville Railway Yards Boulogne, Flushing | 118 (82) | 2 | 50 | 1 | - |
| 22 | 2 Rodeos 3 Offensive Shipping Recces | Transportation North France Ijmuiden, Dutch Coast, Ostend-Dieppe | 10 | - | - | - | - |
| 23 | 1 Offensive Shipping Recce | Dieppe | 1 | 1 | - | - | - |
| 24 | 1 Offensive Shipping Recce | French and Dutch Coasts | 7 | 1 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> | | | | | | | |
| 25 | 3 Rhubarbs 1 Offensive Shipping Recce | Transportation North France French and Dutch Coasts | 28 | 2 | - | - | - |
| 26 | 1 Offensive Shipping Recce | French and Dutch Coasts | 3 | - | - | - | - |
| 27 | 1 Fighter Roadstead 1 Roadstead 2 Offensive Shipping Recces | St. Valery - Le Havre Convoy Jersey Ault, French and Dutch Coasts | 49 | - | - | 1 | - |
| 28 | 2 Roadsteads 3 Rhubarbs 1 Offensive Shipping Recce | Convoy Ile de Batz Transportation and Industrial Targets North France French and Dutch Coasts | 82 | 2 | - | - | - |
| 29 | 1 Bomber Support 1 Rodeo 2 Roadstead | Railway Sidings East of Eu Pas de Calais - Hague Seine Bay, Convoy Dutch Coast | 159 (112) | (2) | 117 | - | - |
| 30 | 1 Ranger 1 Roadstead 1 Fighter Roadstead 1 Offensive Shipping Recce | Transportation Holland Minesweeper Ushant Shipping Guernsey French Coast - Channel Isles | 64 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 1 | 2 Rangers 2 Fighter Protection (i) 1 Rodeo 1 Offensive Shipping Recce | Germany and France Diversion to attack on St. Nazaire, Caen Railway Yards Cherbourg Ostend-Dieppe | 198 | 1 | 12 | - | 3 |
| 2 | 1 Roadstead 2 Fighter Protection | Alderney-Cherbourg Ijmuiden Steel Works | 137 | 4 | 55 | 6 | - |
| 3 | 3 Rangers 1 Roadstead 1 Fighter Protection 2 Rodeos 2 Offensive Shipping Recces | Power Stations North France Guernsey-Batz (no shipping seen) Amsterdam Power Station Pas de Calais - Walcheren French and Dutch Coasts, Somme | 212 (124) | 3 | 120 | 5 | 1 |
| 4 | 2 Fighter Protection 1 Offensive Shipping Recce 1 Ranger | Ford Works Antwerp, Abbeville Railway Yards Le Havre, Fecamp-Ostend Vire | 324 (124) | 4 | 92 | 4 (1) | - |
| 5 | 1 Fighter Roadstead 3 Offensive Shipping Recces 1 Roadstead | Le Havre Ostend, Brest, French and Dutch Coasts, Channel Isles Brehat (no shipping seen) | 54 | 1 | - | - | - |

(i) The expression 'Fighter Protection' is used henceforward for Operations formerly described as 'Bomber Support'.

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>May</u> 6 | 1 Ranger 1 Rhubarb 1 Roadstead 1 Offensive Shipping Recce | Transportation North France Transportation North France Alderney (no shipping seen) Channel Isles - Cherbourg | 76 | 1 | - | - | - |
| 7 | 3 Rodeos 3 Offensive Shipping Recces | North France Ushant, Channel Isles, Ostend | 145 | 1 | 40 | - | - |
| 9 | 1 Fighter Roadstead | Dieppe-Boulogne (no shipping seen) | 4 | - | - | - | - |
| 11 | 3 Rangers 1 Roadstead 1 Fighter Roadstead 1 Offensive Shipping Recce | Transportation North France Channel Isles Calais Dieppe | 200 (118) | - | 25 | 1 | 1 |
| 12 | 2 Rangers 1 Rhubarb 1 Offensive Shipping Recce | Transportation North France Transportation North France French and Dutch Coasts | 10 | - | - | - | - |
| 13 | 5 Fighter Protection 1 Offensive Shipping Recce | Boulogne Railway Yards, Meaulte Aircraft Factory, St. Omer, Abbeville/ Drucat Airfields, Cherbourg Docks French and Dutch Coasts | 424 (124) | 8 (1 Pilot saved) | 255 | 12 | 8 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 14 | 3 Fighter Protection 2 Fighter Roadsteads 1 Roadstead 2 Offensive Shipping Recces | Courtrai-Wevelghem Tricqueville Airfields, Antwerp Shipyards Gris Nez - Dunkirk, E-Boats St. Peter Port Destroyers Cherbourg Cherbourg, French and Dutch Coasts | 223 (123) | 1 (3) | 130 | 8 (4) | 11 |
| 15 | 3 Fighter Protection 1 Instep 1 Rodeo 2 Offensive Shipping Recces | Caen, Poix Airfields Bay of Biscay Holland French and Dutch Coasts, Zeebrugge-Boulogne | 251 (118) | 6 | 60 | 8 | 6 |
| 16 | 2 Fighter Roadsteads 1 Rhubarb 1 Roadstead 3 Rodeos 4 Fighter Protection | Ostend-Flushing, Seine Bay Transportation North France Chammel Isles North France Eu Railway Yards, Tricqueville, Caen, Morlaix Airfields. | 363 (235) | 1 (1) | 296 | 2 | 3 |
| 17 | 1 Fighter Roadstead 5 Fighter Protection 3 Rodeos 1 Roadstead 1 Instep | Somme Caen, Morlaix Airfields, Cherbourg, Coxysde Airfield North France Convoy off Texel South West of Brest | 313 (118) | 1 | 96 | 7 | 12 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (2) | Losses German Records (4) |
| May 18 | 2 Fighter Protection 1 Instep 2 Rodeos 1 Roadstead 1 Ranger | Poix, Abbeville Airfields South West of Brest Ostend-Waalhaven, Pas de Calais Guernsey (no shipping seen) Transportation North France | 202 (100) | 5 (1) | 104 | 1 (1) | 4 |
| 19 | 1 Rodeo 1 Roadstead 1 Instep 1 Fighter Protection 2 Rodeos 1 Offensive Shipping Recce | Transportation North France Cherbourg-Channel Isles (no shipping seen) South West of Brest Diversion to U.S. attack on Kiel Pas de Calais French and Dutch Coasts | 259 (117) | 1 | 165 | 1 | 1 |
| 20 | 1 Rhubarb 2 Rodeos 1 Instep 1 Offensive Shipping Recce | Transportation and Airfields East of Brest Pas de Calais, Holland South West of Brest Channel Isles | 255 (113) | (1) | 40 | - | - |
| 21 | 1 Roadstead 1 Instep 1 Offensive Shipping Recce | North France, Low Countries South West of Brest French and Dutch Coasts | 26 (111) | (3) | 50 | - | - |
| 22 | 1 Fighter Roadstead 1 Ranger 2 Offensive Shipping Recces | Somme-Fecamp Cognac French and Dutch Coasts | 28 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 23 | 2 Roadsteads 1 Fighter Protection 1 Instep 1 Offensive Shipping Recce | Dutch Coast, Guernsey, Zeebrugge Coke Ovens and Power Station, South West of Brest French and Dutch Coasts | 185 | 3 | 60 | - | - |
| 24 | 1 Roadstead 1 Ranger 1 Offensive Shipping Recce | Convoy Egmond Power Station North France French and Dutch Coasts | 69 | 1 | - | - | - |
| 25 | 1 Fighter Protection 1 Offensive Shipping Recce | Abbeville Airfield French and Dutch Coasts | 78 (123) | 2 | 34 | - | - |
| 26 | 5 Rodeos 1 Offensive Shipping Recce | North France, Holland Dutch Coast | 60 (122) | - | 88 | - | - |
| 27 | 1 Rhubarb 1 Rodeo 1 Offensive Shipping Recce | Transportation North France North France and Belgium Dutch Coast | 222 (123) | 1 | 65 | 2 | - |
| 28 | 1 Instep 1 Fighter Protection 1 Roadstead 1 Offensive Shipping Recce | South West of Brest Zeebrugge Coke Ovens and Power Station North France French and Dutch Coasts | 320 (123) | 1 | 30 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>May</u> 29 | 1 Offensive Patrol 2 Offensive Shipping Recces 1 Roadstead 1 Rodeo 4 Fighter Protection | Dutch Coast Le Touquet, French and Dutch Coasts Barfleur Pas de Calais Maupertus, Caen Airfields, Rennes Railway Yards, St. Nazaire Submarine Base | 352 (132) | - | 38 | - | 8 |
| 30 | 1 Roadstead 1 Fighter Protection 1 Instep 1 Roadstead 1 Offensive Shipping Recce | Flushing Mondeville Steel Works South West of Brest Charnel Isles (no shipping seen) French and Dutch Coasts | 108 | 1 | 20 | 4 | 1 |
| 31 | 5 Fighter Protection 1 Rodeo 1 Offensive Shipping Recce 1 Fighter Roadstead | Caen, Abbeville/Druacat Airfields, Cherbourg Docks, Flushing Shipyards and Aircraft Factory, Zeebrugge Coke Ovens North France Flushing-Calais E-Boats Dutch Coast (no shipping seen) | 554 (134) | 2 (1 Pilot saved) (1) | 90 | 2 | 2 |
| <u>June</u> 1 | 1 Roadstead 1 Rodeo 1 Rhubarb 1 Shipping Recce 1 Photo Recce | Shipping Walcheren-Schouwen North France Transportation North France Vlieland-Brest Casquettes | 125 | 1 | 84 | 10 | 6 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| June | | | | | | | |
| 2 | 2 Fighter Roadsteads 5 Rhubarbs 1 Offensive Patrol Shipping Recces | Shipping Texel-Ijmuiden, Ijmuiden-De Kooy Transportation North France Dutch Coast French and Dutch Coasts | 37 | 5 | - | - | - |
| 3 | 3 Fighter Roadsteads 1 Rhubarb Shipping Recces | Shipping Dutch Coast Transportation Holland French and Dutch Coasts | 71 | 1 | - | - | - |
| 4 | 2 Fighter Roadsteads 1 Rodeo 1 Ranger Shipping Recces | Shipping Boulogne-Dieppe, Texel-Hook Pas de Calais North France French, Dutch and Belgian Coasts | 67 | 1 | 35 | 1 | - |
| 5 | 2 Shipping Recces 1 Fighter Roadstead 2 Rhubarbs 1 Photo Recce | Dunkirk-Calais, Texel-Batz Shipping The Hague Transportation North France French Coast | 37 | 1 | - | - | - |
| 6 | 1 Roadstead 3 Rhubarbs 1 Offensive Patrol 2 Insteps Shipping Recces Photo Recces | Shipping Gris Nez Transportation North France Dutch Coast South West of Brest Ijmuiden-Batz Texel | 63 | 1 | 6 | 1 | 1 |
| 7 | 1 Rodeo 2 Rhubarbs Shipping Recces Photo Recces | Pas de Calais Transportation North France French and Dutch Coasts France | 170 | 4 | 23 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| June 8 | 2 Fighter Roadsteads 3 Rhubarbs | Shipping off Dutch Coast Transportation Holland | 22 | 1 | - | - | - |
| 10 | 1 Fighter Protection 3 Fighter Roadsteads Shipping Recces Photo Recces | Langerbrugge Power Station Shipping Dutch Coast, Cayeux-Gris Nez Terschelling-Calais Terschelling-Le Touquet | 168 (97) | 4 | 30 | 4 | - |
| 11 | 2 Fighter Protection 1 Fighter Roadstead 1 Rhubarb 5 Insteps 3 Rodeos Shipping Recces Photo Recces | Zeebrugge Coke Ovens, Gosnay Power Station Shipping The Hague Transportation North France South West of Brest North France, Belgium French and Dutch Coasts Holland, France | 639 (292) | 1 | 180 | 4 | 1 |
| 12 | 4 Fighter Protection Shipping Recces Photo Recces | Rouen Power Station, Caen/Carpique, Abbeville/Drucat, Brest/Guipavas French and Dutch Coasts France and Holland | 300 (143) | 2 | 87 | 1 (1) | 1 |
| 13 | 6 Insteps 3 Fighter Protection 1 Roadstead Shipping Recces Photo Recces | South West of Brest Flushing Shipyards, Gosnay Power Station, Abbeville/Drucat Airfield Convoy off Egmond Texel/Hook North France | 311 (145) | 7 (2) | 175 | 1 (6) | 2 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>June</u> | | | | | | | |
| 14 | 1 Fighter Roadstead 5 Insteps Shipping Recces Photo Recces | Shipping Hook-Schouwen South West of Brest French, Belgian, Dutch Coasts French Coast | 59 | - | - | - | 1 |
| 15 | 2 Roadsteads 4 Insteps 1 Shipping Recce Photo Recces | Shipping Guernsey/Sark, Channel Islands South West of Brest Texel/Le Havre France, Belgium | 166 (136) | 2 | 30 | 3 | 1 |
| 16 | 1 Rhubarb 2 Insteps 1 Roadstead Shipping Recces | Transportation North France South West of Brest Shipping Brehat-Guernsey French and Dutch Coasts | 37 | 3 (1 Pilot saved) | - | 2 | 1 |
| 17 | 1 Roadstead 1 Fighter Protection 3 Insteps 1 Rodeo 1 Shipping Recce Photo Recces | Shipping off Walcheren Flushing Shipyards (Abortive) South West of Brest Pas de Calais and Holland Texel-Casquet France, Belgium | 335 (140) | 3 | 65 | 9 | 2 |
| 18 | Shipping Recces | Dutch Coast | 8 | - | - | - | - |
| 19 | Shipping Recces Photo Recces 10 Rhubarbs 2 Insteps | Dutch, Belgian, French Coasts France, Holland North France, Holland South West of Brest | 59 | 2 | - | 2 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| June 20 | 2 Fighter Roadsteads 5 Insteps 1 Shipping Recce Photo Recces 1 Fighter Protection | Shipping Dutch Coast South West of Brest Texel/Batz France Poix Airfield | 203 (137) | 5 | 62 | 1 | 2 |
| 21 | 2 Roadsteads 2 Fighter Roadsteads Shipping Recces Photo Recces 3 Insteps | Shipping Walcheren, Kapelle-Hook Shipping Den Helder, Le Treport- Le Havre French and Dutch Coasts France, Holland South West of Brest | 69 | 2 | 25 | - | - |
| 22 | 4 Fighter Protection 1 Roadstead 2 Insteps 1 Rodeo Shipping Recces Photo Recces | Rotterdam Shipyards, Ford Works, Antwerp, Huls Synthetic Rubber Works (withdrawal only), Abbeville/ Drucair Airfields Convoy Scheveningen South West of Brest North France French and Dutch Coasts France | 561 (136) | 5 | 185 | 7 | 5 |
| 23 | 3 Fighter Protection 1 Roadstead 2 Insteps Shipping Recces Photo Recces | St. Omer Maintenance Unit, Meaulte Aircraft Factory, Cherbourg/Maupertus Airfields Shipping Dutch Coast South West of Brest Channel Isles - Texel North West France, Holland | 224 | - | 110 | 2 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| June 24 | 8 Fighter Protection Shipping Recces Photo Recces | Flushing Engineering Works, Cherbourg/Maupertus, St. Omer/ Fort Rouge, Abbeville/Drucat, Brest Guipavas, Morlaix-Ploujean Airfields, Yainville Power Station French Coast France and Holland | 860 (138) | 6 | 178 | 11 | 4 |
| 25 | 2 Insteps 1 Shipping Recce 1 Photo Recce 2 Fighter Protection | South West of Brest Texel-Channel Isles France Hamburg/Bremen (withdrawal only), Caen/Carpique Airfield | 241 | - | 39 | - | 1 |
| 26 | 6 Fighter Protection 4 Insteps 1 Offensive Patrol 1 Rhubarb 1 Roadstead Shipping Recces Photo Recces | Brest/Guipavas, Abbeville/Drucat, Tricqueville, Bernay, Villacoublay Airfields, Eu Railway Yards South West of Brest Dutch Coast Transportation Holland Shipping Channel Isles French and Dutch Coasts France | 346 (129) | 2 (4) | 151 | (3) | 5 |
| 27 | 4 Roadsteads 2 Insteps 1 Shipping Recce 1 Photo Recce | Shipping Le Touquet-Boulogne, Channel Isles, Vessel in Dieppe Harbour, Convoy The Hague South West of Brest Dieppe-Texel North France | 200 | - | 39 | 6 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|----------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims | Losses German Records (4) |
| June 28 | 2 Roadsteads 1 Offensive Patrol 1 Instep 3 Fighter Protection 1 Rhubarb Shipping Recces Photo Recces | Shipping Flushing-Hook, Convoy off Boulogne Dutch Coast South West of Brest St. Nazaire Lock, Beaumont le Roger, Morlaix Airfields Transportation Belgium Texel-Dieppe North France, Belgium | 216 (132) | 1 | 37 | - | 3 |
| 29 | 2 Roadsteads 1 Fighter Protection 2 Rangers 4 Insteps 8 Rhubarbs Shipping Recces Photo Recce | Shipping Boulogne-Dieppe, Dunkirk Gnome-Rhone Aircraft Factory Le Mans (withdrawal only) Airfields North France South West of Brest Transportation France and Holland French, Belgian, Dutch Coasts North France | 323 (126) | - | 50 | 6 | 4 |
| 30 | 3 Roadsteads 4 Insteps 1 Fighter Roadstead 7 Rhubarbs 2 Shipping Recces Photo Recces | Shipping Sept Iles-Batz, Channel Isles-Casquettes, Channel Isles South West of Brest Cap de le Hague-Barfleur Transportation North France Ile de Vierge, Boulogne-Dieppe North and North West France | 85 | 2 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------|----------------------------|----------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>July</u> 1 | 2 Fighter Protection | Courtrai and Poix airfields | 262 (129) | 5 (1) | 195 | 4 (4) | 5 |
| | 2 Roadsteads | Shipping Channel Isles, Convoy off Hook of Holland | | | | | |
| | 9 Rhubarbs | Locomotives, pylons, airfield, marshalling yards Northern France and Netherlands | | | | | |
| 2 | 3 Shipping Recces | Texel-Channel Isles | 204 (80) | - | 60 | - | - |
| | 1 Photo Recce | Northern France, Belgium | | | | | |
| | 2 Insteps | South West of Brest patrol | | | | | |
| | 5 Rhubarbs | Troops, military positions, trains North France and Belgium | | | | | |
| | 1 Roadstead | Shipping Dutch Islands | | | | | |
| | 1 Distill | Dutch Islands | | | | | |
| | 1 Ranger | Courtrai, Lille, Ghent marshalling yards | | | | | |
| 3 | 2 Shipping Recces | Somme Estuary, Ile de Batz | 162 | 2 | 20 | - | 1 |
| | 3 Rodeos | North France | | | | | |
| | 4 Photo Recces | France | | | | | |
| | 7 Rhubarbs | France and Low Countries, gun positions, transportation targets | | | | | |
| | 1 Instep | Patrol south west of Brest | | | | | |
| | 1 Special Patrol | Dutch coast | | | | | |
| | 3 Unescorted bomb raids | Pont a Vendin Power Station, Gosnay Power Station, Tricqueville Airfield | | | | | |
| | 2 Photo Recces | France | | | | | |
| | | | | | | | |
| | | | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| July 4 | 2 Fighter Protection 2 Distill 1 Instep 2 Shipping Recces 4 Photo Recces | Aero Engine Works Le Mans (withdrawal cover) Amiens marshalling yards Patrol Bay of Biscay Channel Isles, French Coast Brehat Ile de Batz-France | 369 | 4 | 95 | 4 | 7 |
| 5 | 2 Rhubarbs 1 Fighter Roadstead 2 Insteps Shipping Recces Photo Recces | Rail Targets North France and Low Countries Baie de la Seine Patrol Bay of Biscay Terschelling/Channel Isles (Shipping attacked Den Helder) North and North West France | 71 | - | - | - | - |
| 6 | 3 Fighter Roadsteads 2 Insteps 2 Rodeos 1 Ramrod 2 Shipping Recces Photo Recces 1 Rhubarb | Dutch Islands, Minesweeping Den Helder Cherbourg Peninsula-Fecamp North France Destroyers Boulogne Harbour Ile Brehat-Sept Isles area, French and Dutch coasts France and Holland Rail Targets Bruges-Ghent area | 318 (124) | 2 | 50 | 8 | 5 |
| 7 | 3 Rhubarbs 1 Roadstead 1 Rodeo 2 Insteps Photo Recces | Rail Targets Belgium, Cherbourg, Alkmaar Airfield Shipping Le Havre Pas de Calais Patrols Bay of Biscay Northwest France | 151 | 2 | 30 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| July 8 | 1 Instep 2 Roadsteads 4 Shipping Recces 2 Rhubarbs Photo Recces | Patrol Bay of Biscay Shipping Dutch Coast, Ile de Brehat Texel-Somme, Cherbourg-Channel Isles, Ile de Brehat, Casquettes-Barfleur, Landeda-Les Sept Iles Railway Targets Northern France Northern France and Belgium | 127 | 2 | 3 | 2 | - |
| 9 | 6 Roadsteads 1 Fighter Protection 1 Rodeo 1 Rhubarb 1 Distill Shipping Recces Photo Recces | Shipping Channel Isles, Sept Iles-Batz, Brehat-Sept Iles, Walcheren St. Omer Railway Yards Low Countries Railway Le Treport-Yvetot Dutch coast Dutch coast Northwest France | 523 (128) | 1 | 114 | 1 | - |
| 10 | 5 Fighter Protection 1 Distill Shipping Recces Photo Recces | Caen/Carpique Airfield (Secondary Target) Abbeville/Druacat Airfield St. Omer Railway Yards Cherbourg/Maupertus Airfield Dutch coast Texel-Dieppe North France/Belgium | 348 | - | 70 | 1 | 1 |
| 11 | 9 Rhubarbs 4 Unescorted Bomb Raids Shipping Recces | Transportation Targets Netherlands Yainville, Beuvry, Chocques, Mazingarbes Power Station Dutch coast | 38 | 2 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|---------------------------|--------------------------------|--------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| July 12 | 6 Rhubarbs 1 Roadstead 1 Fighter Roadstead Shipping Recces Photo Recces 1 Unescorted Bomb raid | Rail Targets Cabourg-Argentan and Hazebruck-Amiens area Shipping Sept Iles-Guernsey Shipping Channel Isles Dunkirk-Hook Northern France Building North of Amiens | 51 | 2 | - | 1 | - |
| 13 | 2 Fighter Protection 4 Rodeos 1 Rhubarb 2 Roadsteads 1 Instep Shipping Recces Photo Recces | Brest Guipavas and Morlaix/Ploujean (Diversion for Bomber Command raid on Turin) Northern France Brittany Shipping Channel Isles, Vierge-Batz Bay of Biscay Texel-Dieppe Northern France | 293 | - | 62 | - | - |
| 14 | 5 Fighter Protection Shipping Recces Photo Recces | Villacoublay and Le Bourget Aircraft Factories, Amiens/Glisy, Abbeville/ Drucat, Tricqueville, Poix Airfields Dieppe-Texel Northern France-Brittany | 414 (129) | 2 (3) (1 pilot safe) | 68 | 3 (3) | 62 (54 destroyed on ground) |
| 15 | 3 Fighter Protection 1 Fighter Roadstead 5 Rodeos Shipping Recces Photo Recces | Poix, Abbeville Airfields Baie de Seine Northern France Texel-Boulogne France | 320 | 7 | 75 | 9 | 8 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------|--------|--------------------------------------|-------------------------------------------|--------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C ⁽²⁾ 'Reaction' | Losses R.A.F. Claims ⁽³⁾ | Losses German Records ⁽⁴⁾ |
| July 16 | 1 Fighter Protection 1 Rodeo 2 Rhubarbs 1 Instep Shipping Recces Photo Recces | Abbeville Railway Yards Ostend-Pas de Calais Normandy railway targets Dutch and French coasts North France | 337 (128) | 1 | 90 | 3 | - |
| 17 | 1 Rodeo Shipping Recces Photo Recces | Tricqueville Batz-Textel France | 218 (128) | - | - | - | - |
| 18 | 1 Fighter Protection 3 Roadsteads 1 Ranger Shipping Recces Photo Recces | Abbeville/Druca Airfield Convoy off Den Helder, Channel Isles-Brehat Chateaudun Texel-Dieppe North France | 192 | 7 | 27 | 8 | 2 |
| 19 | 1 Rodeo Shipping Recces Photo Recces 1 Fighter Roadstead | St. Omer Dieppe Flushing Cherbourg Texel Hook | 130 | 1 | 27 | 1 | - |
| 20 | 1 Rhubarb 1 Instep Shipping Recce | Railway Yvetot Southwest of Brest Dutch coast | 8 | 1 | - | - | - |
| 21 | 1 Instep 1 Rhubarb Shipping Recce | Bay of Biscay Railway Hazebrouck Texel-Hook | 8 | 1 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| July 22 | 2 Insteps 1 Rhubarb Photo Recces | South west of Brest, Biscay Railway Nieuport-Knocke Courtrai-Ypres | 14 | 4 | - | - | - |
| 23 | 2 Unescorted Bomb Raids 12 Rhubarbs Shipping Recces | Langerbrugge, Antwerp/Schelle Power Stations Rail Targets North France and Belgium North France | 61 | 1 | - | - | - |
| 24 | 11 Rhubarbs Shipping Recce 1 Instep 1 Fighter Roadstead Photo Recces | Railway Targets North France Calais-Flushing, Boulogne-Texel Southwest of Brest Le Treport-Le Havre North France | 104 | - | - | - | - |
| 25 | 4 Fighter Protection 6 Rodeos Shipping Recce 2 Insteps Photo Recces | Amsterdam Fokker Aircraft Factory, Woensdrecht, Amsterdam/Schipol Air- fields, Ghent Coke Ovens French and Dutch coasts Cherbourg-Le Havre and French and Dutch coasts West and Southwest of Brest North and North West France | 516 (146) | 8 (3 pilots safe) | 104 | 4 | 2 |
| 26 | 4 Fighter Protection 2 Rodeos 1 Roadstead Shipping Recces Photo Recces | St. Omer, Courtrai/Wevelghem, Merville Abbeville/Drucat Airfields Dutch coast, Pas de Calais-Nieuport Shipping off Dunkirk Holland-Brittany France | 583 (275) | 5 | 139 | 4 | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|--------------------------|-------------------------------|--------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C(2) 'Reaction' | Losses R.A.F. Claims(3) | Losses German Records(4) |
| July 27 | 5 Fighter Protection 1 Rodeo Shipping Recces Photo Recces 1 Ranger | Zeebrugge Coke Ovens, Courtrai/ Wevelghem, Woensdrecht, Tricqueville, Amsterdam/Schipol Airfields Dieppe-Rouen Channel Isles-Texel North France Plancoet Transformer Station | 640 (121) | 2 pilots safe | 93 | 15 | 5 |
| 28 | 9 Fighter Protection 1 Instep Shipping Recces Photo Recces | Amsterdam Fokker Aircraft Factory, Zeebrugge Coke Ovens, Coxyde, Courtrai/Wevelghem, Merville Airfields, Kassel area, Ochtersleben, Pas de Calais Bay of Biscay Dutch and French coasts France and Holland | 573 (242) | - (1) | 98 | - (9) | 1 + 19 ⁽¹⁾ |
| 29 | 1 Roadstead 3 Fighter Protection 1 Rodeo 2 Insteps 1 Rhubarb Shipping Recces Photo Recces | Knocke-Schouwen Yainville Power Station, St. Omer/ Fort Rouge, Holland, Merville Airfield Holland Southwest of Brest Railway Morlaix-Guingamp Den Helder-Vierge North France | 354 (241) | 5 | 146 | 2 (1) | 1 |

(1) + refers to losses suffered by dayfighters of Luftflotte Reich (air defence of Germany) operating against USAAF incursions.

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C (2) 'Reaction' | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>July</u> 30 | 7 Fighter Protection 1 Instep 2 Rodeos Shipping Recces Photo Recces | Woensdrecht, Amsterdam/Schipol, Courtrai/Wevelghem, Coxyde, Poix Airfields, Yainville Power Station Kassel Southwest of Brest Caen, Ostend-Somme French and Dutch coasts, France-Belgium | 477 (146) | 6 (7) | 134 | 3 (25) | 15 + 21 |
| 31 | 1 Fighter Roadstead 8 Fighter Protection Shipping Recces Photo Recces | Cherbourg-Le Havre Merville, Poix, St. Omer/Fort Rouge, Amiens/Glisy, Abbeville-Drucat, Tricqueville Airfields, Pas de Calais French and Dutch coasts France | 597 (129) | 2 | 164 | 2 | 1 |
| <u>August</u> 1 | 1 Instep 1 Roadstead 1 Rodeo Shipping Recces Photo Recces | Bay of Biscay Shipping Dutch Coast Le Treport-Abbeville Dutch coast France | 40 | - | - | - | - |
| 2 | 2 Fighter Protection 5 Roadsteads Shipping Recces Photo Recces | Merville, St. Omer/Fort Rouge Airfields, Convoy Den Helder, Destroyer at Dunkirk, Shipping Sept Iles-Vierge Den Helder-Vierge Dutch and Belgian coasts | 418 (128) | 2 | 53 | 4 | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>August</u> | | | | | | | |
| 3 | 3 Insteps 2 Roadsteads 1 Fighter Protection 2 Fighter Roadsteads Shipping Recces Photo Recces | Southwest of Brest Shipping Channel Isles, Ostend Brest Guipavas Shipping Calais, Le Treport-Le Havre Batz-Holland North France | 199 | 4 | 24 | 1 | 1 |
| 4 | 1 Roadstead 1 Rhubarb 3 Fighter Protection 1 Rodeo Shipping Recces Photo Recces | Shipping Ushant-Brest Transport Bricquebec Le Trait Shipyards, Abbeville/Drucat, Poix Airfields North France Dutch, French and Belgian coasts French and Belgian coasts | 279 (36) | - | 66 | - | 1 |
| 5 | 1 Instep 1 Rhubarb 1 Roadstead Shipping Recces Photo Recces | Southwest of Brest Railway Dieppe Shipping off Dutch coast Cap de la Hague-St. Valery, French and Dutch coasts Brehat | 45 | - | - | - | - |
| 6 | 3 Rhubarbs 1 Instep Shipping Recces Photo Recces | Railways France-Brittany Bay of Biscay Channel Isles-Texel Northwest France | 52 | 3 | - | - | - |
| 7 | 1 Distill Shipping Recces Photo Recces | Bay of Biscay Batz- Texel North France | 45 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| August 8 | 1 Ranger 1 Rhubarb 1 Fighter Protection (withdrawal only) Shipping Recces | Northwest Germany Railway Lisieux Remmes Naval Stores Brittany coast, Ijmuiden-Brehat | 147 (36) | 3 1 crew safe | - | - | - |
| 9 | 2 Rhubarbs 3 Fighter Protection Shipping Recces Photo Recces | Transport Dieppe, Railway Cayeuse St. Omer/Fort Rouge, Poix airfields Dutch, Belgian, French coasts France | 253 (147) | 3 | 42 | 7 | 5 |
| 10 | Shipping Recces | Calais-Dunkirk, French and Dutch coasts | 38 | 1 | - | - | - |
| 11 | 6 Rhubarbs 2 Insteps 1 Distill 1 Roadstead Shipping Recces 1 Fighter Roadstead | Transport North France and Belgium Southwest of Brest Dutch coast Abervrach Le Havre-Texel, Northwest France Shipping Le Havre | 110 | 1 | - | 1 | 1 |
| 12 | 4 Fighter Protection 3 Insteps 1 Distill Shipping Recces Photo Recces | Wesseling Synthetic Oil, Courtrai/ Wevelghem, Merville, Poix Airfields Southwest of Brest West of Brest Texel-Brehat Northern France | 312 (179) | - | 92 | 2 (2) | 2 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| August 13 | 4 Rhubarbs 1 Instep 1 Roadstead Shipping Recces Photo Recces | Railways Normandy Southwest of Brest Minesweepers south of Ijmuiden Dieppe-Le Havre, Dieppe-Texel, Walcheren-Nieuport Brittany-North France | 82 | - | - | - | - |
| 14 | 2 Rhubarbs 1 Roadstead Shipping Recces | Railways Belgium Convoy off Vlieland Dutch, Belgian, French coasts | 53 | - | - | - | - |
| 15 | 1 Fighter Roadstead 1 Roadstead 4 Fighter Protection 2 Instep Shipping Recce Photo Recce | Shipping Le Havre-Cherbourg Shipping Zeebrugge-Noordes Hooft St. Omer/Fort Rouge, Vitry en Artois, Amiens/Clisy Poix Airfields, Abbeville Railway Yards Southwest of Brest Dutch and French coasts Northern France | 538 (185) | 5 | 271 | 5 | 7 |
| 16 | 8 Fighter Protection 2 Rodeos Shipping Recces Photo Recces | Le Bourget, Poix and Abbeville/ Drucat, Tricqueville, Bernay/St. Martin, Amiens/Clisy, Beaumont Le Roger airfields, Denain engineering works Pas de Calais, Knocke/Mardyck Terschelling-Sept Iles North France-Belgium | 545 (188) | 14 1 pilot safe (3) | 237 | 2 (17) | 14 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| August 17 | 7 Fighter Protection 1 Instep Shipping Recces Photo Recces | Schweinfurt (to and from Antwerp only) Bryas Sud Poix, Lille/Vendeville, Woensdrecht Airfields, Calais railway yards Southwest of Brest Dutch and Belgian coasts North France | 546 (268) | 3 | 135 | 14 (9) | 9 + 17 |
| 18 | 3 Fighter Protection 1 Instep 1 Rodeo Shipping Reoce Photo Recces | Lille/Vendeville, Woensdrecht Airfields, Batz-Guisseny (Photo) Southwest of Brest Pas de Calais Dutch coast North France | 334 (40) | 1 | 22 | 1 | - |
| 19 | 6 Fighter Protection 1 Fighter Roadstead Shipping Recces Photo Recces | Amiens/Clisy, Poix, Bryas/Sud, Flushing Airfields, Lannion (photo- graphic) Baie Seine Texel-Sept Iles North France | 683 (190) | 7 1 pilot safe (1) | 321 | 15 (9) | 4 |
| 20 | 1 Roadstead 1 Instep 2 Fighter Protection Shipping Recces Photo Recces | Dutch coast Southwest of Brest Flushing Dornier Airframe factory, Abbeville Marshalling yards French and Dutch coasts North France | 248 | 1 | 26 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>August</u> | | | | | | | |
| 21 | 2 Insteps 6 Rhubarbs Shipping Recces | Southwest of Brest Railways France - Belgium Texel-Dieppe | 34 | 1 | - | 1 | 1 |
| 22 | 2 Insteps 3 Rodeos 1 Rhubarb 2 Fighter Protection Shipping Recces Photo Recces | Southwest of Brest French and Dutch coasts Railway Abbeville - Amiens Airfield North France, Beaumont-le-Roger Airfield Texel - Dieppe North France | 448 | 9 | 140 | 7 | 3 |
| 23 | 2 Fighter Protection 1 Distill 1 Instep 1 Rodeo 1 Roadstead Shipping Recces Photo Recces | St. Omer Marshalling Yards, Gosnay Power Station Dutch Coast Southwest of Brest Pas de Calais Shipping off Texel Den Helder - Ostend France and Belgium | 491 (161) | 2 | 53 | 1 | 3 |
| 24 | 1 Distill 1 Rodeo 1 Roadstead 3 Fighter Protection Shipping Recces Photo Recces | Dutch coast Holland Shipping off Le Touquet Diversion to attacks on airfields in France French coast North France | 392 (192) | - | 78 | 2 (6) | 11 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| August 25 | 1 Distill 2 Insteps 2 Rhubarbs 4 Fighter Protection Shipping Recces Photo Recces | Frisian Isles Southwest of Brest Railway Somme, Bruges-Ghent Tricqueville, Bernay St. Martin, Beaumont-le-Roger Airfields, Grand Quevilly Power Station French and Dutch coasts North France | 529 (96) | 2 | 110 | 1 | 2 |
| 26 | 1 Roadstead 2 Fighter Protection 1 Fighter Roadstead Shipping Recces Photo Recces | Schouwen - Zeebrugge Guerledan Transformer station, Caen, Carpiquet Airfield Le Treport Den Helder - Cherbourg North France | 363 | - | 15 | 2 | - |
| 27 | 3 Fighter Protection 1 Rhubarb 1 Roadstead Shipping Recces Photo Recce | Poix Airfield, Gosnay Power Station, Crossbow Target Watten Railway Lamballe Tanker off Ostend Ostend - Dunkirk and French coast Northern France | 587 (177) | 10 1 pilot safe | 225 | 10 | 3 |
| 28 | 1 Roadstead 8 Rhubarbs 1 Ranger Shipping Recce Photo Recces | Blankenberghe - Walcheren Railways North France South of Paris Ostend - Walcheren North France | 30 | 3 | - | 2 | 2 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>August</u> 29 | 6 Rhubarbs 1 Ranger Shipping Recces Photo Recces | Railways North France Lingen-Meppen-Pappenburg French-Dutch and Belgian coasts North France | 26 | 1 | - | 1 | - |
| 30 | 1 Instep 2 Rhubarbs 1 Ranger 1 Fighter Protection Shipping Recces Tactical Recces Photo Recces | Bay of Biscay Railways Brest Le Touquet - Caen Crossbow Target Watten Dunkirk - Dieppe France France | 506 | 2 | 80 | 2 (on ground) | - |
| 31 | 1 Roadstead 5 Fighter Protection Shipping Recce Photo Recces Tactical Recces | Dutch Islands Lille/Vendeville, Bryas/Sud, Monchy/Breton Airfields, Mazingarbe Power Station, Amiens/Glisy Airfield Hook - Texel North France North France | 536 (198) | 5 1 pilot safe (2) | 145 | 8 | 3 |
| <u>September</u> 1 | 1 Fighter Protection 2 Roadstead Shipping Recces Photo-Tactical Recces | Roosendaal Marshalling Yards Shipping off Dutch Islands Den Helder - Boulogne North France | 84 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September 2 | 6 Fighter Protection 2 Insteps Shipping Recce Tactical and Photo Recces | Hansweert Lock Gates, Mazingarbe Power Station, Foret de Hesdin (Special target), Serquex Marshalling yards Southwest of Brest Boulogne North France, Holland and Belgium | 442 (182) | 6 (3) 1 pilot safe | 75 | 3 | 1 |
| 3 | 6 Fighter Protection 1 Instep Shipping Recces Tactical and Photo Recces | Lille/Nord, Beauvais/Tille, Beaumont-le-Roger Airfields, Watten (Crossbow target), Brest (photographic) Southwest of Brest Off Westhoofd, Texel - Dieppe North France | 739 (257) | 3 (1) | 102 | 2 (3) | 4 |
| 4 | 11 Fighter Protection 1 Roadstead 2 Instep 1 Distill Shipping Recces Tactical and Photo Recces | Rouen, Abbeville, Amiens, Lille, Courtrai, Hazebrouck Marshalling yards, Boulogne Harbour, St. Pol Loco Depot Shipping off Le Havre Bay of Biscay Dutch coast Boulogne-Holland North France | 1157 (97) | 5 2 pilots safe | 226 | 19 | 6 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>September</u> | | | | | | | |
| 5 | 5 Fighter Protection 1 Roadstead 1 Distill Shipping Recces Tactical and Photo Recces 1 Instep | Ghent, Courtrai Marshalling yards, Woensdrecht Mardyck Airfields, Brittany (photographic) Dutch coast Dutch coast French and Dutch coasts North France Bay of Biscay | 508 | 2 | 60 | 3 | 2 |
| 6 | 9 Fighter Protection Shipping Recces Tactical and Photo Recce | Stuttgart (withdrawal only), Diversionsary Sweep, Rouen, Boulogne Harbour, Serqueux, Amiens, Abbeville Marshalling yards Texel - Le Havre North France | 997 (176) | 6 2 pilots safe (1) | 290 | 11 (1) | 7 |
| 7 | 8 Fighter Protection Shipping Recces Tactical and Photo Recces 2 Instep | Poix, Abbeville/Drucat Airfields, St. Omer, Lille, St. Pol Marshalling yards, Crossbow target Watten Dieppe - Dutch Islands North France - Belgium Bay of Biscay, Southwest of Brest | 562 (185) | 2 (1) | 26 | 4 (on ground) (2) | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September 8 | 12 Fighter Protection 1 Instep Shipping Recces Tactical and Photo Recces | Boulogne Defence Positions, Lille/Nord, Lille/Vendeville, Vitry-en-Artois, Mardyck Airfields, Abbeville Marshalling yards Southwest of Brest French, Belgian and Dutch coasts France | 1305 (95) | 5 | 240 | 10 | 8 |
| 9 | 7 Fighter Protection Shipping Recces Photo and Tactical Recces | (Starkey) Boulogne, Courtrai/ Moorseel, St. Omer/Fort Rouge, Monchy/Breton, Bryas/Sud, Merville, Coxide Airfields Texel - Le Havre North France | 1755 (469) | 3 1 pilot safe (2) | 212 | - (1) | 9 (6 on ground) |
| 10 | 2 Fighter Roadstead 2 Rhubarbs 1 Instep Shipping Recces Tactical and Photo Recces | Fecamp - Cherbourg, Dutch Islands Transport Paris, Ault-Creil Bay of Biscay Dieppe - Ostend North and Northeast France | 59 | 1 | - | 1 | - |
| 11 | 4 Fighter Protection 2 Rhubarbs 2 Instep 1 Roadstead Shipping Recces | Beaumont-le-Roger, Beauvais/Tille, Juvincourt airfields, railways North France Southwest of Brest, Bay of Biscay Shipping off Le Havre Le Havre, Boulogne - Barfleur | 448 | 5 | 136 | 15 | 6 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September | | | | | | | |
| 12 | Shipping Recces | Cherbourg - Gravelines | 5 | - | - | - | - |
| 13 | 3 Rodeos Shipping Recces Photo Recces | Pas de Calais, Beaumont - Le Havre Dutch Islands, Le Havre - Dieppe, Texel - Dieppe North France | 437 | 2 | 55 | - | - |
| 14 | 2 Fighter Roadstead 1 Fighter Protection Shipping Recces Photo Recces | Shipping off Haamstede, Cherbourg- Chammel Isles Merville Airfield Le Treport - Ameland Northeast France | 106 | - | 90 | 1 | - |
| 15 | 2 Rhubarbs 1 Roadstead 1 Instep 3 Fighter Protection Shipping Recces Photo Recces | Railways Somme, Ault Shipping Ijmuiden - Hook Southwest of Brest Targets near Paris and Airfields North France, Merville, Bryas/Sud Airfields Terschelling - Dieppe North France | 335 (232) | 1 (2) 1 pilot safe | 175 | - | 2 |
| 16 | 1 Fighter Roadstead 2 Rhubarbs 4 Fighter Protection 1 Roadstead Shipping Recces Photo Recces | Dutch Islands Railways Ghent, Alencon Beaumont-le-Roger, Tricqueville Airfields, Serqueux Marshalling yards, Grand Quevilly Power Station Shipping off Texel Dutch, Belgian, French coasts North France | 511 (92) | 5 | 36 | 7 (2) | 7 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September | | | | | | | |
| 17 | 1 Fighter Roadstead 1 Fighter Protection 2 Insteps Shipping Recces Photo Recces | Dutch Islands (Photographic) Brest Southwest of Brest Dutch, Belgian and French coasts North France | 56 | - | - | - | - |
| 18 | 4 Fighter Protection 1 Roadstead 1 Instep Shipping Recces Photo Recces | St. Omer/Longuenesse, Beauvais/ Tille Airfields, Rouen/Sotteville Marshalling yards Shipping Flushing Southwest of Brest French, Belgian and Dutch coasts North France | 577 | 1 pilot safe | 136 | - | - |
| 19 | 1 Roadstead 1 Fighter Roadstead 4 Fighter Protection Shipping Recces | Brest Etretat - Cap de la Hague Lille/Nord, Merville, Woensdrecht Airfields, Lens/Lieven Synthetic petrol plant French, Dutch, Belgian coasts | 498 | 4 1 pilot safe | 100 | 4 | 3 |
| 20 | 2 Rangers 4 Rhubarbs Shipping Recces | Landivisiau-Lamballe, Quimper-Rennes Railways Bruges, Poperinghe, Roules, Etretat - Ambleteuse, Chartres Terschelling - Dieppe | 42 | 3 1 pilot safe | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September | | | | | | | |
| 21 | 2 Fighter Protection 1 Ranger 1 Roadstead 1 Rodeo 2 Rhubarbs 1 Instep Shipping Recces Photo Recces | Beauvais/Tille Airfield Lens Synthetic Petrol Plant Aalborg U-boat west of Scillies Falaise - Vire Railway Targets North France Southwest of Brest Dutch coast North France | 307 | 2 1 air- crew saved | 66 | 5 | 3 |
| 22 | 3 Fighter Protection 1 Instep Shipping Recces Photo Recces | St. Omer/Longuenesse, Evreux/ Fauville, Brest Guipavas Airfields Southwest of Brest Dutch, Belgian and French coasts North France | 360 (432) | 2 (1) | 81 | 3 (2) | 7 |
| 23 | 11 Fighter Protection 6 Rodeos 2 Insteps Shipping Recces Photo Recces | Lock at Wemeldinge, Grand Quevilly Power Station Conches, Lanveoc/ Poulmic, Morlaix, Beauvais/Tille Lille/Nord, Abbeville/Drucaat Airfields, Ostend North France Southwest of Brest Texel - Brehat France, Belgium, Holland | 849 (372) | 5 1 pilot safe (1) | 139 | 9 (4) | 11 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September 24 | 8 Fighter Protection 1 Instep Photo Recces Shipping Recces | Amiens Marshalling yards, St. Omer Longuenesse, Evreux/ Fauville, Lanveoc/Paulmic, Beauvais/Tille, Beaumont le Roger, Brest/Guipavas Southwest of Brest France, Belgium, Holland Vlieland - Cherbourg | 889 (138) | 9 | 189 | 20 | 8 |
| 25 | 1 Fighter Roadstead 2 Roadstead 11 Rhubarbs 3 Insteps 1 Fighter Protection Shipping Recces | E-Boats Hook - Orfordness Dutch Islands, Convoy off Den Helder Transportation North France Southwest of Brest St. Omer/Longuenesse Airfield French, Dutch coasts | 335 | 3 | 3 | 2 | - |
| 26 | 1 Instep 4 Rhubarbs 3 Rodeos 2 Fighter Protection Shipping Recces | Southwest of Brest Transportation North France Cayeux - Dieppe, St. Omer, St. Pol North and West France (withdrawal to U.S. bombers) North Sea (ditto) French, Dutch, Belgian coasts | 214 | 2 | 153 | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| September 27 | 2 Roadsteads 6 Fighter Protection 1 Instep Shipping Recces Photo Recces | 3,000 ton vessel south of Berck, Dutch Islands Emden (withdrawal) Sweep to Holland, Rouen/Sotteville Marshalling yard, Beauvais/Tille, Abbeville/Drucat, Conches Airfields Southwest of Brest Dutch, Belgian, French coasts Bayeux | 762 (287) | 8 (1) | 159 | 14 (20) | 6 + 29 |
| 28 | 3 Rhubarbs 1 Instep Shipping Recces | Transportation North France Southwest of Brest French coast | 13 | 1 | - | - | - |
| 29 | 6 Rhubarbs 1 Roadstead Shipping Recces | Transportation North France Dutch Islands French, Dutch, Belgian coasts | 52 | - | - | - | - |
| 30 | 1 Rhubarb 1 Fighter Roadstead Shipping Recces Photo Recces | Transportation Cabourg Westerschelde French, Belgian coasts, Channel Isles Le Treport | 26 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October | | | | | | | |
| 1 | 2 Fighter Roadsteads 6 Rhubarbs 1 Rodeo Shipping Recces Photo Recces | Blankenberghe - Calais, Etretat - Cap de la Hague Transportation and other targets North France Rouen - Dieppe - Fecamp Hardelst - Fecamp, Hook - Dunkirk, Texel - Hook North France | 54 | - | - | - | - |
| 2 | 1 Roadstead 2 Rhubarbs 1 Rodeo 1 Instep 2 Fighter Protection 1 Fighter Roadstead Shipping Recces Photo Recces | Boulogne - Somme Transportation North France Le Treport-Rouen-Abbeville Southwest of Brest St. Omer/Longueness Airfield, Calais Marshalling yards Cherbourg-Le Havre Channel Isles - Holland Hague | 326 | - | 3 | (5) | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------|--------------------------------|------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October 3 | 9 Fighter Protection 2 Roadsteads 1 Unescorted Bomb raid 1 Rodeo 1 Distill Shipping Recces Photo Recces Instep | Woensdrecht, Schipol Airfields, Guerledon, Distre, Chaingy Power Transformer Stations, Chevilly Larne Transformer Station, Flushing Docks, Beauvais Tille Airfield, Grand Quevilly Power station Cayeux-Le Havre, Merchant vessel Boulogne Pont-Chateau Transformer Station Gravelines-Hardelot North East Ushant French, Belgian, Dutch Coasts North France Biscarosse | 946 | 15 | 102 | 25 | 7 |
| 4 | 1 Fighter Protection 2 Roadsteads 2 Offensive Patrols 5 Rhubarbs 1 Instep 1 Distill Shipping Recces Photo Recces | (Withdrawal), Frankfurt Oosterschelde, Shipping Lezardrieux Scillies - Ushant Transportation and other targets North France South west of Brest Off Frisian Isles Dieppe/Ijmuiden North France | 248 (243) | 6 (1 pilot safe) | 20 | 3 (19) | 4 + 16 (inc. 3 on ground)(i) |

(i) Destroyed by bombing or machine gun/cannon attack.

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|---------------------------|--------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October | | | | | | | |
| 5 | 1 Fighter Roadstead 5 Rhubarbs 2 Ranger 1 Fighter Protection Shipping Recces Photo Recces | Le Havre - Barfleur Transportation North France Transportation Paris area, Chateaudun-Rheims Oil tanks at Hoeksken Ghent French, Belgian, Dutch Coasts North France | 60 | 6 | - | 7 (4 on ground) | - |
| 6 | Shipping Recces Photo Recces | French, Dutch, Belgian Coasts Northeast France | 20 | - | - | - | - |
| 7 | 2 Roadsteads 2 Ranger 2 Offensive Patrol 1 Instep Shipping Recces | Walcheren, Channel Isles Chateaudun, Rennes area Southwest of Scillies, West of Ushant Southwest of Brest French, Dutch, Belgian Coasts | 100 | 1 | - | 1 | 1 |
| 8 | 3 Fighter Protections 1 Fighter Roadstead Offensive Patrol Instep Shipping Recces Photo Recces | Chievres, St. Omer Longuenesse, Brest/Lanveoc Airfields E-Boats Calais-Cap Gris Nez Southwest of Scillies Southwest of Brest Le Havre-Boulogne, French, Dutch, Belgian Coasts North France | 496 (296) | 2 (1 pilot safe) (3) | - | 11 (12) | 17 + 20 (inc. 6 on ground) |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>October</u> | | | | | | | |
| 9 | 3 Fighter Protection 1 Fighter Roadstead 1 Instep 1 Rodeo Shipping Recce Photo Recces | Woippy aero-engine Works, Woensdrecht, Morlaix Airfields Walcheren South west of Brest Le Touquet-Furnes Hook-Texel North France | 483 | 4 | 1 | - | - |
| 11 | Offensive Patrol | South west of Scillies | 16 | - | - | - | - |
| 13 | 3 Rhubarbs 2 Instep 1 Ranger 1 Fighter Roadstead Offensive Patrol Shipping Recces | Transportation North France South west of Brest Stavanger Le Havre - Cap de la Hague South west of Scillies French and Belgian coasts | 58 | - | - | 1 | - |
| 14 | 1 Instep 3 Offensive Patrols 1 Fighter Protection Shipping Recces | South west of Brest South west of Scillies Brest/Lanveoc Airfield Brest, French Coast | 88 (210) | (13) | - | (2) | 2 |
| 15 | 1 Instep 1 Rhubarb 1 Offensive Patrol 3 Rodeos Shipping Recces Photo Recces | South west of Brest Tingry Transformer Station South west of Scillies North France Brittany North France | 110 | - | - | 1 | 1 |

SECRET

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October | | | | | | | |
| 16 | 1 Fighter Roadstead 1 Rhubarb Shipping Recces Photo Recces | Le Havre - Alderney Paris Dutch, Belgian, French Coasts North France | 48 | 1 (pilot safe) | - | 2 | - |
| 17 | 3 Rodeos 1 Roadstead 2 Insteps 1 Offensive Patrol Shipping Recce | North France Pointe St. Mathieu South west of Brest South west of Scillies French and Belgian Coasts | 115 | - | - | 1 | 1 |
| 18 | 6 Fighter Protection 1 Rhubarb Offensive Patrol 1 Rodeo Shipping Recces Photo Recces | Evreux/Fauville, Beauvais/Nivilliers, St. Omer/Fort Rouge, St. Omer/ Longuenesse Airfields, Target in western Germany Cherbourg Southwest of Scillies Eindhoven French, Belgian, Dutch Coasts North France | 811 (411) | 2 (2) | 261 | 4 | 1 |
| 19 | 2 Roadstead 4 Rhubarbs 2 Rodeos Shipping Recces Photo Recces 1 Instep | Strasbourg at Ijmuiden, Oosterschelde Transportation North France Seine Cherbourg, Rouen-Lille French, Belgian, Dutch Coasts Merville viaduct Southwest of Brest | 89 | - | - | - | - |

SECRET

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October 20 | 3 Fighter Protection 4 Rodeos 1 Instep 1 Rhubarb Shipping Recces Photo Recces | Duren, Woensdrecht, St. Omer/ Longuenesse Airfields North France Southwest of Brest Paris area Dutch, French, Belgian Coasts North France | 482 (399) | 3 (1 pilot safe) | 79 | 12 (6) | 15 |
| 21 | 2 Instep 2 Rhubarbs 1 Fighter Roadstead 2 Rodeos Shipping Recces Photo Recces | Southwest of Brest Transportation Targets North France Etretat-Hardelot North France French, Dutch, Belgian Coasts Cherbourg and Caen | 151 | - | 15 | - | - |
| 22 | 4 Fighter Protection 3 Rhubarbs Shipping Recces Photo Recces | Evreux/Fauville, Tricqueville, Abbeville/Drucat, Airfields, Courcelles Aircraft factory Transportation North France Dieppe-Ijmuiden North France | 409 (415) | 8 | 127 | 9 | 2 |
| 23 | 4 Roadsteads 2 Insteps 3 Rhubarbs 2 Rodeo Shipping Recces Photo Recces | Barfleur, Channel Isles, Boulogne- Blankenbergh, Minesweepers off Dutch Coast, Destroyers in St. Malo Bay Southwest of Brest Transportation North France Pas de Calais, North France French and Belgian Coasts North France | 167 | - | - | 2 | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| October 24 | 2 Insteps | South west of Brest, West of Lands End | | | | | |
| | 1 Offensive Patrol Shipping Recces | South west of Scillies Baie de la Seine, Brest, Abervrach, St. Malo, Lezardrieux, Dieppe, Terschelling | | | | | |
| | 1 Roadstead 5 Rhubarbs 6 Fighter Protection | Alderney-Barfleur Transportation and other targets North France Montdidier, Beauvais/Nivilliers Schipol, Woensdrecht Airfields, Cherbourg (Munsterland) | 842 (285) | 8 (1 pilot safe) | 176 | 9 (1) | 8 |
| | 1 Unescorted Bomb Raid Photo Recces | Munsterland, Cherbourg France | | | | | |
| 25 | 2 Insteps | Southwest of Brest | | | | | |
| | 3 Fighter Protection | Cherbourg/Maupertas, Brest/Lanveoc Airfields, Power station Caen | | | | | |
| | 1 Rhubarb 2 Rodeos Shipping Recce | Transportation North France North France French Coast | 211 | 6 | - | - | 1 |
| 26 | 4 Rhubarbs | Transportation Targets North France | | | | | |
| | 2 Insteps | Southwest of Brest, Southwest of Scillies | 78 | - | - | - | - |
| | 1 Fighter Protection Shipping Recce | Brest/Lanveoc Airfield French and Belgian Coasts | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>October</u> | | | | | | | |
| 27 | 1 Fighter Protection Shipping Recces Photo Recces | Cherbourg/Maupertus Airfield French Coast North France | 43 | - | - | - | - |
| 28 | 3 Fighter Protection | Cherbourg Harbour (Munsterland) | 127 | 1 | - | - | - |
| 29 | 1 Fighter Protection | Brest Guipavas Airfield | 24 | - | - | - | - |
| 30 | 1 Instep 1 Rhubarb 2 Fighter Protection 1 Unescorted Bomb Photo Recce | Southwest of Brest North France Shipping Cherbourg Docks (Munsterland) " " " (Munsterland) | 82 | - | - | - | - |
| 31 | 4 Rhubarbs 1 Fighter Protection Shipping Recce Photo Recce | Transportation and Aircraft North France Lessay Airfield Flushing-Boulogne North France | 49 | 2 | - | 2 (on grnd.) | - |
| <u>November</u> | | | | | | | |
| 1 | 1 Roadstead 3 Rhubarbs Shipping Recce | Shipping Dutch Isles Transportation North France Dutch, Belgian, French Coasts | 46 | 1 | - | 1 | - |
| 2 | 7 Rhubarbs 1 Roadstead Shipping Recces | Transportation North France Shipping Brittany Texel-Egmond, French, Belgian, Dutch Coasts | 42 | 1 | - | 3 | 1 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 3 | 5 Fighter Protection Shipping Recces 1 Rhubarb Photo Recce | Airfield North France, St. Andre de l' Eure, Tricqueville, Amsterdam/Schipol, Airfields, Antwerp Power Station Ile de Batz - Flushing River Waal area, Shipping France | 652 (435) | 2 (2) | 100 | 12 (14) | 4 |
| 4 | 2 Insteps 2 Rodeos Shipping Recce Photo Recce | Southwest of Brest North France Dutch, Belgian, French coasts North France | 122 | 2 (1 pilot safe) | - | - | - |
| 5 | 6 Rhubarbs 2 Insteps 1 Roadstead 3 Fighter Protection Shipping Recce Photo Recce | Transportation Targets North France Southwest of Brest Shipping Dutch Coast Mimoyecques (Crossbow Target) France and Holland North France, Belgium and Holland | 891 (437) | 1 (4) | 60 | 1 (on ground) (18) | 2 |
| 6 | 2 Rhubarbs 2 Rangers 1 Unescorted Bomb Raid 2 Shipping Recces 1 Photo Recce | Transportation North France Transportation North France Target North France French and Belgian Coasts, Cap de la Hague - Charnel Isles North France | 44 | 2 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 7 | 1 Haunch 1 Instep 3 Rangers 2 Rhubarbs 4 Fighter Protection 1 Rodeo 1 Shipping Recce 1 Photo Recce | Southwest of Brest Southwest of Brest Transportation and other Targets North France Transportation North France Bernay, Montdidier, Tricqueville, Beaumont le Roger Airfields North France Ostend-Ushant North France | 541 (474) | 1 (8) | 86 | 1 (1) | 1 |
| 8 | 2 Rhubarbs 1 Ranger 1 Fighter Protection 1 Shipping Recce 1 Photo Recce | Transportation North France " " " Mimoyecques (Crossbow Target) French, Belgian, Dutch Coasts North France | 233 | 1 | - | - | - |
| 9 | 1 Roadstead 3 Shipping Recces 4 Rangers 3 Rhubarbs 1 Photo Recce | Brest Dutch Isles, St. Mathieu-Pontusval, Dutch, Belgian, French Coasts Transportation and Airfields North France Transportation North France North France | 83 | 4 | - | 1 | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 10 | 2 Roadstead 5 Fighter Protection 1 Instep 2 Rhubarbs 1 Shipping Recce 1 Photo Recce | Channel Isles, Lezardrieux Estuary Mimoyecques (Crossbow Target), Lille/Vendeville Chievres Airfields, Audinghen (Crossbow Target) Southwest of Brest Transportation North France Dutch, French, Belgian Coasts North France | 955 | 1 | 27 | - | - |
| 11 | 6 Rhubarbs 1 Ranger 2 Roadstead 2 Insteps 4 Fighter Protection 1 Shipping Recce 1 Photo Recce | Transportation and other Targets North France Transportation and other Targets North France Brest, Goulet de Brest Southwest of Brest Martinvast (Crossbow Target) Audinghen (Crossbow) Dutch, Belgian, French Coasts North France | 844 (143) | 3 (3) | 68 | 4 (8) | 4 |
| 12 | 11 Rhubarbs 1 Shipping Recce 1 Photo Recce | Transportation North France France, Belgium, Holland North France | 54 | 1 | - | - | 1 |
| 13 | 2 Insteps 12 Rhubarbs 1 Fighter Roadstead 1 Ranger 1 Shipping Recce | Southwest of Brest Transportation Targets North France Rhine Estuary Nantes Dutch, Belgian, French Coasts | 69 (420) | 7 (11) | - | - (10) | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 14 | 1 Shipping Recce 1 Photo Recce | Dutch, Belgian, French Coasts North France | 27 | - | - | - | - |
| 15 | 1 Roadstead 1 Rhubarb 1 Shipping Recce | Goulet de Brest Radio Station and transportation, Rouen Dutch, Belgian and French Coasts | 37 (2) | 1 (2) | - | - | - |
| 16 | 2 Unescorted Bomb Raids 2 Instep 2 Fighter Roadstead 2 Rhubarbs 1 Roadstead Fighter Protection 1 Rodeo 1 Shipping Recce | Synthetic Oil Plant Painboeuf, Guipavas Airfield Southwest of Brest Le Treport-Le Havre, North French Coast Transportation, airfield North France Dutch Coast Lanveoc/Poulmic Airfield Northwest France Dutch, Belgian, French Coasts | 169 | - | - | - | 1 |
| 17 | 2 Fighter Roadstead 1 Roadstead 3 Shipping Recces 1 Instep 1 Rhubarb 2 Rodeos 1 Photo Recce | Lezardrieux-Ile de Batz, Goulet de Brest Goulet de Brest St. Peters Port-St. Malo, North coast of France, Dutch, Belgian and French Coasts Southwest of Brest Transportation North France North France Cherbourg | 65 | 2 | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------|-------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 18 | 2 Rodeos | North France, Mont St. Michel- Lezardrieux | 295 | 1 | - | - | - |
| | 2 Insteps | Southwest of Brest | | | | | |
| | 1 Fighter Protection | Audinghen (Crossbow Target) | | | | | |
| | 1 Shipping Recce | Dutch and French Coasts | | | | | |
| 19 | 4 Fighter Protection | St. Andre de L'Eure, Evreux/Fauville, Tricqueville, Airfields, Audinghen (Crossbow) | 363 | 2 | - | 1 | - |
| | 1 Haunch | Brest | | | | | |
| | 1 Roadstead | Gris Nez-Le Treport | | | | | |
| | 1 Instep | Southwest of Brest | | | | | |
| | 1 Shipping Recce | French, Belgian and Dutch Coasts | | | | | |
| | 1 Photo Recce | Cayeux | | | | | |
| | 1 Unescorted Bomb Raid | Bernay St. Martin Airfield | 215 | 1 (pilot safe) | - | 1 | 1 |
| 20 | 2 Haunch | Brest, Le Havre | | | | | |
| | 1 Roadstead | Calais-Knocke | | | | | |
| | 6 Fighter Protection | Audinghen (Crossbow) | | | | | |
| | 1 Unescorted Bomb Raid | " " | | | | | |
| | 1 Instep | Southwest of Brest | | | | | |
| | 1 Rodeo | Dieppe-Cayeux | | | | | |
| | 2 Shipping Recces | Goulet de Brest, Cherbourg-Ostend | 19 | - | - | - | - |
| 21 | 2 Shipping Recces | Goulet de Brest, Le Havre-Cherbourg | | | | | |
| | 1 Instep | Southwest of Brest | | | | | |
| | 1 Ranger | North France | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 22 | 1 Instep 2 Shipping Recces 1 Fighter Roadstead | Southwest of Brest Brittany, North France Ushant-Goulet de Brest | 22 | - | - | - | - |
| 23 | 3 Roadsteads 5 Fighter Protection 1 Unescorted Bomb Raid 1 Shipping Recce 1 Photo Recce | Goulet de Brest, Terschelling, Texel Lille/Vendeville, St. Omer Longuenesse Airfield, Audinghen (Crossbow) Audinghen (Crossbow) Dutch, Belgian and French Coasts North France | 597 | - | - | 2 | - |
| 24 | 2 Unescorted Bomb Raids 2 Roadsteads 1 Shipping Recce 1 Photo Recce | St. Herbst, Vannes Power Stations Ile de Batz, Guernsey French, Belgian and Dutch Coasts France | 100 | 1 | - | - | - |
| 25 | 4 Unescorted Bomb Raids 5 Fighter Protection 1 Instep 1 Rhubarb 1 Rodeo 1 Shipping Recce 1 Photo Recce | Falaise, Vezins, Aube, Laigle Power Stations Audinghen (Crossbow) Munsterland Cherbourg, Martinvast (Crossbow) Southwest of Brest Transportation Belgium North France Goulet de Brest Ijmuiden France, Holland | 1021 (343) | 8 (1 air- crew safe) (2) | - | 3 (3) | 6 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| November | | | | | | | |
| 26 | 9 Fighter Protection | Target in Paris area, Martinvast (Crossbow), Audinghen (Crossbow), Munsterland Cherbourg, Cambrai/Epinoxy, Rosieres-en-Sauterre Airfields | 882 | 5 (1 pilot safe) | 102 | 6 | 12 + 25 |
| | 3 Unescorted Bomb Raids | Audinghen, Martinvast (Crossbow) | (416) | (7) | | (36) (inc. Germany) | |
| | 1 Shipping Recce | Dutch, Belgian and French Coasts | | | | | |
| | 1 Photo Recce | France, Belgium, Holland | | | | | |
| 27 | 1 Fighter Protection | Audinghen (Crossbow) | 6 | - | - | - | - |
| | 1 Shipping Recce | Belgian and French Coasts | | | | | |
| 29 | 1 Haunch | Goulet de Brest | | | | | |
| | 5 Fighter Protection | Chievres, Cambrai/Epinoxy, Courtrai/Moorsele, Merville Airfields, Albert aircraft factory | | | | | |
| | 1 Unescorted Bomb Raid | Leer Railway Sidings | 395 | 2 | 15 | 5 | 3 + 23 |
| | 1 Roadstead | Cherbourg Peninsula | (352) | (16) | | (15) | |
| | 1 Instep | Southwest of Brest | | | | | |
| | 2 Rodeos | North France | | | | | |
| | 1 Shipping Recce | French and Dutch Coasts | | | | | |
| | 1 Photo Recce | North France and Belgium | | | | | |
| 30 | 1 Instep | Southwest of Brest | | | | | |
| | 1 Fighter Protection | Solingen (withdrawal) | 206 | 2 | - | 6 | - |
| | 1 Shipping Recce | Holland, North France, Brittany | (421) | (5) | | | |
| | 1 Photo Recce | Holland, North France | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-------------------------|-----------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>December</u> | | | | | | | |
| 1 | 5 Fighter Protection | Lille/Vendeville, Cambrai/Epinoxy, Cambrai/Niergnies Airfields, Albert aircraft factory | | | | | |
| | 1 Unescorted Bomb Raid | Cleve vegetable oil factory | 574 | 7 | 9 | 10 | 14 |
| | 1 Instep | Southwest of Brest | (434) | (6) | | (20) | |
| | 1 Roadstead | Shipping Ile de Croix | | | | | |
| | 1 Shipping Recce | French, Dutch, Belgian Coasts | | | | | |
| | 1 Photo Recce | North France and Holland | | | | | |
| 2 | 1 Instep | Southwest of Brest | | | | | |
| | 1 Fighter Protection | Martinvast (Crossbow) | 179 | - | - | - | 1 |
| | 1 Rodeo | North France | | | | | |
| | 1 Photo Recce | France, Holland | | | | | |
| 3 | 2 Rodeos | North France | | | | | |
| | 1 Shipping Recce | Northeast France and Belgium coasts | 42 | - | - | - | - |
| | 1 Photo Recce | North France | | | | | |
| 4 | 1 Haunch | Frisian Isles | | | | | |
| | 1 Instep | Southwest of Brest | | | | | |
| | 2 Rodeos | Bergen-Ijmuiden, Gael-Remmes | | | | | |
| | 2 Unescorted Bomb Raids | Courtrai-Moorselle, Courtrai-Wevelghem Airfields | 376 | 1 | - | 11 | 1 |
| | 1 Shipping Recce | Dutch, Belgian, French Coasts | (144) | | | (3) | |
| | 1 Photo Recce | Holland, Belgium, North France | | | | | |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| December | | | | | | | |
| 5 | 4 Fighter Protection | Bordeaux, Merignac, Cognac, La Rochelle, Lalao Airfields, Paris area, Brunhauptre (Crossbow), St. Josse, Ligescourt (Crossbow) | 483 (376) | - (1) | - | - | 3 |
| | 1 Rodeo | North France | | | | | |
| | 1 Shipping Recce | Texel and Dieppe | | | | | |
| | 1 Photo Recce | Bayeux area | | | | | |
| 6 | 1 Ranger | Paris | | | | | |
| | 1 Shipping Recce | Dutch and French Coasts | 12 | - | - | - | - |
| 7 | 1 Rodeo | West of Dieppe | | | | | |
| | 1 Shipping Recce | Belgian and French Coasts | 15 | - | - | - | - |
| 9 | 1 Instep | Southwest of Brest | 4 | - | - | - | - |
| 10 | 1 Instep | Southwest of Brest | | | | | |
| | 4 Unescorted Bomb Raids | Railway targets Netherlands and Northwest Germany | | | | | |
| | 1 Shipping Recce | Dieppe and Texel | 42 | 2 | - | - | - |
| | 1 Photo Recce | Courtrai, Brussels, Merville, Woensdrecht | | | | | |
| 11 | 1 Instep | Southwest of Brest | | | | | |
| | 1 Shipping Recce | Dutch and French Coasts | 26 (506) (1) | - (21) | - | - | 1 + 16 |
| | 1 Photo Recce | North France | | | | | |

(1) Including 50 sorties by IXth U.S. Air Force.

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| December | | | | | | | |
| 12 | 1 Instep 1 Ranger 1 Shipping Recce 1 Photo Recce | Southwest of Brest Bourges-Avord French, Dutch, Belgian Coasts Northeast France, Belgium | 26 | - | - | 1 | - |
| 13 | 2 Fighter Protection 1 Instep 1 Shipping Recce 1 Photo Recce | Bremen, Kiel (withdrawal), Schipol Airfield Southwest of Brest Northeast France and Holland Northeast France and Belgium | 356 (505) | 1 (1) | - | 1 | - |
| 14 | 1 Instep 1 Fighter Protection 1 Shipping Recce 1 Photo Recce | Southwest of Brest Four Crossbow Targets France, Belgium, Holland North France and Belgium | 125 | 1 | - | - | - |
| 15 | 1 Fighter Protection 1 Instep 1 Shipping Recce | Seven Crossbow Targets Southwest of Brest Abbeville-Dutch Coast | 119 | 1 | - | - | - |
| 16 | 1 Shipping Recce | French, Dutch, Belgian Coasts | 12 (234) | - (2) | - | - | - |
| 17 | 1 Fighter Protection 2 Unescorted Bomb Raids 1 Shipping Recce | Campagne les Hesdins (Crossbow) Audinghen (Crossbow) North France | 37 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| December | | | | | | | |
| 18 | 2 Rodeos 1 Instep 1 Rhubarb 1 Roadstead | North France Southwest of Brest Crossbow Targets Concarneau Harbour | 78 | - | - | - | - |
| 19 | 1 Ranger 5 Rhubarbs 2 Shipping Recces 1 Photo Recce | Chateaudun-Bourges Crossbow Targets Goulet de Brest, Dutch and French Coasts North France, Belgium, Holland | 43 | - | - | - | - |
| 20 | 6 Fighter Protection 2 Shipping Recces 1 Rodeo 1 Rhubarb 1 Photo Recce | Bremen (partial), Sixteen Crossbow Targets France, Cherbourg-Texel North France Crossbow Target Holland, France | 796 (481) | 7 (5) | 85 | 12 (19) (Germany) | 5 + 23 |
| 21 | 15 Unescorted Bomb Raids 6 Fighter Protection 1 Haunch 1 Shipping Recce 1 Photo Recce | Crossbow Targets 9 Crossbow Targets Dutch Coast French, Dutch, Belgian Coasts North France, Holland | 712 (208) | 8 | 127 | 4 (4) | 3 |
| 22 | 5 Unescorted Bomb Raids 7 Fighter Protection 1 Roadstead 1 Shipping Recce 1 Photo Recce | Crossbow Targets 20 Crossbow Targets Shipping Dutch Coast Northeast France, Holland North France, Belgium, Holland | 984 (516) | 4 (4) | - | - (15) | 3 + 33 |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>December</u> | | | | | | | |
| 23 | 3 Fighter Protection 3 Unescorted Bomb Raids 1 Shipping Recce 1 Photo Recce | 11 Crossbow Targets Crossbow Targets France, Belgium, Holland North France, Belgium | 465 (95) | 3 (1 pilot safe) | - | - | - |
| 24 | 6 Fighter Protection 1 Instep 1 Shipping Recce 1 Photo Recce | 9 Crossbow Targets, Brest/Guipavas, Morlaix Airfields Southwest of Brest France, Belgium, Holland Holland, North France | 573 (545) | - | - | - | - |
| 25 | 1 Roadstead 1 Rodeo | Shipping west of Brest Kerlin/Bastard | 21 | - | - | 1 | - |
| 27 | 2 Shipping Recces | Le Havre-Fecamp, Dutch and French Coasts | 28 | - | - | - | - |
| 28 | 9 Unescorted Bomb Raids 2 Rodeos 1 Rhubarb 2 Shipping Recces 1 Photo Recce | Crossbow Targets Antwerp-Brussels, Kerlin/Bastard Crossbow Target Goulet de Brest, North France, Holland North France, Belgium | 55 (38) | 1 | - | 1 | 1 |
| 29 | 2 Roadsteads 1 Shipping Recce 1 Photo Recce | Motor Vessel off Boulogne Dutch and French Coasts France | 36 | - | - | - | - |

| Date 1943 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>December</u> | | | | | | | |
| 30 | 1 Haunch 1 Roadstead 5 Fighter Protection 4 Unescorted Bomb Raids 1 Rodeo 2 Insteps | Crossbow Target Ile de Batz Chemical Works Ludwigshafen (partial), Nine Crossbow Targets Crossbow Targets North France Southwest of Brest | 728 (584) | 4 (10) | 40 | 5 (8) | - |
| 31 | 5 Fighter Protection 8 Unescorted Bomb Raids 2 Rodeos 1 Instep 1 Shipping Recce 1 Photo Recce | Seven Crossbow Targets, St. Jean D'Angleley, Cognac/Chateau Bernard Airfield Crossbow Targets North France Southwest of Brest North France Holland, Belgium, France | 828 (597) | 1 (2) (1 pilot safe) | 9 | 4 (7) | - |
| <u>1944</u> <u>January</u> | | | | | | | |
| 1 | 1 Photo Recce 2 Roadsteads 6 Unescorted Bomb Raids 2 Fighter Protection 1 Ranger 1 Special Patrol 1 Shipping Recce | North France, Belgium <u>Munsterland</u> Boulogne Crossbow Targets, <u>Munsterland</u> Boulogne Crossbow Targets Brussels, Chievres-Cambrai North west of Brest Holland, France | 226 | - | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 2 | 1 Instep 4 Rangers 4 Fighter Protection 1 Unescorted Bomb Raid 5 Rhubarbs 1 Shipping Recce 1 Photo Recce | South West of Brest North France 5 Crossbow Targets Munsterland Boulogne Crossbow Targets North France North France | 211 (2) | 1 | - | 4 | 1 + 1 |
| 3 | 1 Haunch 5 Rangers 18 Rhubarbs 4 Fighter Protection 1 Instep 2 Shipping Recces 1 Photo Recce | Goulet de Brest - Ile de Batz Transportation North France Transportation and Crossbow Targets North France Crossbow Targets South west of Brest Goulet de Brest - Ile de Batz, French, Dutch, Belgian Coasts France, Belgium, Holland | 160 | 9 | - | 2 | 1 + 1 |
| 4 | 11 Fighter Protection 10 Unescorted Bomb Raids 1 Rodeo 2 Roadsteads 1 Shipping Recce 1 Photo Recce | Munster and Kiel (partial), 17 Crossbow Targets Crossbow Targets North France Shipping Dutch Coast, U-boat West of Brest Cherbourg - Hook North France | 1104 (545) | 6 (2) | 110 | 8 (3 on ground) (8) | + 5 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------|--------------------------------------------------------------|--------------------|-------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| January | | | | | | | |
| 5 | 2 Shipping Recces | Goulet de Brest - Ile de Batz, North France-Belgium | | | | | |
| | 1 Roadstead | Ijmuiden - Den Helder | 617 | - | 23 | - | 15 + 8 |
| | 8 Fighter Protection | Bordeaux and Tours, Crossbow Targets | (611) | (12) | | (33) | (inc. 8 on ground) |
| | 7 Unescorted Bomb Raids | Crossbow Targets | | | | (inc. Germany) | |
| | 1 Instep | South west of Brest | | | | | |
| | 1 Rodeo | Dreux - Paris area | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 6 | 1 Roadstead | Ijmuiden - Bergen | | | | | |
| | 1 Special Patrol | North West of Brest | | | | | |
| | 4 Fighter Protection | 7 Crossbow Targets | | | | | |
| | 1 Unescorted Bomb Raid | Crossbow Target | | | | | |
| | 15 Rhubarbs | Crossbow Targets | 490 | 6 | 74 | 3 | 2 + 1 |
| | 3 Rangers | Transportation and other Targets | | | | | |
| | | North France | | | | | |
| | 1 Shipping Recce | North France, Holland | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 7 | 9 Fighter Protection | Ludwigshafen Chemical Works (partial), 9 Crossbow Targets | | | | | |
| | 10 Unescorted Bomb Raids | Crossbow Targets | 764 | 5 | 91 | 4 | 5 + 5 |
| | 1 Haunch | Frisian Isles | (619) | (1 Pilot safe) | | (7) | |
| | 1 Instep | South West of Brest | | | | | |
| | 1 Shipping Recce | North France, Holland | | | | | |
| | 1 Photo Recce | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| January | | | | | | | |
| 8 | 2 Fighter Protection 1 Rodeo 1 Shipping Recce 1 Photo Recce | 3 Crossbow Targets Kerlin/Bastard Airfield North France, Holland North France | 301 | 1 | - | 1 | - |
| 9 | 7 Rhubarbs 1 Shipping Recce 1 Photo Recce | Crossbow Targets North France North France | 36 | 1 | - | - | - |
| 10 | 1 Instep 12 Rhubarbs 2 Fighter Protection 1 Shipping Recce 1 Photo Recce | South west of Brest (2 abortive) Transportation and other targets North France 3 Crossbow Targets France, Holland Domleger | 102 | 3 (1 pilot safe) | - | 1 | - |
| 11 | 3 Unescorted Bomb Raids 1 Fighter Protection 1 Shipping Recce | Crossbow Targets (2 abortive) Crossbow Target France, Holland | 88 (593) | - (5) | - | - (27) | 3 + 26 |
| 12 | 1 Shipping Recce | Berck | 2 | - | - | - | - |
| 13 | 2 Rangers 1 Shipping Recce 1 Photo Recce | Aircraft and Airfields North France France, Holland North France | 26 | 1 | - | 8 | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| January | | | | | | | |
| 14 | 4 Unescorted Bomb Raids 10 Fighter Protection 1 Instep 1 Rodeo 1 Shipping Recce 1 Photo Recce | Crossbow Targets 11 Crossbow Targets South west of Brest Holland Cherbourg area France, Holland | 743 (647) | 8 (3) | - | 2 (14) | 9 + 1 |
| 15 | 2 Rodeos 1 Shipping Recce | North France French and Belgian Coasts | 22 | - | - | - | - |
| 16 | 1 Unescorted Bomb Raid 1 Shipping Recce | St. Thegonnec warehouses and railway siding French Coast | 25 | - | - | - | - |
| 17 | 2 Fighter Roadsteads 2 Insteps | Abervrach-Goulet de Brest, Abervrach-Brehat South west of Brest | 19 | - | - | - | - |
| 18 | 1 Shipping Recce | Le Treport-Calais | 2 | - | - | - | - |
| 19 | 1 Ranger 1 Rhubarb 1 Shipping Recce 1 Photo Recce | Leeuwarden (abortive) South west Norwegian Coast Dutch Isles, French Coast North France | 20 | - | - | 2 (1 on water) | - |
| 20 | 1 Roadstead 1 Instep 1 Shipping Recce 1 Photo Recce | <u>Munsterland</u> off Sangatte South West of Brest French Coast and Brittany Cherbourg area | 62 | 1 | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------|----------------------------|---------------------------------------------------------------------------|--------------------|--------|------------------------|-------------------------------|--------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C Reaction(2) | Losses R.A.F. Claims(3) | Losses German Records(4) |
| January 21 | 10 Fighter Protection | 13 Crossbow Targets, Ijmuiden - Velsen Blast Furnace Steel Works | | | | | |
| | 3 Unescorted Bomb Raids | Crossbow Targets | 689 | 3 | - | 6 | 9 + 1 |
| | 2 Rodeos | North France | (628) | (1) | | (7) | (inc. 4 on ground) |
| | 1 Instep | South West of Brest | | | | | |
| | 1 Shipping Recce | Coast North East France and Brittany | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 22 | 2 Shipping Recces | Cherbourg - Le Havre, North France | | | | | |
| | 1 Ranger | South Norway | 19 | - | - | - | - |
| | 1 Photo Recce | North France | | | | | |
| 23 | 3 Fighter Protection | Crossbow Targets and North France | | | | | |
| | 3 Unescorted Bomb Raids | Crossbow Targets | 375 | 1 | 74 | 4 | 2 |
| | 1 Shipping Recce | North France | (65) | | | | |
| | 1 Photo Recce | North France | | | | | |
| 24 | 6 Fighter Protection | 5 Crossbow Targets, North France, Targets in Western Germany (partial) | | | | | |
| | 4 Unescorted Bomb Raids | Crossbow Targets | 501 | 4 | 40 | 3 | 1 + 9 |
| | 1 Roadstead | Shipping Dutch Coast | (678) | (7) | | (19) | |
| | 1 Shipping Recce | South of Ushant | | | | | |
| | 1 Photo Recce | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|--------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. /A 'Reaction' (2) | Losses R.A.F. Claims (5) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 25 | 7 Fighter Protection 5 Unescorted Bomb Raids 1 Shipping Recce 1 Photo Recce | 9 Crossbow Targets (2 abortive) Crossbow Targets North France North France | 644 (218) | 3 | - | - | - |
| 26 | 6 Fighter Protection 4 Unescorted Bomb Raids 1 Shipping Recce 1 Photo Recce | Crossbow Targets Crossbow Targets French and Dutch Coasts North France | 403 | 1 | - | - | - |
| 27 | 2 Roadsteads 1 Rodeo 3 Rangers 1 Shipping Recce 1 Photo Recce | Shipping Dutch Coast (Iron and steel works Ijmuiden attacked), Vlieland-Texel Kerlin/Bastard Airfield Airfields North France and Belgium North France North France | 44 | - | - | 10 | 5 |
| 28 | 3 Unescorted Bomb Raids 3 Fighter Protection 6 Rodeos 1 Roadstead 1 Special Patrol 2 Rangers 1 Fighter Roadstead 1 Shipping Recce 1 Photo Recce | Crossbow Targets (1 abortive) Crossbow Targets North France Frisian Isles South of Scillies Miscellaneous Targets, North France Brest Peninsula Dutch Coast North France and Holland | 273 (295) | 5 | - | 4 | 1 (dest. on ground) |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|----------------------------|-------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>January</u> | | | | | | | |
| 29 | 5 Fighter Protection | Frankfurt (partial), North France Behen, Crossbow Target | | | | | |
| | 3 Unescorted Bomb Raids | Behen (1 abortive) | | | | | |
| | 2 Rodeo | North France | 535 | 7 | - | 4 | 15 + 17 |
| | 1 Instep | South West of Brest | (632) | (14) | | (45) | |
| | 2 Rangers | Shipping Targets North France | | | | | |
| | 1 Shipping Recce | E-boats Hague - Ijmuiden | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 30 | 2 Roadsteads | Scheldt, Brouquershaven | | | | | |
| | 2 Fighter Protection | Brunswick (partial), Crossbow Target | | | | | |
| | 5 Rodeos | North France | 255 | 2 | - | 14 | 18 + 36 |
| | 1 Instep | South West of Brest | (718) | (4) | | (2 on ground) | (inc. 3 on ground) |
| | 1 Special Patrol | North West of Brest | | | | (45) | |
| | 2 Rangers | Troops and gun positions North France | | | | | |
| | 1 Shipping Recce | French Coast | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 31 | 1 Rodeo | North France | 36 | 3 | - | - | - + 5 |
| | 1 Shipping Recce | North French Coast | (338) | (6) | | (13) | |
| <u>February</u> | | | | | | | |
| 1 | 1 Ranger | Barges Brussels area | 16 | - | - | - | - |
| | 1 Shipping Recce | Dutch, Belgian, French coast | | | | | |
| 2 | 1 Shipping Recce | Dutch and French coasts | 14 | - | - | - | - |
| | | | (279) | (1) | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February | | | | | | | |
| 3 | 1 Roadstead 5 Fighter Protection 9 Unescorted Bomb Raids 1 Shipping Recce 1 Photo Recce | Shipping Scheldt Wilhelmshaven (partial), 7 Crossbow Targets Crossbow Targets Dutch Coast North France | 551 (991) | 1 (9) | - | - (8) | + 7 |
| 4 | 1 Instep 4 Fighter Protection 8 Unescorted Bomb Raids 1 Photo Recce | South west of Brest Frankfurt (partial), 3 Crossbow Targets Crossbow Targets North France | 414 (725) | - (1) | - | - (8) | 9 |
| 5 | 6 Unescorted Bomb Raids 8 Fighter Protection 1 Shipping Recce 1 Photo Recce | Crossbow Targets North French Airfields, Villacoublay Aircraft Works, Beauvais/Tille Airfield, 7 Crossbow Targets Dutch and French Coast France | 618 (916) | 3 (6) | 100 | - (6) | 19 (inc. 16 on ground) |
| 6 | 2 Roadsteads 3 Fighter Protection 4 Unescorted Bomb Raids | Shipping Dutch Coast, Minesweepers Abervrach Estuary 6 Crossbow Targets Crossbow Targets | 492 (828) | 3 (3) | 113 | (13) (2 on ground) | 7 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>February</u> | | | | | | | |
| 7 | 2 Rangers 1 Shipping Recce | North France (abortive) Dutch coast | 8 | 2 | - | - | - |
| 8 | 13 Fighter Protection 11 Unescorted Bomb Raids 2 Rangers 1 Instep 2 Roadsteads 1 Shipping Recce 1 Photo Recce | Airfields North France 17 Crossbow Targets Crossbow Targets North France Airfields North France South west of Brest Shipping Den Helder Ushant - Texel North France, Holland | 955 (1070) | 4 (9) | - | 1 (17) | 5 |
| 9 | 11 Fighter Protection 7 Unescorted Bomb Raids 1 Rodeo 1 Instep 1 Shipping Recce 1 Photo Recce | 10 Crossbow Targets, Ternier Marshalling Yards Crossbow Targets North France South west of Brest Dutch Coast North France | 650 (220) | 3 | 58 | 2 | - |
| 10 | 3 Fighter Protection 2 Unescorted Bomb Raids 3 Rodeos 1 Shipping Recce 1 Photo Recce | (1 abortive), 7 Crossbow Targets Crossbow Targets North France Dutch Coast North France | 296 (854) | 2 (8) | 18 | 10 (56) | + 40 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February | | | | | | | |
| 11 | 4 Fighter Protection 1 Instep 2 Unescorted Bomb Raids 1 Shipping Recce 1 Photo Recce | Crossbow Targets South west of Brest Crossbow Targets North Sea, Dutch Coast North France | 343 (946) | 1 (14) | 66 | - (34) | 6 + 15 |
| 12 | 1 Fighter Protection 1 Instep 1 Rodeo 1 Ranger 1 Roadstead 1 Shipping Recce 1 Photo Recce | 2 Crossbow Targets South west of Brest North France Airfields, North France Convoy Den Helder Dutch and French Coasts North France | 84 (126) | 1 | - | 6 (2 on ground) | - |
| 13 | 2 Fighter Protection 1 Unescorted Bomb Raid 1 Roadstead 1 Instep 4 Rodeos 1 Shipping Recce 1 Photo Recce | Dieppe area, Crossbow Target Crossbow Target Convoy off The Hook South west of Brest North France Holland North France | 240 (445) | 2 | 30 | 4 (3 on ground) (6) | 5 |
| 14 | 2 Shipping Recces 1 Unescorted Bomb Raid 1 Fighter Protection 2 Rangers 1 Rodeo 1 Photo Recce | Cherbourg Peninsula, Fecamp-Ouistreham Crossbow Target 4 Crossbow Targets Airfields North France St. Lo area North France | 328 (60) | 3 | - | 3 | 1 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------|-------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February | | | | | | | |
| 15 | 2 Shipping Recces | Cap de la Hague - Ile Brehat, Dutch, French, Belgian Coasts | | | | | |
| | 1 Instep | South west of Brest | | | | | |
| | 1 Rodeo | Brest Peninsula | 745 | 5 | - | - | - |
| | 7 Fighter Protection | 11 Crossbow Targets | (492) | (1) | | | |
| | 2 Unescorted Bomb Raids | Crossbow Targets | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 16 | 1 Ranger | Ostend-Cayeux | | | | | |
| | 1 Instep | South west of Brest | 16 | - | - | - | - |
| | 1 Shipping Recce | North East France | | | | | |
| 17 | 2 Instep | South west of Brest | 8 | - | - | - | - |
| 18 | 3 Fighter Protection | Amiens Prison | | | | | |
| | 1 Shipping Recce | Dutch and French Coasts | 57 | 4 | - | - | - |
| | 1 Photo Recce | Pas de Calais | | | | | |
| 19 | 8 Insteps | South west of Brest | | | | | |
| | 1 Shipping Recce | Dutch Coast | 62 | - | - | 1 | 1 |
| 20 | 4 Fighter Protection | Leipzig, Gotha, Brunswick (partial), Holland airfields, 2 Crossbow Targets | | | | | |
| | 1 Instep | South west of Brest | 501 | 1 | 102 | - | 2 + 38 |
| | 1 Shipping Recce | Dutch and French Coasts | (1048) | (3) | | (61) | |
| | 1 Photo Recce | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>February</u> | | | | | | | |
| 21 | 2 Fighter Protection 3 Shipping Recces 2 Escorted Recces 1 Photo Recce 1 Instep 1 Ranger | Coxsye Airfield, Crossbow Target Cherbourg-St. Malo, Le Havre, St. Marcouf, Dutch and French Coasts Morlaix, Caen area North France South West of Brest Airfields North France | 166 (947) | 2 | - | - (33) | + 26 |
| 22 | 2 Shipping Recces 2 Fighter Protection 1 Unescorted Bomb Raid 3 Rodeos 1 Photo Recce | Cherbourg - St. Malo, French and Dutch Coasts Gilze-Rijen Airfield, Industrial Targets Germany (partial) Crossbow Target Brest Peninsula (1 abortive) North France | 255 (905) | 4 (13) | 120 | - (59) | 10 + 37 |
| 23 | 1 Roadstead 1 Shipping Recce | Shipping Zeebrugge French, Belgian and Dutch Coasts | 26 | 1 | - | - | - |
| 24 | 5 Fighter Protection 1 Unescorted Bomb Raid 1 Instep 1 Shipping Recce 1 Photo Recce | Schweinfurt Ball Bearing Works, Gotha Aircraft Factory (partial), Leeuwarden, Deelen, Gilze-Rijen Airfields, 8 Crossbow Targets Crossbow Target South West of Brest Dutch and French Coast North France | 795 (1231) | 1 (10) | - | 1 (37) | 12 + 35 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|----------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| February 25 | 7 Unescorted Bomb Raids 9 Fighter Protection 1 Rodeo 2 Naval Escort 1 Shipping Recce 1 Photo Recce | North France Venlo, St. Trond Airfield, South West German industrial targets (partial), 7 Crossbow Targets Brest Peninsula South West Approaches Dutch, French, Belgian Coasts, Channel Isles North France | 758 (1328) | 3 (7) | 30 | 2 (26) (1 on ground) | 8 + 27 |
| 26 | 3 Ranger 1 Instep 1 Shipping Recce 1 Photo Recce | Airfields North France South West of Brest French Coast North France | 24 | - | - | 9 (3 on ground) | 4 (inc. 3 on ground) |
| 27 | 1 Special Patrol 1 Ranger 1 Rodeo | South of Scillies (abortive) North West France Pas de Calais | 21 | - | - | - | - |
| 28 | 1 Instep 1 Rodeo 1 Ranger 3 Fighter Protection 1 Roadstead 1 Shipping Recce 1 Photo Recce | South West of Brest Dunkirk - Ostend Bourges - Avord 5 Crossbow Targets Motor vessel Boulogne Harbour French and Dutch Coasts North France | 484 (533) | 2 (3) | - | (1) (on ground) | - |

| Date 1944 | Type of Operation | Targets attacked | P.A.F. | | G.A.F. | | |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>February</u> 29 | 1 Special Patrol 1 Instep 1 Unescorted Bomb Raid 6 Fighter Protection 1 Roadstead 2 Shipping Recces 1 Photo Recce | South of Scillies South West of Brest Crossbow Target Brunswick (partial), 5 Crossbow Targets Shipping Frisian Isles (none seen) French and Dutch Coasts, Boulogne Harbour North France | 428 (967) | 4 (6) | - | 2 (1) | 1 |
| <u>March</u> 1 | 1 Instep 1 Ranger 2 Roadstead 1 Shipping Recce 1 Photo Recce 1 Protected Bomb Raid 1 Fighter Protection | South west of Brest Paris area Shipping Den Helder Channel Isles, Dutch Coast North France Crossbow Target Crossbow Target | 100 (163) | - (1) | - | 1 (2) | - |
| 2 | 2 Unescorted Bomb Raids 5 Fighter Protection 5 Protected Bomb Raids 1 Rodeo 1 Instep 1 Shipping Recce 1 Photo Recce | Crossbow Targets Frankfurt (partial), Amiens/Glisy, Rosieres-en-Santerre Airfields, Tergnier, Chaumy Marshalling Yards, Crossbow Target Crossbow Targets North France South West of Brest Brittany, Holland North France | 615 (413) | 4 (1) | - | - | 12 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------|--------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 3 | 14 Fighter Protection | 5 Crossbow Targets, Juvincourt, Beauvais Airfields | | | | | |
| | 3 Unescorted Bomb Raids | Crossbow Targets | 493 (261) | - | - | - | - |
| | 1 Protected Bomb Raid | Crossbow Target | | | | | |
| | 2 Rodeos | North France, Belgium | | | | | |
| | 1 Shipping Recce | French and Dutch Coasts | | | | | |
| | 1 Photo Recce | North France | | | | | |
| | 1 Instep | South West of Brest | | | | | |
| 4 | 7 Fighter Protection | Targets in Berlin and Ruhr (partial), Crossbow Targets | | | | | |
| | 3 Unescorted Bomb Raids | Crossbow Targets | 401 (274) | 2 | 37 | - | - |
| | 4 Protected Bomb Raids | Crossbow Targets | | | | | |
| | 1 Ranger | Airfields North France | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 5 | 1 Unescorted Bomb Raid | Crossbow Target | | | | | |
| | 2 Fighter Protection | Crossbow Target | | | | | |
| | 3 Rangers | Airfields North France | 139 (536) | - | 2 | 1 (14) | 11 (inc. 2 on ground) |
| | 3 Fighter Protection | 2 Crossbow Targets, Dieppe area | | (8) | | | |
| | 1 Shipping Recce | French and Dutch Coasts | | | | | |
| | 1 Photo Recce | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|------------------------------------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| March | | | | | | | |
| 6 | 1 Instep 10 Unescorted Bomb Raids 1 Protected Bomb Raid 2 Fighter Protection | South West of Brest Crossbow Targets Crossbow Target Hirson Marshalling Yards, Beauvais/Tille Airfield, Targets in Berlin area (partial) | 228 (303) | 2 | - | - | 4 + 41 (VIIIth Air Force Claims) |
| | 1 Rodeo 1 Ranger 1 Shipping Recce 1 Photo Recce | North France North France, Belgium Dunkirk - Dutch Coast North France | | | | | |
| 7 | 7 Unescorted Bomb Raids 1 Protected Bomb Raid 2 Fighter Protections | Crossbow Targets Crossbow Target Aulnoye - Creil Marshalling Yards, Conches Airfield, Crossbow Target | 378 (318) | 1 | - | 2 | 3 |
| | 1 Instep 1 Ranger 1 Roadstead 1 Shipping Recce 1 Photo Recce | South West of Brest North France Convoy off Ameland Holland, North France North France | | | | | |
| 8 | 5 Fighter Protection 6 Rangers 1 Instep 1 Shipping Recce 1 Photo Recce 2 Unescorted Bomb Raids 1 Protected Bomb Raid | Targets in Berlin area (partial), Volkel, Soesterberg Airfields North France South West of Brest North France North France and Holland Crossbow Targets Crossbow Targets | 397 (566) | 4 (2) | 12 | - (6) | 12 (inc. 7 on ground) + 47 (VIIIth Air Force claims) |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------|--------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 9 | 2 Fighter Protection | Berlin and Hanover (partial), Crossbow Target | | | | | |
| | 1 Protected Bomb Raid | Crossbow Target | | | | | |
| | 2 Rangers | Airfields North France | 83 | 3 | - | - | - |
| | 1 Instep | South west of Brest | (177) | | | | |
| | 1 Shipping Recce | Holland, Belgium, North France | | | | | |
| | 1 Photo Recce | North France | | | | | |
| 10 | 1 Instep | South west of Brest | | | | | |
| | 1 Shipping Recce | Dutch Coast | 8 | - | 1 | - | 2 |
| 11 | 1 Fighter Protection | Crossbow Target, Gilze-Riejen | | | | | |
| | 2 Unescorted Bomb Raids | Crossbow Targets | | | | | |
| | 1 Ranger | Airfields North France | 138 | 1 | - | - | 2 |
| | 1 Shipping Recce | Channel Isles, Belgian Coast | (146) | (2) | | | |
| | 1 Photo Recce | North France and Holland | | | | | |
| 12 | 5 Rangers | Airfields North France | 23 | - | - | 2 | - |
| | 1 Photo Recce | North France | (2) | | | (on ground) | |
| 13 | 4 Rangers | Airfields and Transportation North France | | | | | |
| | 2 Unescorted Bomb Raids | Crossbow Targets | | | | | |
| | 1 Fighter Protection | Crossbow Targets | 76 | 1 | - | - | - |
| | 1 Instep | South west of Brest | (178) | | | | |
| | 1 Photo Recce | France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 14 | 3 Unescorted Bomb Raids 1 Instep 2 Shipping Recces 2 Weather Recoes 1 Photo Recce | Crossbow Targets South west of Brest France, Belgium and Holland North France and Holland North France | 83 (113) | - | - | - | - |
| 15 | 6 Fighter Protection 3 Unescorted Bomb Raids 2 Protected Bomb Raids 2 Shipping Recces 1 Instep 1 Photo Recce | Aulnoye, Haine St. Pierre Marshalling Yards, Coxyde Airfield, Crossbow Targets Crossbow Targets " " Dutch Coast South west of Brest North France | 281 (303) | 1 | - | 4 (2) (1 on ground) | 7 (inc. 4 on ground) + 20 |
| 16 | 4 Fighter Protection 2 Protected Bomb Raids 1 Unescorted Bomb Raid 3 Shipping Recces 1 Rodeo 1 Instep 1 Photo Recce | Targets in South West Germany (partial), Military Target, Ostend Military Target, Ostend Crossbow Targets Dieppe, Dutch Coast South of Paris South west of Brest North France | 225 (276) | 6 | - | 6 (1 on ground) | 17 + 39 |
| 17 | 1 Protected Bomb Raid 1 Fighter Protection 5 Rodeos 1 Instep 1 Shipping and Weather Recce 1 Photo Recce | Crossbow Target Crossbow Target Brest Peninsula South west of Brest French and Dutch Coasts Belgium, France | 114 (290) | 2 (4) | - | - (3) | 2 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------|-----------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|-------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| March 18 | 1 Protected Bomb Raid | Crossbow Targets, Hengelo Electrical Equipment Factory | 203 (39) | 3 (1) | - | - | 12 (inc. 5 on ground) + 29 |
| | 1 Ranger | Airfields North France | | | | | |
| | 1 Rodeo | North France | | | | | |
| | 1 Weather Recce | North France | | | | | |
| | 2 Shipping Recces | Ile de Vierge-Ile de Batz, North France, Holland | | | | | |
| | 1 Photo Recce | North France, Belgium | 20 (386) | - | - | - | - |
| 19 | 1 Protected Bomb Raid | Crossbow Target | | | | | |
| | 1 Fighter Protection | Crossbow Target | | | | | |
| | 1 Shipping Recce | Dutch Coast | 392 (608) | 3 (2) | - | 1 | 5 |
| 20 | 2 Fighter Protection | Crossbow Target, Channel area | | | | | |
| | 2 Protected Bomb Raids | 4 Crossbow Targets, Convoy Morlaix Harbour | | | | | |
| | 3 Unescorted Bomb Raids | Crossbow Targets | | | | | |
| | 4 Rodeos | North France, Brest Peninsula | | | | | |
| | 1 Ranger | Pointe de Raz | | | | | |
| | 1 Shipping Recce | Ushant, Boulogne | | | | | |
| | 1 Photo Recce | North France | 79 (89) | 1 | - | 7 (3 on ground) (21) | 6 |
| 21 | 1 Unescorted Bomb Raid | Airfields North France | | | | | |
| | 4 Rodeos | France and Holland | | | | | |
| | 2 Rangers | Airfields North West Germany and France | | | | | |
| | 1 Shipping Recce | French, Dutch and Belgian Coast | | | | | |
| | 4 Photo Recces | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| March | | | | | | | |
| 22 | 1 Rodeo 1 Shipping and Weather Recce 1 Photo Recce | North France French and Dutch Coasts North France | 51 (231) | - (3) | - | - | - |
| 23 | 5 Fighter Protection 2 Unescorted Bomb Raids 3 Protected Bomb Raids 2 Instep 1 Shipping and Weather Recce 1 Photo Recce | Creil Marshalling Yards, Beauvais/Tille, Beaumont le Roger Airfields, Haine St Pierre Marshalling Yards Crossbow Targets Creil Marshalling Yards, Crossbow Targets South West of Brest French, Dutch and Belgian Coasts France and Holland | 434 (796) | 1 | - | 2 | 3 + 27 |
| 24 | 1 Fighter Protection 5 Unescorted Bomb Raids 3 Rodeos 1 Ranger 2 Shipping Recces 1 Photo Recce | Targets in Western Germany (partial), Airfields in East France Crossbow Targets North France Airfields Denmark North France North France | 161 (544) | 2 (7) | - | 2 (3) | 4 (inc. 2 on ground) |
| 25 | 1 Unescorted Bomb Raid 3 Rodeos 2 Shipping and Weather Recces 1 Photo Recce | Crossbow Target North France North France and Holland North France, Belgium | 63 (346) | - (6) | - | - (4) | 2 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> | | | | | | | |
| 26 | 4 Unescorted Bomb Raids 3 Protected Bomb Raids 1 Fighter Protection 1 Instep 1 Shipping and Weather Recce 1 Photo Recce | Crossbow Targets Ijmuiden, Crossbow Target Crossbow Target South west of Brest North France, Belgium and Holland North France, Belgium | 384 (859) | 2 (2) | - | - (1) | 1 |
| 27 | 1 Fighter Protection 1 Instep 1 Shipping Recce 1 Rodeo 1 Photo Recce | Crossbow Target South west of Brest French and Dutch Coasts Cherbourg Peninsula North France | 58 (1024) | - (12) | - | - (38) | 10 |
| 28 | 1 Fighter Protection 1 Protected Bomb Raid 1 Unescorted Bomb Raid 2 Rodeos 1 Shipping and Weather Recce 1 Photo Recce | Airfields North France Crossbow Target Crossbow Target North France North France North France, Belgium, Holland | 150 (512) | 3 (3) | - | 4 (on ground) (30) | 22 (inc. 21 on ground) |
| 29 | 1 Roadstead 1 Shipping Recce | Convoy off Dutch Coast Dutch, Belgian, French Coasts | 43 (39) | - | - | - | - + 33 |
| 30 | 3 Rodeos 2 Rangers 1 Instep 2 Shipping and Weather Recces 1 Photo Recce | North France Airfields North France South west of Brest Belgian and French Coasts North France | 64 | 1 | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-----------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>March</u> 31 | 7 Rodeos 2 Insteps 2 Rangers 1 Roadstead 1 Shipping Weather Recce 1 Photo Recce | North France and Belgium South west of Brest North France Convoy Den Helder (no shipping seen) French and Belgian Coasts North France | 146 (114) | - | - | - | - |
| <u>April</u> 1 (1) | 3 Shipping and Weather Recces 1 Photo Recce 1 Fighter Protection | Dutch Coast (A.D.G.B.) French Coast (2nd T.A.F.) Targets in Germany (IX A.F.) | 10 6 102 | - - - | - - 30 | - - 2 | - - 1 + 5 |
| 2 | 1 Shipping Recce | Boulogne Harbour (A.D.G.B.) | 2 | - | - | - | - |
| 3 | 4 Shipping and Weather Recces | Den Helder (A.D.G.B.) | 10 | - | - | - | - |
| 4 | 1 Rhubarb 1 Shipping Recce 1 Ranger 1 Weather Recce | Transportation North France } Ostend - Dieppe } A.D.G.B. North France } " " } 2nd T.A.F. | 6 5 | - - | - - | - 1 | - - |

(1) After 31 March A.D.G.B., Form 'Y' ceased to record the operations of 2nd T.A.F. and the VIIIth and IXth U.S. Air Forces. In order to maintain the sequence A.E.A.F. Int/Ops summaries Nos. 1-123 (A.H.B./IIM/A49/1D) have been used in addition to Form 'Y' together with VIIIth U.S. Air Force Monthly Summary of Operations, 1944-1945.

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|---------------------------|------------------------------------|----------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 5 | 1 Offensive Shipping Recce 1 Ranger 1 Instep 2 Weather/Photo Recces 2 Rangers | Ushant Airfields North France South west of Brest North France " " } | 12 - - - - | - - - - - | - - - - - | 5 (3 on grd.) - - - | - - - 4 (inc. 3 on grd.) - |
| | 3 Fighter Sweeps 3 Weather/Photo Recces 1 Bomber Support | North France North west France Crossbow Targets } | 156 50 - | 2 - - | - - - | 7 (on grd.) - - | - - - |
| 6 | 3 Rodeos 2 Insteps 1 Offensive Shipping Recce 2 Weather Recces 2 Rangers 1 Shipping Recce 6 Photo Recces 3 Offensive Patrols | Airfields Cherbourg Peninsula South west of Brest South Western Approaches French and Dutch Coasts North France Channel Isles North France Evreux/Fauville, St. Andre de L'Eure Conches Airfields St. Dizier-Metz-Nancy Airfields North France Crossbow Targets } | 56 32 227 27 - | 1 - 2 - - | - - - - - | 2 (on grd.) 1 - - - | - - 1 - - - - |
| 7 | 1 Rodeo 4 Photo Recces 1 Bomber Support | St. Dizier-Metz-Nancy Airfields North France Crossbow Targets } | IX A.F. VIII A.F. - | 2 - - | - - - | - - - | - - - |
| | 1 Instep 1 Ranger 1 Rodeo | South west of Brest Bayeux-Chateau Roux Ouistreham-Dreux } | (A.D.G.B.) 2nd T.A.F. - | 2 8 1 | - - - | - - - | - - - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | | |
|----------------------------------|-----------------------------|-----------------------------------------------|------------------------|----------|---------------------------|--------------------------------|---------------------------------|------------------------------------|---|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | | |
| April 8 | 3 Weather Recces | Pas de Calais | (A.D.G.B.) | 6 | - | - | - | - | |
| | 7 Photo/Weather Recces | Crossbow Targets, Railway Centres, Beaches | 2nd T.A.F. | 186 | 1 | 10 | - | 23 (inc. 21 on grd.) + 65 | |
| | 1 Bomber Support | Hirson Railway Centre | | | | | | | |
| | 2 Rodeos | North west Germany, North France | | | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | | | | | | | |
| | 2 Bomber Support | Hasselt Railway Centre, Targets in Germany | IX A.F. | 468 | 8 | 32 | - | - | |
| | 2 Fighter Sweeps | North France | | | | | | | |
| | 11 Photo Recces | Airfields, Beaches, Rivers North France | | | | | | | |
| | 9 | 1 Ranger | Airfields North France | A.D.G.B. | 20 | - | - | 2 | - |
| | | 1 Instep | South west of Brest | | | | | | |
| 4 Shipping and Weather Recces | | Ostend, Ushant, Dieppe | | | | | | | |
| 1 Bomber Support | | Stavoran Railway Centre | 2nd T.A.F. | 50 | - | - | - | 9 (on grd.) + 20 | |
| 5 Photo Recces | | Beach Defences North France | | | | | | | |
| 1 Fighter Sweep | | North France | IX A.F. | 242 | 4 | - | 10 | - | |
| 4 Bomber Support | | Targets North west Germany | | | | | | | |
| 10 | | 1 Instep | South west of Brest | A.D.G.B. | 18 | - | - | - | - |
| | 6 Weather Recces | North France, Holland | | | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------------|-----------------------------------------------|--------------------|--------|---------------------------|--------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April 10 | 2 Bomber Support | Le Havre Charleroi Railway Centres | 174 | 3 | 63 | - | 15 (inc. 4 on grd.) |
| | 1 Roadstead | Channel Area | | | | | |
| | 3 Photo Recces | Netherlands, North France | | | | | |
| | 2 Fighter Bomber Attacks | Hasselt Railway Centre | 307 | 2 | - | 5 | - |
| | 3 Bomber Support | Namur, Evreux/Fauville | | | | | |
| | 5 Photo /Weather Recces | North France | | | | | |
| | 1 Bomber/Fighter Bomber Support | Airfields North France | 572 | 4 | - | 54 | - |
| 11 | 7 Weather Recces | North France | 30 | 1 | - | 3 | - |
| | 1 Instep | South west of Brest | | | | | |
| | 2 Bomber Support | Charleroi/Montignies, Targets N.W. Germany | | | | | |
| | 6 Photo/Weather Recces | Airfields, Rivers, Coastal Defences | 209 | - | 115 | 6 (on grd.) | 8 (inc. 3 on grd.) + 43 |
| | 2 Fighter Bomber Attacks | Crossbow Targets, Denain/ Prouvy airfield | | | | | |
| | 2 Rangers | Airfields North France | | | | | |
| | 5 Bomber Support | Crossbow Targets, Targets in N.W. Germany | 327 | 10 | - | 9 (inc. 2 on grd.) | |
| | 1 Fighter Bomber Attack | Gael | | | | | |
| | 1 Fighter Sweep | Conde - Beaumesnil- Le Havre | | | | | |
| | 5 Photo/Weather Recces | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|----------------------------------|------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 12 | 1 Fighter Protection | Crossbow Target | 27 | - | - | - | - |
| | 5 Shipping and Weather Recces | Morlaix, Brest | | | | | |
| | 1 Instep | S.W. of Brest | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | | | | | |
| | 6 Bomber Support | Haine St. Pierre, Monceau sur Sambre, Hirson, St. Ghislain | 248 | - | 47 | - | 9 + 20 |
| | | Railway Centres, Crossbow Targets, Target in Germany | | | | | |
| | 5 Photo/Weather Recces | Crossbow Targets, Airfields North France | | | | | |
| | 5 Bomber Support | Targets in Germany | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | 539 | 2 | - | 6 | - |
| | 4 Fighter Sweeps | North France | | | | | |
| | 5 Photo/Weather Recoes | Railways, Crossbow Targets, Airfields North France | | | | | |
| | | | | | | | |
| 13 | 1 Instep | S.W. of Brest | 61 | - | - | - | - |
| | 4 Rangers | Airfields North France | | | | | |
| | 2 Offensive Shipping Recces | Chamel Isles | | | | | |
| | 1 Fighter Protection | Shipping Dutch Coast | | | | | |
| | 5 Weather Recces | French and Dutch Coasts | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|----------------------------------|------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 13 | 4 Bomber Support | Batteries Dieppe, Crossbow Targets, Namur, Ronet Railway Centres | 2nd T.A.F. | 3 | 190 | 2 | 16 (inc. 10 on grd.) + 24 |
| | 2 Fighter Bomber Attacks | Crossbow Targets | | | | | |
| | 2 Rangers | Airfields France and Denmark | | | | | |
| | 4 Photo Recces | Rivers, Airfields, France, Belgium | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | IX A.F. | 3 | - | 16 | - |
| | 7 Bomber Support | Namur, Targets in Germany | | | | | |
| | 3 Photo/Weather Recces | Belgium, France | | | | | |
| 14 | 1 Photo Recce | Amiens | A.D.G.B. | - | - | 3 (on grd.) | - |
| | 1 Ranger | Danish Coast | | | | | |
| | 4 Shipping and Weather Recces | Dutch Coast | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | 2nd T.A.F. | 2 | 30 | - | - |
| | 1 Rodeo | North France | | | | | |
| | 2 Rangers | Dreux, Chartres Airfields | | | | | |
| | 1 Fighter Protection | Shipping Frisian Isles | | | | | |
| | 4 Photo/Weather Recces | Crossbow Targets, etc., France | | | | | |
| | 2 Fighter Sweeps | North France | IX A.F. | - | - | - | - |
| | 1 Fighter Bomber Attack | Thionville Airfield | | | | | |
| | 1 Fighter Escort | do. | | | | | |
| | 3 Photo/Weather Recces | Airfields North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------|---------------------------|--------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April | | | | | | | |
| 15 | 3 Shipping and Weather Recces 4 Rangers | French Coast (A.D.G.B.) Brussels, Evreux, Conches, } Echauffour Airfields Ghislain Railway Centre } North France } North France (IX A.F.) | 8 34 51 | - - 3 | - 4 - | - - - | - 5 (on grd.) + 14 - |
| 16 | 1 Shipping Recce 2 Rangers | Boulogne } Airfields North France } A.D.G.B. | 6 | - | - | 10 (7 on grd.) | - |
| 17 | 1 Ranger 1 Weather Recce 2 Photo/Weather Recces | Dreux Airfield } North France } 2nd T.A.F. Cherbourg } Le Havre } IX A.F. Creil } Crossbow Targets VIII A.F. | 10 5 33 | - - - | - - - | - - - | - - - |
| 18 | 1 Bomber Support | | | | | | |
| | 1 Ranger 3 Fighter Protection | North France } Crossbow Targets, } Two Coastal Batteries } North France } A.D.G.B. | 33 | - | - | - | - |
| | 1 Shipping Recce 4 Fighter Bomber Attacks 3 Bomber Support | Dieppe } Coastal Batteries North } France } Targets in Germany, } Coastal Batteries North } France } 2nd T.A.F. | 188 | - | 19 | 2 | 1 (on grd.) + 6 |
| | 4 Photo Recces | Crossbow Targets, Beach } Defences, North France } | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|--------------|----------------------------------|---------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|-----------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| April 18 | 2 Bomber Support | Charleroi/St. Martin Railway Centre | IX A.F. | 242 | - | - | - | - |
| | 4 Photo/Weather Recces | France and Low Countries | | | | | | |
| 19 | 5 Fighter Protection | 4 Crossbow Targets, Shipping Terschelling | A.D.G.B. | 71 | - | - | - | - |
| | 3 Shipping and Weather Recces | Ostend-Calais | | | | | | |
| | 1 Ranger | Airfields S.W. France | 2nd T.A.F. | 386 | 3 | 74 | - | 1 + 20 |
| | 2 Fighter Escort | Malines Railway Centre, Crossbow Target | | | | | | |
| | 8 Fighter Bomber Attacks | Crossbow Targets, Coastal Batteries | | | | | | |
| | 11 Photo/Weather Recces | Railways, Beach Defences, Crossbow Targets North France | | | | | | |
| | 2 Fighter Bomber Attacks | Namur, Hasselt Railway Centres | | | | | | |
| | 2 Bomber Support | Targets in Germany | IX A.F. | 192 | - | - | - | - |
| | 10 Photo/Weather Recces | Railways etc. North France | | | | | | |
| | 1 Bomber Support | Crossbow Target | VIII A.F. | 46 | - | - | - | - |
| 20 | 1 Instep | S.W. of Brest | A.D.G.B. | 83 | - | - | 1 | - |
| | 2 Rodeos | North France | | | | | | |
| | 4 Fighter Protection | Crossbow Targets | | | | | | |
| | 1 Ranger | North France | | | | | | |
| | 1 Weather Recce | " " | | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 20 Contd. | 4 Bomber Support 1 Fighter Roadstead 1 Ranger 1 Roadstead 7 Photo/Weather Recces 3 Fighter Sweeps 3 Fighter Bomber Attacks 6 Photo/Weather Recces 1 Bomber Support | Crossbow Targets Shipping Ooster Scheldt Airfields North France Schiermonikoog Island Coastal Defences, Rivers, Crossbow Targets France N.W. France Mantes/Cassicourt Railway Centre North France Crossbow Targets, Airfields North France | 2nd T.A.F. IX A.F. VIII A.F. | 258 289 499 | 1 1 - | 6 1 20 | 6 - - |
| 21 | 7 Shipping and Weather Recces 3 Rangers 1 Fighter Sweep 2 Fighter Bomber Attacks 1 Bomber Support 13 Photo/Weather Recces 4 Fighter Bomber Attacks 1 Fighter Sweep 12 Photo/Weather Recces | French and Belgian Coasts North France Orleans-Melun Crossbow Targets " " North France Montignies sur Sambre, Namur, Hasselt, Haine St. Pierre Railway Centres Eindhoven Crossbow Targets, Railways etc. France | A.D.G.B. 2nd T.A.F. IX A.F. | 23 198 270 | - 1 5 | - 1 2 | - - - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|--------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|-----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| April 22 | 1 Fighter Protection 6 Fighter Bomber Attacks | Shipping Dutch Coast Crossbow Targets, Mirville) Viaduct, Mantes-Gassicourt) Railway Centre | (A.D.G.B.) | 23 | - | - | - | - |
| | 8 Bomber Support | Crossbow Targets, Targets in Germany | 2nd T.A.F. | 375 | 1 | 23 | 3 | 4 + 25 |
| | 9 Photo/Weather Recces | France, Belgium, Holland | | | | | | |
| | 1 Fighter Sweep | Hasselt Area | | | | | | |
| | 5 Fighter Bomber Attacks | St. Ghislain, Malines | | | | | | |
| | 9 Bomber Support | Railway Centres St. Ghislain, Targets in N.W. Germany | IX A.F. | 655 | 10 | - | 2 | - |
| | 8 Photo/Weather Recces | France, Belgium, Holland) | | | | | | |
| 23 | 4 Shipping Weather Recces | Dutch Coast | A.D.G.B. | 36 | - | - | - | - |
| | 1 Fighter Protection | Crossbow Target | | | | | | |
| | 11 Fighter Bomber Attacks | Crossbow Target, Mirville) Viaduct, St. Ghislain Railway Centres, Etienville, Baupte Bridges | | | | | | |
| | 3 Rangers | Airfields France and Belgium | 2nd T.A.F. | 464 | 1 | 27 | 6 | 10 (inc. 9 on grd.) + 11 |
| | 8 Bomber Support | Railway Targets, Crossbow Targets, St. Ghislain, Namur Railway Centres | | | | | | |
| | 12 Photo/Weather Recces | Railways, Beach Defences, Crossbow Targets France and Belgium | | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------|-------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April 23 | 7 Fighter Bomber Attacks | Haine St. Pierre, Monceau sur Sambre, Namur Railway Centres | 671 | 3 | - | - | - |
| | 6 Fighter Sweeps | N.W. and Central Germany | | | | | |
| | 10 Photo/Weather Recces | North France | | | | | |
| | 1 Fighter Bomber Sweep | France, Belgium, Germany | 340 | 7 | - | 38 | - |
| 24 | 1 Fighter Protection | Shipping Dutch Coast | 30 | - | - | - | - |
| | 4 Shipping and Weather Recces | " " " | | | | | |
| | 4 Offensive Patrols | Dreux, Coastal Battery, Mirville Viaduct, Laon Area | | | | | |
| | 3 Fighter Bomber Attacks | Amiens Railway Centre, Canal Du Plessis, St. Sauveur Bridge | 245 | - | 56 | 2 | 6 (inc. 5 on grd.) + 53 |
| | 1 Fighter Roadstead | Dieppe Harbour | | | | | |
| | 3 Fighter Escort | U.S. Bomber Targets France and Germany | | | | | |
| | 7 Photo/Weather Recces | North France | 402 | 2 | - | 9 (inc. 1 on grd.) | |
| | 1 Fighter Bomber Attack | Louvain Railway Centre | | | | | |
| | 8 Bomber Support | Targets in Germany | | | | | |
| | 6 Photo/Weather Recces | North France and Belgium | | | | | |

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| April 25 | 1 Rodeo 4 Rangers 1 Instep 1 Shipping and Weather Recce 1 Offensive Shipping Recce 3 Rangers 1 Rodeo 3 Fighter Sweeps 16 Fighter Bomber Attacks 6 Bomber Support 9 Photo/Weather Recces 1 Fighter Sweep 2 Bomber Support 13 Fighter Bomber Attacks 7 Photo/Weather Recces 2 Bomber Support | North France North France S.W. of Brest North France St. Malo North France N.W. Germany North France Crossbow Targets, Folligny and other Bridges North France Crossbow Targets, Targets in Germany North France Bayeux-Morlaix Targets in Germany Malines, St. Ghislain Railway Centres, Coastal Batteries North France Airfields, Crossbow Targets North France | A.D.G.B. 2nd T.A.F. IX A.F. VIII A.F. | 37 631 248 638 | - 3 2 - | - 10 - - | - 5 18 (inc. 16 on grd.) 16 | - 26 (inc. 21 on grd.) - |
| 26 | 5 Shipping and Weather Recces 1 Ranger 1 Fighter Roadstead 3 Fighter Protection | St. Malo, St. Peter Port, Sept Iles-Ile de Batz Brest Peninsula Shipping Morlaix Crossbow Targets, Shipping Dutch Coast | A.D.G.B. | 76 | 1 | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|----------------------------------|-------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 26 | 10 Fighter Bomber Attacks | Crossbow Targets, Mirville Viaduct, Bridges North France, Mesnil- Mauger Station | 2nd T.A.F. | 190 | - | 6 | 1 |
| | 4 Offensive Patrols | Le Havre, Charleroi, Cambrai, Juvin-court | | | | | |
| | 3 Bomber Escort | St. Ghislain | | | | | |
| | 9 Photo/Weather Recces | North France | | | | | |
| | 5 Fighter Bomber Attacks | Mantes-Gassicourt, Louvain Railway Centre | | | | | |
| 27 | 2 Offensive Patrols | Fecamp-Rheims-Le Treport | IX A.F. | 434 | - | - | - |
| | 7 Bomber Escort | Mantes-Gassicourt, Louvain, Lille, Targets in Germany | | | | | |
| | 18 Photo/Weather Recces | France, Belgium | | | | | |
| | 1 Fighter Bomber Attack | Cormeilles-en-Vexin Airfield | | | | | |
| | 9 Shipping and Weather Recces | Ushant, Morlaix, Channel Isles, Dieppe, Ostend, Belgian Coast | | | | | |
| 27 | 2 Fighter Roadsteads | Shipping Morlaix | A.D.G.B. | 132 | - | - | - |
| | 1 Offensive Shipping Recce | Bay of Biscay | | | | | |
| | 3 Fighter Protection | Shipping Hook-Texel, Bethune Railway Centres | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| April 27 | 15 Fighter Bomber Attacks | Crossbow Targets, Baupte, Etienville, Pont de la Rocque Bridges, Mirville Viaduct, Mesnil Mauger Railway Centre, Coastal Batteries Airfields North France | | | | | |
| | 3 Rangers 1 Offensive Patrol 4 Bomber Support | Bethune, Hendiere, U.S. Bomber Targets France North France | 2nd T.A.F. | 639 | 3 | 31 | 5 |
| | 15 Photo/Weather Recces 10 Fighter/Bomber Attacks | Charleroi-Montignies, Haine St. Pierre, St. Ghislain, Creil, Mantes-Gassicourt | IX A.F. | 475 | 3 | - | - |
| | 5 Fighter Escort 7 Photo/Weather Recces 2 Bomber Support | North France Crossbow Targets, Airfields North France | VIII A.F. | 1005 | 6 | - | 7 |
| | 1 Rodeo | Corneilles-en-Vexin Airfield | | | | | |
| 28 | 4 Shipping and Weather Recces 1 Rodeo | French and Belgian Coasts Cherbourg Peninsula | A.D.G.B. | 16 | - | - | - |

23
(inc. 18
on grd.)

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 28 Contd. | 4 Fighter Bomber Attacks 3 Rangers 2 Offensive Patrols 5 Bomber Escort | Baupre Bridge, Crossbow Targets Airfields North France Coast Line North France Mantes Cassicourt Railway Centre, Crossbow Targets, U.S. Bomber Targets France | 356 | 2 | 14 | 2 | 5 (on grd.) |
| | 7 Photo/Weather Recces 5 Fighter Bomber Attacks | North France Laon/Athies, Laon/ Couvron, Rheims/Champagne, Juvincourt, Creil Airfields | | | | | |
| | 1 Fighter Sweep 4 Photo/Weather Recces 3 Bomber Support | Rheims area North France Crossbow Targets, Airfields North France | 205 | - | - | - | - |
| | | | 534 | 3 | - | 9 | - |
| 29 | 3 Fighter Roadsteads 3 Shipping and Weather Recces | Destroyer Ile Vierge French Coast, Ile Vierge-St. Malo | 94 | - | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------|----------------------------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>April</u> 29 Contd. | 4 Fighter Bomber Attacks | Abancourt Railway Centre, Etretat Flak Position, Mesnil Mauger Railway Centre, Etienville Bridge | 367 | 2 | 43 | 2 | 6 + 24 |
| | 3 Fighter Roadsteads | St. Malo, Destroyer Ile Vierge | | | | | |
| | 2 Rangers | Tours, Munster, Eindhoven Airfields | | | | | |
| 30 | 4 Fighter Escort | Targets in Germany, Mantes Gassicourt, Creil, Cambrai, Abancourt Railway Centres | 284 | 8 | - | 9 (inc. 3 on grd.) | - |
| | 10 Photo/Weather Recces | North France | | | | | |
| | 2 Fighter Bomber Attacks | Evreux/Fauville, Rennes Railway Centres | | | | | |
| | 4 Fighter Escort | Targets in Germany | | | | | |
| | 4 Photo/Weather Recces | France | | | | | |
| 30 | 1 Offensive Shipping Recce | Destroyer Lezardrieux | 39 | 2 (1 Pilot saved) | - | - | - |
| | 1 Fighter Protection | Ushant-Sept Ile | | | | | |
| | 3 Shipping and Weather Recces | St. Malo, North France | | | | | |
| | 1 Rodeo | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| <u>April</u> 30 Contd. | 18 Fighter Bomber Attacks | Crossbow Targets, Baupre Bridge, Fecamp, Abancourt Railway Centres, Battery Fontenay do. | 2nd T.A.F. | 741 | 3 | 25 | 5 (on grd.) | + 13 |
| | 5 Fighter Escort 1 Ranger | Metz Area | | | | | | |
| | 10 Weather/Shipping Recces | North France | | | | | | |
| | 8 Fighter Bomber Attacks | Corneilles, Creil, Arras, Cambrai, Douai, Mont Cassicourt, Bethune do. | | | | | | |
| | 3 Fighter Escort 1 Fighter Sweep 16 Photo/Weather Recces 3 Bomber Support | Tours-Chartres-Rouen Railways, Crossbow Targets etc. France Crossbow Targets, Airfields North France | VIII A.F. | 675 | - | - | - | - |
| | | | | | | | | |
| <u>May</u> 1 | 1 Fighter Protection | Railway Targets North France | A.D.G.B. | 22 | - | - | - | - |
| | 2 Shipping Recces | Calais-Dunkirk, Destroyer Pontusval | | | | | | |
| | 1 Weather Recce | North France | | | | | | |

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 1 Contd. | 2 Fighter Bomber Attacks 3 Fighter Sweeps 10 Fighter Escort | Crossbow Targets, Abancourt Railway Centre North France Hirson, Mantes Gassicourt, Douai, Abancourt, Charleroi Cambrai Evreux, Valenciennes Railway centres 2nd T.A.F. | 414 | - | 10 | - | 1 (on grd.) + 5 |
| | 4 Photo/Weather Recces 14 Fighter Bomber Attacks | North France Haine St. Pierre, Arras, Namur, St. Ghislain, Amiens, Valenciennes Railway Centres, Orly Airfield IX A.F. | 1,030 | 1 | - | - | - |
| | 7 Fighter Sweeps 14 Bomber Escort 9 Photo/Weather Recces 2 Bomber Support | North France and Netherlands Railway Targets North France Railway Centres, etc. North France Crossbow Targets, Railway centres France, Belgium VIII A.F. | 766 | 3 | - | 6 | - |
| 2 | 1 Shipping Recce 5 Weather Recces 1 Rodeo 1 Fighter Roadstead 1 Ranger 2 Fighter Protections | Dunkirk North France Calais-Flushing Shipping Lezardrieux Airfields North Germany Valenciennes, Blanc Misseron Railway Centres A.D.G.B. | 127 | - | - | 11 (10 on grd.) | - |

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APPENDIX NO. 29

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 2 Contd. | 7 Fighter Bomber Attacks | Baupre, Etienville Bridges, Mirville Viaduct, Mantes Cassicourt, Mesnil/Mauger Railway Centres Cambrai-Brussels Tours Area Namur, Busigny, Valenciennes Railway Centres, Mirville Viaduct | | | | | |
| | 1 Fighter Sweep | | | | | | |
| | 1 Ranger | | | | | | |
| | 4 Fighter Escort | | | | | | |
| | 9 Photo/Weather/ Shipping Recces | North France | | | | | |
| | 10 Fighter Bomber Attacks | Le Mans, Aulnoye, Tergnier, Hasselt, Nantes, Tourcoing, Charleroi, St. Martin/ Montignies, Somain Railway Centres, Peronne Airfield | 2nd T.A.F. | 530 | 3 | 12 | - |
| | | do. | | | | | |
| | 10 Fighter Escort | North France | IX A.F. | 639 | 1 | - | 4 |
| | 3 Fighter Sweeps | " " | | | | | |
| | 7 Photo/Weather Recces | | | | | | |
| | 1 Bomber Support | Crossbow Target | VIII A.F. | 97 | - | - | - |
| 3 | 2 Shipping Recces | Cherbourg | | | | | |
| | 1 Rodeo | North France | A.D.G.B. | 94 | - | - | - |
| | 2 Roadsteads | Destroyer Pontusval | | | | | |

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APPENDIX NO. 29

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|-----------------------------|-------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 3 Contd. | 8 Fighter Bomber Attacks | Crossbow Targets, Baupte, Touffreville en Eu Bridges, Formerie Railway Centre | 783 | 4 | 4 | - | 1 (on grd.) |
| | 1 Fighter Roadstead | Destroyer Ile de Vierge | | | | | |
| | 1 Fighter Sweep | Laval-Rennes-Chateaufneuf, | | | | | |
| | 1 Fighter Escort | Orleans, Villaroche, Beaumont Airfields, Abancourt Railway Centre | | | | | |
| | 9 Photo/Weather Recces | North France | 137 | - | - | - | - |
| | 1 Fighter Bomber Attack | Crossbow Targets | | | | | |
| | 1 Fighter Sweep | Bayeux-Nantes | | | | | |
| | 11 Photo/Weather Recces | North France | | | | | |
| 4 | 1 Roadstead | Merchant Vessel Ostend (abortive) | 15 | - | - | 4 | - |
| | 3 Rangers | Airfields North France | | | | | |
| | 3 Shipping Recces | Pontusval, Cherbourg, Guernsey, Casquettes | | | | | |
| | 2 Fighter Bomber Attacks | Crossbow Targets | 350 | 1 | 35 | - | 4 (on grd.) + 4 |
| | 1 Fighter Escort | " " | | | | | |
| | 5 Photo/Weather Recces | North France | | | | | |
| | 1 Fighter Sweep | Ghent Area | 211 | - | - | 1 | - |
| | 3 Fighter Escort | Le Treport, Etaples, Bethune Railway Centres, | | | | | |
| | 10 Photo/Weather Recces | Targets in Germany North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 5 | 1 Offensive Shipping Recce 3 Weather Recces | Dutch Coast Boulogne, Cherbourg, Gravelines | A.D.G.B. | 16 | - | (4 on grd.) | - |
| | 2 Shipping Recces 1 Ranger | French and Belgian Coasts Metz Airfield | | | | | |
| | 2 Fighter Bomber Attacks | Hazebrouck, Motteville Railway Centres | | | | | |
| | 5 Fighter Sweeps 1 Fighter Escort | North France Cambrai Railway Centre | 2nd T.A.F. | 378 | 1 | 30 | 4 |
| | 4 Photo/Weather Recces 2 Fighter Bomber Attacks | North France Valenciennes, Somain Railway Centres | | | | | |
| | 2 Fighter Escort 2 Weather Recces | do. North France | | | | | |
| | 6 | 8 Rodeos 3 Shipping/Weather Recces | A.D.G.B. | 81 | - | - | 1 |
| | 2 Rhubarbs 2 Fighter Sweeps | Airfields North France Douai, Metz, Rheims-Soissons | | | | | |
| | 4 Rangers 2 Fighter Escort | Airfields Denmark and North France Conteville Coastal Battery | | | | | |
| | 3 Photo/Weather Recces 1 Fighter Sweep 1 Fighter Escort 3 Photo/Weather Recces | North France Nantes-Rennes Crossbow Target North France | IX A.F. | 138 | 1 | 10 | (2 on grd.) |
| | | | | | | | |
| | | | | | | | |
| | | | IX A.F. | 113 | - | - | 1 (on grd.) |
| | | | | | | | |
| | | | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 6 | 1 Fighter Bomber Attack | Crossbow Targets | VIII A.F. | 118 | - | - | - |
| Contd. 7 | 6 Shipping Recces | Calais, Boulogne, Ile Vierge, Pontusval, Lezardrieux, St. Malo, St. Peter Port. | | | | | |
| | 4 Weather Recces | North France | A.D.G.B. | 94 | - | - | - |
| | 2 Rangers | " " (abortive) | | | | | |
| | 1 Rodeo | " " | | | | | |
| | 2 Fighter Protection | Railway and Crossbow Targets North France | | | | | |
| | 19 Fighter Bomber Attacks | Crossbow Targets, Oissel Bridge, Arras, Motteville, Formerie Railway Centres, Tancarville Bridge and Lock, Cap du Hode Radar Station, Montfort Oil Storage | 2nd T.A.F. | 786 | 4 | 73 | 3 |
| | 3 Fighter Sweeps | Munster, Oldenburg, Paris | | | | | |
| | 7 Fighter Escort | Targets in Germany, Cambrai, Valenciennes, Aerschot Railway Centres, Crossbow Targets | | | | | |
| | 5 Photo/Weather Recces | North France | | | | | 4 (inc. 1 on grd.) |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|--------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| May 7 Contd. | 8 Fighter Bomber Attacks | Rouen, Vernon, Mantes Gassicourt, Oissel, Orival Bridges, Namur, Tourcoing, Bethune Railway Centres, St. Andre sur L'Eure Airfield | IX A.F. | 1,001 | 10 | - | 1 | - |
| | 6 Fighter Sweeps 10 Photo/Weather Recces 1 Bomber Support | North France " " Liege Railway Centre | | | | | | |
| 8 | 3 Shipping Recces 1 Weather Recce 4 Rodeos 6 Fighter Protection | Dieppe, Denmark, Boulogne Brussels North France Crossbow Targets, Railways, Coastal Batteries North France, Dinard/Pleurduit Airfields | A.D.G.B. | 215 | - | - | - | - |
| | 14 Fighter Bomber Attacks | Crossbow Targets, Douai, Moorsele, Mardyck Airfields, Serqueux, Aerschot, Bethune, Busigny Railway Centres do. | | | | | | |
| | 4 Fighter Escort 4 Photo/Weather Recces | North France | 2nd T.A.F. | 880 | 2 | 63 | 1 | 4 (inc. 2 on grd.) + 42 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. . | | G.A.F. | | |
|--------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 8 Contd. | 7 Fighter Bomber Attacks | Mantes Gassicourt, Origny, Mezieres, Sedan Bridges, St. Andre sur L'Eure, Conches Airfields, Cambrai, Denain Railway Centres | 874 | 4 | - | 9 | - |
| | 5 Fighter Sweeps | North France | | | | | |
| | 5 Fighter Escort | VIII A.F. Targets, Crossbow Targets | | | | | |
| | 20 Photo/Weather Recces | North France, Belgium, etc.) | 82 | - | - | - | - |
| | 2 Bomber Support | Railway Centres, Crossbow Targets France and Belgium | | | | | |
| | | | | | | | |
| 9 | 3 Offensive | Nieuport-Westerschelde, | 143 | 2 | - | - | - |
| | Shipping Recces | Ostend, Dunkirk | | | | | |
| | 5 Shipping Recces | French and Dutch Coasts | | | | | |
| | 1 Weather Recce | North France | | | | | |
| | 6 Rodeos | " " | | | | | |
| | 1 Fighter Protection | Crossbow Targets | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 9 Contd. | 17 Fighter Bomber Attacks | Crossbow Targets, Foret d' Arques Ammunition Dump, St. Denis d'Arclon Railway Station, Serqueux, Rouen, Sotteville Railway Centres, Malaunay, Orival, Tancarville Bridges, Long Lock | 2nd T.A.F. | 3 | 6 | - | 29 (inc. 24 ground) |
| | 2 Fighter Sweeps | N.W. Germany, North France | | | | | |
| | 6 Fighter Escort | Valenciennes, Aerschot, Bussigny Railway Centres, Coastal Batteries | | | | | |
| | 3 Photo/Weather Recces | North France | IX A.F. | 5 | - | 2 | - |
| | 12 Fighter Bomber Attacks | Crossbow Targets, Calais, Coastal Batteries, Arras, Monceau sur Sambre, Mantes Gassicourt, Mezieres Bridges | | | | | |
| | 6 Fighter Sweeps | North France and Belgium | | | | | |
| | 6 Fighter Escort | VIII and IX U.S. Bomber Command Targets | VIII A.F. | 7 | - | 4 | - |
| | 17 Photo/Weather Recces | North France | | | | | |
| | 1 Bomber Support | Airfields, Railway Centres, France, Belgium, Luxembourg | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 10 | 5 Insteps 6 Shipping Recces 1 Weather Recce 1 Rodeo 3 Fighter Protection 16 Fighter Bomber Attacks 2 Fighter Sweeps 3 Fighter Escort 9 Photo/Weather Recces 10 Fighter Bomber Attacks 5 Fighter Sweeps 10 Fighter Escort 16 Photo/Weather Recces 1 Bomber Support | S.W. of Brest North France, Holland North France " " A.D.G.B. Railway Targets North France Crossbow Targets, Long Lock, Orival, Bolleville, Malaunay Bridges, Amiens/Longeau Railway Centre, Foret d' Arques Ammunition Dump Florennes, Brussels, Creil-Rheims-Laon VIII and IX U.S. Bomber Command Targets North France Valenciennes Railway Centre, Mantes Cassicourt Railway Bridge, Busigny, Bethune, Cambrai, Tourcoing Railway Centres, Mohan Bridge, Lille, Bapaume, Rheims/Champagne Airfields North France Railway Centres North France North France Railways, Airfields, France and Belgium | | | | | |
| | | | 140 | 1 | - | - | - |
| | | | 704 | 5 | 10 | 3 | 3 (inc. 2 on grd.) + 9 |
| | | | 1,520 | 4 | - | 1 | - |
| | | | 85 | - | - | - | - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| <u>May</u> 11 | 2 Weather Recces 2 Shipping Recces 2 Rangers 5 Rodeos 2 Fighter Protection 24 Fighter Bomber Attacks | North France " " Transportation North France North France Douai Marshalling Yards Crossbow Targets, Charleroi/St. Martin, Valenciennes, Douai, Formerie, Touffreville, Charleroi/Monceau Railway Centres, Cap d' Antifer, Le Treport Radar Station Crossbow Targets North France Crossbow Targets, Arras, Bethune, Tournai, Cambrai, Lille, Criel, Valenciennes, Monceau sur Sambre Railway Centres | A.D.G.B. | 191 | - | - | - |
| | 3 Fighter Escort 4 Photo/Weather Recces 9 Fighter Bomber Attacks | 2nd T.A.F. IX A.F. | 719 | 4 | 55 | - | 8 (inc. 4 on grd.) + 9 |
| | 19 Fighter Escort | IX U.S. Bomber Command and Fighter Bomber Targets Fecamp-Angers | IX A.F. | 1,143 | 4 | - | 13 |
| | 1 Fighter Sweep 8 Photo/Weather Recces 2 Bomber Support | North France Railway Centres, France and Belgium | VIII A.F. | 718 | 5 | - | 8 |

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 12 | 2 Weather Recces | North French Coast | 168 | 1 | - | - | - |
| | 5 Shipping Recces | North France | | | | | |
| | 4 Rodeos | " " | | | | | |
| | 1 Fighter Ramrod | Crossbow Target North France | | | | | |
| | 2 Fighter Roadsteads | St. Malo | | | | | |
| | 6 Fighter Protection | Crossbow Targets North France | 924 | 1 | 8 | 1 | 6 (inc. 4 on grd.) + 68 |
| | 36 Fighter Bomber Attacks | Crossbow Targets Railways North France, Fermanville/Cherbourg Radar Station, La Riviere, Asnelles sur Mer Coastal Batteries | | | | | |
| | 1 Ranger | Denmark | | | | | |
| | 7 Fighter Escort | Railway Targets, VIII U.S. Bomber Command Targets | | | | | |
| | 5 Photo/Weather Recces | North France | | | | | |
| | 8 Fighter Bomber Attacks | Railway Bridge Liege, Hasselt, Etaples, Herenthals Bridges | 657 | 13 | - | 22 (inc. 15 on grd.) | - |
| | 14 Fighter Escort | VIII and IX U.S. Bomber Command Targets | | | | | |
| | 1 Fighter Sweep | Ghent Area | | | | | |
| | 19 Photo/Weather Recces | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 13 | 5 Shipping Recces 2 Weather Recces 1 Instep 2 Rodeos 4 Fighter Protection | French and Dutch Coasts Ile Brehat-Ile Vierge S.W. of Scillies North France Tourcoing Railway Yards, Convoy near Rouen, Douai Railway Yards | A.D.G.B. | 198 | - | - | - |
| | 37 Fighter Bomber Attacks 5 Fighter Sweeps 9 Photo/Weather Recces 4 Fighter Bomber Attacks | Rail Centres and Road Crossings North France North France, N.W. Germany Namur, Tournai Railway Centres, Herenthals Bridge, Airfields N.W. Germany | | | | | |
| | 14 Fighter Escort | VII and IX U.S. Bomber Command Targets | 2nd T.A.F. | 772 | 3 | 271 | - 3 (on grd.) + 21 |
| | 22 Photo/Weather Recces | North France and Netherlands | | | | | |
| | | | IX A.F. | 727 | 9 | - | 28 (inc. 15 on grd.) |
| | | | | | | | |
| 14 | 2 Instep 6 Shipping Recces 3 Weather Recces 5 Rodeos 1 Rhubarb 2 Rangers 1 Fighter Protection | S.W. of Scillies French and Dutch Coasts " " " " North France Transportation North France Cabourg, Hagenau, Luxeuil Airfields Convoy North Ameland | A.D.G.B. | 87 | 1 | - | 2 (1 on grd.) |
| | | | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 14 Contd. | 1 Fighter Bomber Attack 2 Offensive Patrols 3 Photo/Weather Recces 9 Photo/Weather Recces | Douvres/Caen Radar Station Caen, Paris Area North France North France | 2nd T.A.F. (IX A.F.) | 34 10 | - - | 5 - | - 2 (on grd.) |
| 15 | 5 Shipping Recces 3 Weather Recces 1 Roadstead 2 Fighter Protection 2 Rangers 6 Fighter Bomber Attacks 2 Fighter Sweeps 8 Fighter Escort 3 Photo/Weather Recces 2 Fighter Bomber Attacks 1 Fighter Sweep 3 Fighter Escort 8 Photo/Weather Recces 1 Bomber Support | French and Dutch Coasts North France Destroyer/Minesweeper Abervrach Railway Facilities North France Transportation and Airfields North France Gisors, Clermont Railway Centres, Douvres/La Deliverance Radar Station North France IX U.S. Bomber Command and Fighter Bomber Targets North France Gael, Chartres Airfields South of France Gael, Chartres, Douvain- Prouvy Airfields North France Crossbow Target | A.D.G.B. 2nd T.A.F. IX A.F. VIII A.F. | 42 354 117 97 | - 1 - 1 | - 8 2 (on grd.) - | - 1 (on grd.) - - |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------|---------------------------|--------------------------------|----------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 16 | 3 Weather Recces 3 Shipping Recces 2 Rangers 3 Fighter Sweeps 1 Ranger 4 Photo/Weather Recces | North France French and Belgian Coasts Airfields N.W. Germany North France Chateaudun/Orleans Airfield North France | A.D.G.B. 2nd T.A.F. | 20 58 | 1 - | - 19 | 8 (11 on grd.) - - |
| 17 | 5 Shipping Recces 3 Weather Recces 1 Rhubarb 2 Insteps 1 Rodeo 1 Ranger 1 Ranger 1 Photo Recce 1 Offensive Patrol | French Coast " " Shipping Dunkirk - Calais N.W. of Scillies North France Chievres Airfield (abortive) Denmark Railway Chartres-Le Mans North France | A.D.G.B. 2nd T.A.F. (IX A.F.) | 40 9 2 | - 2 - | - 6 - | - - + 6 - |
| 18 | 2 Offensive Shipping Recces 1 Rodeo 3 Weather Recces 7 Shipping Recces 12 Offensive Patrols 4 Photo/Weather Recces | Nieuport-Hook/Calais- Trouville North France " " Chanel Isles, French and Belgian Coasts North France " " | A.D.G.B. 2nd T.A.F. | 42 87 | - 2 | - 5 3 | - - 2 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 19 | 5 Shipping Recces | French and Belgian Coasts | 594 | 2 | 127 | 2 | 3 + 56 |
| | 2 Weather Recces | North France | | | | | |
| | 2 Rangers | Transportation North France | | | | | |
| | 7 Rodeos | North France | | | | | |
| | 5 Fighter Protection | 3 Crossbow Targets, Dieppe, Shipping Ushant | | | | | |
| | 30 Fighter Bomber Attacks | Crossbow Targets, Sortosville-en-Beaumont, Lanmeur, Caen/Douvres, Buchy Radar Stations, Formerie, Le Grand Verderet Railway Centres, Somercoy Tunnel, Lebiez, Bailly-en- Riviere, St. Vaast Chateaux (H.Q.), St. Denis d' Arclon Railway Centre | 823 | 2 | - | 19 (inc. 13 on grd.) | - |
| | 19 Offensive Patrols | North France | | | | | |
| | 9 Photo/Weather Recces | North France | | | | | |
| | 4 Fighter Escort | Targets in Germany | | | | | |
| | 11 Photo/Weather Recces | North France | | | | | |
| | 13 Fighter Bomber Attacks | " " | 4 | - | - | - | - |
| | 1 Fighter Bomber Attack | Landegg Lock | | | | | |
| | | | | | | | |
| 20 | 9 Weather Recces | North France, Belgium | 145 | - | - | - | - |
| | 6 Shipping Recces | French and Belgian Coasts | | | | | |
| | 5 Fighter Protection | Coastal Batteries | | | | | |
| | 2 Rodeos | North France | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|---------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|----------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| May 20 Contd. | 33 Fighter Bomber Attacks | Crossbow and Railway Targets North France, Touffreville-sur-Eu Railway Bridge, St. Vaast Chateau Railways etc. North France | 2nd T.A.F. | 758 | 1 | 2 | - | 14 (inc. 12 on grd.) |
| | 8 Offensive Patrols | Creil Airfield | | | | | | |
| | 1 Fighter Escort | Ghent, St. Martin, Valenciennes, Bethune, Tournai, Busigny, Mons, Cambrai, Arras Railway Centres | | | | | | |
| | 11 Fighter Bomber Attacks | North France | IX A.F. | 1,493 | 3 | - | - | - |
| | 3 Fighter Sweeps | VIII and IX U.S. Bomber Command Targets | | | | | | |
| | 10 Fighter Escort | North France | VIII A.F. | 597 | 4 | - | 3 | - |
| | 9 Photo/Weather Recces | Airfields North France | | | | | | |
| | 1 Bomber Support | | | | | | | |
| 21 | 4 Weather Recces | North France | A.D.G.B. | 222 | 5 | - | 2 | - |
| | 4 Shipping Recces | Dutch and Belgian Coasts | | | | | | |
| | 18 Offensive Patrols | Transportation and other Targets, Denmark | | | | | | |
| | 1 Fighter Protection | Coastal Batteries North France | 2nd T.A.F. | 240 | 17 | 5 | - | - |
| | 1 Fighter Bomber Attack | Gun Position Bayeux | | | | | | |
| | 20 Offensive Patrols | Railways North France | | | | | | |
| | 3 Photo/Weather Recces | North France | IX A.F. | 704 | 10 | - | 2 (on grd.) | - |
| | 13 Offensive Patrols | Railways North France | | | | | | |
| | 2 Fighter Escort | Abbeville Airfield | VIII A.F. | 47 | - | - | - | - |
| | 2 Weather Recces | North France | | | | | | |
| | 1 Bomber Support | Crossbow Target | | | | | | |

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 23 | 7 Offensive Patrols | Transportation, Shipping and other Targets North France | 174 | 1 | - | - | - |
| | 2 Roadsteads | Shipping Lezardrieux | | | | | |
| | 4 Weather Recces | North France | | | | | |
| | 10 Shipping Recces | French, Dutch, Belgian Coasts | | | | | |
| | 3 Fighter Protection | Shipping Lezardrieux, Dinard/Pleurtuit Airfields, Tactical Targets North France | 332 | 4 | 7 | - | 4 (inc. 3 on grd.) |
| | 16 Fighter Bomber Attacks | Pointe et Raz de la Percee, Lanmeur, Caen/Douvres, Cap d'Antifer, St. Valerie- en-Caux, Arromanches, Le Treport, Cap de la Hague, Cherbourg/ Fermanville, Fecamp, Varengeville Radar Stations | | | | | |
| | 5 Offensive Patrols | Transportation etc. North France | | | | | |
| | 13 Photo/Weather/ Shipping Recces | North France | | | | | |
| | 5 Fighter Bomber Attacks | Railway Targets N.E. France | 961 | 10 | - | - | - |
| | 9 Fighter Escort | VIII and IX Bomber Command Targets (Airfields) | | | | | |
| | 9 Photo/Weather Recces | North France | 634 | 1 | - | - | - |
| | 1 Bomber Support | Metz, Nancy, Epinal | | | | | |
| | 1 Fighter Bomber Attack | Railway Centres Hasselt Bridge | | | | | |

A.D.G.B.

2nd T.A.F.

IX A.F.

VIII A.F.

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|------------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 24 | 4 Weather Recces | North France | 315 | - | - | - | - |
| | 5 Shipping Recces | French, Dutch, Belgian Coasts | | | | | |
| | 9 Offensive Patrols | Miscellaneous Targets | | | | | |
| | 2 Fighter Protection | North France | | | | | |
| | 26 Fighter Bomber Attacks | Evreux/Fauville Coastal Batteries, Lille/Vendeville Airfield | 720 | 4 | - | 1 (on grd.) | 22 (inc. 19 on grd.) + 35 |
| | 10 Fighter Bomber Attacks | Crossbow Targets, Buchy, Le Grand Verderet, Gamaches, Douai, Arras, Bethune Railway Centres, Hesdin, Saleux Petrol Dumps, Pointe et Raz de la Percee, Cap de la Hague, Boulogne, Cap de la Heve Radar Station, Neufchatel H.Q. | | | | | |
| | 20 Fighter Escort | Crossbow Targets, Gael, Remes, Vannes, St. Brieuc Airfields | 1,159 | 7 | - | 1 | - |
| | 7 Photo/Weather Recces | VIII and IX U.S. Bomber Command Targets | | | | | |
| | 2 Fighter Bomber Attacks | North France | 216 | 3 | - | 5 | - |
| | | Creil, Soissons, Verberie, Beaumont-sur-Oise Bridges | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 25 | 8 Shipping Recces | French, Dutch, Belgian Coasts | 225 | - | - | - | - |
| | 1 Weather Recce | North France | | | | | |
| | 5 Offensive Patrols | Shipping and Transportation North France | | | | | |
| | 3 Fighter Protection | Shipping Channel Isles, Chievres, Lille/Nord Airfields | | | | | |
| | 9 Fighter Bomber Attacks | Crossbow Targets, Armentieres, Gisors, St. Ghislain, Buchy, Amiens, Longeau, Motteville Railway Centres, St. Cicely Gun Positions | 329 | 1 | 7 | - | 33 (inc. 13 on grd.) |
| | 2 Bomber Escort | Lille/Nord Airfield, VIII U.S. Air Force Targets | | | | | |
| | 7 Photo/Weather Recces | North France and Low Countries | | | | | |
| | 8 Fighter Bomber Attacks | Ghent/Brussels Railway Centre, Le Mesnil Andelee, Hasselt, Conflans, St. Honorine Bridges | 828 | 4 | - | - | - |
| | 9 Fighter Escort | VIII and IX U.S. Bomber Command Targets | | | | | |
| | 19 Photo/Weather Recces | North France | 536 | 12 | - | 12 | - |
| | 1 Bomber Support | Airfields, Railway centres) France | | | | | |
| | | A.D.G.B. | | | | | |
| | | 2nd T.A.F. | | | | | |
| | | IX A.F. | | | | | |
| | | VIII A.F. | | | | | |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 26 | 2 Weather Recces | North France French and Belgian Coasts Airfields N.W. Germany (abortive) | A.D.G.B. | 14 | - | - | - |
| | 4 Shipping Recces | | | | | | |
| | 1 Ranger | | | | | | |
| | 1 Fighter Bomber Attack | Ault Coastal Battery North France Creil, Evreux/Fauville, Corneilles en Vexin Airfields, Oissel, Le Manoir Bridges | 2nd T.A.F. | 24 | 34 | - | 8 (inc. 7 on grd.) |
| | 3 Photo/Weather Recces | | | | | | |
| | 3 Fighter Bomber Attacks | | | | | | |
| 27 | 9 Fighter Escort | Airfields and Bridges North France | IX A.F. | 430 | 3 | 14 (on grd.) | - |
| | 2 Weather Recces | | | | | | |
| | 2 Fighter Sweeps | North France Holland, North France | VIII A.F. | 57 | - | - | - |
| | 2 Weather Recces | North France French and Belgian Coasts Corneilles en Vexin Airfields, Evreux-Fauville Coastal Batteries, Military Target North France | A.D.G.B. | 257 | - | - | - |
| | 11 Shipping Recces | | | | | | |
| | 3 Fighter Protection | | | | | | |
| | 9 Offensive Patrols | Airfields, Transportation North France and Germany | | | | | |

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| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | | |
|---------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|-----------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) | |
| May 27 Contd. | 20 Fighter Bomber Attacks | Crossbow Targets Cherbourg/ Cap Levy, Ormonville-la- Rogue/Asselins, Fruges, Bailly-en-Riviere, Berck, Cayaux, Guernsey Radar Stations, Cambrai, Douai Railway Centres | 2nd T.A.F. | 622 | - | 30 | - | 10 (inc. 7 on grd.) + 25 |
| | 5 Fighter Escort | Creil Railway Centre, VIII U.S. Air Force Targets | | | | | | |
| | 1 Offensive Patrol | North France | | | | | | |
| | 5 Weather Recces | " " | IX A.F. | 748 | 6 | - | 4 (on grd.) | - |
| | 1 Fighter Bomber Attack | Rouen Bridge | | | | | | |
| | 15 Fighter Escort | VIII and IX U.S. Bomber Command Targets | | | | | | |
| | 6 Photo/Weather Recces | North France | VIII A.F. | 612 | 6 | - | 44 | - |
| | 1 Bomber Support | North France, Germany | | | | | | |
| 28 | 2 Weather Recces | North France | A.D.G.B. | 282 | 1 | - | 2 (on grd.) | - |
| | 10 Shipping Recces | French, Dutch, Belgian Coasts | | | | | | |
| | 9 Offensive Patrols | Transportation and other Targets North France | | | | | | |
| | 1 Offensive Shipping Reoce | Shipping Batz, Abervrach | | | | | | |
| | 10 Fighter Protection | Coastal Batteries North France | | | | | | |

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APPENDIX NO. 29

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 28 Contd. | 32 Fighter Bomber Attacks | Crossbow Targets, Le Grand Verderet, Camaches Railway Centres, Bruges/St. Michier, Berck sur Mer, Fruges, Gravelines, Cap d'Alprech Radar Stations, Orival Bridge, Neufchatel, Bailly-en-Riviere, Lebiez Chateaux, Tingry Switching Station, Gisors, Buchy, Formerie Railway Centres Cambrai, Denain, Montdidier, Creil | 838 | 3 | 83 | - | - + 37 |
| | 5 Fighter Sweeps | VIII U.S. Air Force Targets North France | | | | | |
| | 2 Fighter Escort 7 Photo/Weather Recces 7 Fighter Bomber Attacks | Domfront Fuel Dump, Conflans, St. Honorine, Hasselt, St. Germain, Rouen Bridges, Juvisy Railway Centre | | | | | |
| | 21 Fighter Escort | VIII and IX U.S. Bomber Command Targets | 1,218 | 11 | - | 34 (7 on grd.) | - |
| | 8 Photo/Weather Recces | North France | | | | | |

2nd T.A.F.

IX A.F.

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APPENDIX NO. 29

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|--------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 30 | 10 Shipping Recces | French, Dutch and Belgian Coasts | 218 | 1 | - | - | - |
| | 3 Weather Recces | North France | | | | | |
| | 3 Offensive Patrols | Miscellaneous Targets North France | | | | | |
| | 2 Fighter Roadsteads | Ushant, Goulet de Brest, | | | | | |
| | 4 Fighter Protection | 2 Military Targets Rouen Area, Bridge Courcelles sur Seine, Coastal Battery Ver | | | | | |
| | 22 Fighter Bomber Attacks | Crossbow Targets, Cap d' Antifer, Pointe et Raz de la Percee, Arromanches, Abbeville/Vaudricourt, St. Valery/Marneville, Le Treport Radar Stations, Lebiez, Neufchatel Chateaux Gamaches, Formerie Railway Centres | | | | | |
| | 4 Fighter Escort | VIII U.S. Air Force and Fighter Bomber Targets | | | | | |
| | 5 Photo/Weather Recces | North France | | | | | |
| | | A.D.G.B. | | | | | |
| | | 2nd T.A.F. | 619 | 4 | - | - | 7 (on grd.) + 37 |

| Date 1944 | Type of Operation | Targets attacked | R.A.F. | | G.A.F. | | |
|---------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------------------|--------------------------------|---------------------------------|
| | | | No. A/C Sorties | Losses | No. A/C 'Reaction' (2) | Losses R.A.F. Claims (3) | Losses German Records (4) |
| May 30 Contd. 31 | 7 Fighter Bomber Attacks | Benecourt, Elboeuf, St. Pierre de Vauvry, Courcelles sur Seine, Conflans, Pont de L'Arche Bridges, Camiers Railway Centre, Cambrai/Epinoy Airfield | IX A.F. | 1,120 | 5 | - | 8 |
| | 1 Fighter Sweep | Paris - Compeigne - Laon | | | | | |
| | 8 Fighter Escort | VIII and IX U.S. Bomber Command and Fighter Bomber Targets | | | | | |
| | 7 Photo/Weather Recces | North France | VIII A.F. | 130 | 1 | - | - |
| | 3 Fighter Bomber Attacks | Creil, Soissons, Beaumont Bridges | | | | | |
| | 5 Weather Recces | North France | A.D.G.B. | 38 | - | - | - |
| | 9 Shipping Recces | French, Dutch, Belgian Coasts | | | | | |
| | 2 Rodeos | North France | (2nd T.A.F.) | 34 | - | 3 | + 5 |
| | 7 Photo/Weather Recces | North France | | | | | |
| | 7 Fighter Escort | VIII and IX U.S. Air Force Targets | IX A.F. | 813 | 1 | - | - |
| | 6 Photo/Weather Recces | North France | | | | | |

SUMMARY OF CLAIMS AND LOSSES(1)

| Month | Allied Air Forces | | Claims | | G. A. F. German Records (11) |
|-----------|----------------------------------|-------------------------|----------|----------------|------------------------------------|
| | R. A. F. | U. S. A. A. F. | R. A. F. | U. S. A. A. F. | |
| 1943 | | | | | |
| January | 29 (3 pilots saved) | - | 27 | - | 14 |
| February | 39 (1 pilot saved) | - | 27 | - | 10 |
| March | 25 | - | 25 | - | 14 |
| April | 55 (1 pilot saved) | 5 | 43 | - | 27 |
| May | 47 (1 pilot saved) | 10 | 63 | 6 | 61 |
| June | 49 (1 pilot saved) | 6 | 71 | 10 | 42 |
| July | 73 (5 pilots saved) | 11 (1 pilot saved) | 75 | 42(111) | 116 (40)(iv) |
| August | 83 (5 pilots/aircrew saved) | 6 | 89 | 44 | 72 (17) |
| September | 70 (10 pilots/aircrew saved) | 11 (2 pilots saved) | 133 | 35 | 91 (29) |
| October | 65 (5 pilots saved) | 18 | 93 | 45 | 60 (36) |
| November | 52 (4 pilots/aircrew saved) | 60 | 47 | 105 | 36 (48) |
| December | 41 (1 pilot saved) | 52 (1 pilot saved) | 50 | 76 | 32 (62) |
| TOTALS | 628 (37 pilots/aircrew saved) | 179 (4 pilots saved) | 743 | 363 | 575 (232) |
| 1944 | | | | | |
| January | 71 (2 pilots saved) | 54 | 80 | 218 | 87 (116) |
| February | 52 | 94 | 41 | 366 | 90 (225) |
| March | 43 | 55 | 32 | 130 | 147 (236) |
| April | 38 (1 pilot saved) | 96 | 75 | 258 | 176 (343) |
| May | 95 (1 pilot saved) | 164 | 63 | 254 | 176 (413) |
| | 299 (4 pilots saved) | 463 | 291 | 1226 | 676 (1,333) |

- (1) Excluding losses not due to enemy action and claims for aircraft probably destroyed.
 (11) Includes aircraft destroyed on ground by bombs.
 (111) Includes aircraft claimed destroyed over Germany.
 (iv) Casualties suffered by Luftflotte Reich in operations against Allied daylight raids.

FIGHTER COMMAND/AIR DEFENCE GREAT BRITAIN ANTI-SHIPING SORTIES

JANUARY 1943 - MAY 1944⁽¹⁾

(Including Fleet Air Arm and Tactical Air Force Aircraft under Fighter Command Control)

| 1943 Month | No. Despatched (inc. Recce A/C) | No. Attacked (2) | A/C Losses | Bomb Armament Expended | No. and Tonnage | | Remarks |
|-----------------|------------------------------------------|------------------------|---------------|----------------------------------------------------------------|-----------------|--------------------|--------------------------------------------|
| | | | | | Vessels Sunk | Vessels Damaged | |
| January | 349 | 5 | 1 | 7 x 250) 4 x 100) | - | - | - |
| February | 236 | 25 | 2 | 41 x 250) 12 x 100) | - | - | - |
| March | 251 | 40 | 1 | 31 x 250) 12 x 100) | 1 - 90 | - | - |
| April | 829 | 111 | 18 | 11 x 500) 66 x 250) | 4 - 815 | 1 - 889 | E-Boat S. 75 |
| May | 1,058 | 119 | 12 | 2 x 500) 62 x 250) 21 x 100) | 1 - 421 | - | - |
| June | 1,137 | 138 | 13 | 20 x 500) 105 x 250) 22 x 100) | 1 - 750 | - | T.A.F. came under F.C. control |
| July | 1,233 | 79 | 11 | 30 x 500) 72 x 250) 4 x 100) | - | 2 - 4,294 | - |
| August | 975 | 90 | 6 | 26 x 500) 94 x 250) 2 x 100) 30 x 60 lb (R.P.) | 3 - 340 | - | Inc. E-Boat S. 121 |
| September | 1,277 | 262 | 13 | 32 x 500) 156 x 250) 16 x 60 lb (R.P.) | 5 - 537 | 1 - 5,485 | - |
| October | 1,211 | 177 | 10 | 74 x 500) 132 x 250) 56 x 60 lb (R.P.) | 2 - 1,225 | 1 - 6,408 | - |
| November (3) | 1,310 | 121 | 13 | 94 x 500) 54 x 250) 34 x 60 lb (R.P.) | 1 - 827 | - | A.E.A.F. formed |
| December | 573 | 29 | 4 | 33 x 250) | - | - | - |
| Total | 10,439 | 1,136 | 104 | 289 x 500) 853 x 250) 77 x 100) 136 x 60 lb (R.P.) | 18 - 5,005 | 5 - 17,076 | Approx. 158 tons of bombs dropped |

(1) Includes anti-E Boat effort.

(2) Includes direct attack of shipping at sea and in port.

(3) Includes whole effort of A.E.A.F. from November 1943 to March 1944, thereafter effort of A.D.G.B. alone.

Authority: Fighter Command/A.D.G.B. Form 'Y' Admiralty BR.1337; X.237/48-TSD/FDS.

| 1944 Month | No. Despatched (inc. Recce A/C) | No. Attacked | A/C Losses | Bomb Armament Expended | No. and Tonnage | | Remarks |
|---------------|------------------------------------------|-----------------|---------------|---------------------------------------------------|-----------------|--------------------|--------------------------------------------|
| | | | | | Vessels Sunk | Vessels Damaged | |
| January | 667 | 61 | 4 | 16 x 500) 24 x 250) 154 x 60 lb (R.P.) | - | - | - |
| February | 533 | 100 | 7 | 98 x 500) 16 x 250) 6 x 60 lb (R.P.) | 2 - 802 | - | - |
| March | 605 | 36 | 1 | 22 x 500) 36 x 250) 8 x 60 lb (R.P.) | - | 1 - 4,404 | - |
| April | 576 | 57 | 4 | 68 x 500) 32 x 250) 72 x 60 lb (R.P.) | 2 - 850 | - | - |
| May | 949 | 127 | 6 | 105 x 500) 68 x 250) 84 x 60 lb (R.P.) | 3 - 3,253 | - | - |
| Total | 3,330 | 381 | 22 | 309 x 500) 176 x 250) 324 x 60 lb (R.P.) | 7 - 4,905 | 1 - 4,404 | Approx. 87 tons of bombs dropped. |

SUMMARY OF NIGHT OFFENSIVE OPERATIONS JANUARY 1943 TO MAY 1944

| Date | No. of Sorties | Squadrons | No. of Enemy A/C Seen | No. of Enemy A/C Claimed Destroyed | No. of Attacks Carried Out | Losses | Remarks |
|-------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------|------------------------------------|----------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>1943</u> | | | | | | | |
| January | 111 (98 Intruders 7 Rhubarbs 6 Misc. Off. Ops.) | 3, 137, 264, 411, 605, 609. | 16 | (2 dam.) | 53 | 1 | Patrolling of airfields and dropping of leaflets by Bostons. Occasional attacks on railways. |
| February | 110 (60 Intruders 27 Rangers 23 Rhubarbs) | 137, 264, 418, 605, 609, 256, 409, 25, 151, 68, 406, 488. | 15 | 2 (1 prob. dest. 2 dam.) | 57 | 3 | Patrolling of airfields continued. Ranger and night Rhubarb operations against transportation commenced. Intruders penetrate over North West Germany. New Mosquito II Flights forming. |
| March | 130 (71 Intruders 33 Rangers 26 Rhubarbs) | 264, 605, 418, 406, 456, 25, 141, 263, 409, 151, 157. | 25 | 2 (1 prob. dest. 1 dam.) | 49 | 3 | Continued patrolling of airfields, dropping of leaflets. Ranger and Rhubarb operations with Mosquitos and Beaufighters with A.I. equipment removed as well as with Typhoons and Whirlwinds. |
| April | 235 (86 Intruders 128 Rangers 21 Rhubarbs) | 96, 456, 29, 418, 605, 264, 406, 263, 410, 604, 151, 157, 25, 141, 609, 483, 488. | 27 | 4 (1 dam.) | 144 | 7 | As above |
| May | 395 (225 Intruders 166 Rangers 4 Rhubarbs) | 151, 605, 418, 609, 23, 410, 157, 456, 96, 307, 488, 264, 215, 102, 400, 168, 141. | 49 | 6 (8 dam.) | 227 | 8 (1 pilot resc.) | Increased support of Bomber Command operations by patrolling night fighter bases; these subsequently became known as Operation Flower. Ranger attacks against transportation. |
| June | 340 (265 Intruders 27 Rangers 48 Serrate) | 418, 605, 141, 157, 168, 256, F.I.U., 25, 400, 3, 488, 151, 29, 137. | 70 | 12 (1 prob. dest. 7 dam.) | 169 | 4 | Serrate operations began on 14/15 June; decline in Ranger operations as Mosquitos required to support Coastal Command. Nos. 418 and 605 Squadrons now equipped with Mosquito VI fighter/bombers. |

SECRET

| Date | No. of Sorties | Squadrons | No. of Enemy A/C Seen | No. of Enemy A/C Claimed Destroyed | No. of Attacks Carried Out | Losses | Remarks |
|-------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------|----------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>1943</u> | | | | | | | |
| July | 392 (277 Intruders 50 Rangers 65 Serrate) | 418, 605, 141, 307, 157, 410, 151, 25, 456, 400, 184, 168, 198. | 58 | 8 (7 dam.) | 196 | 5 | Patrolling and bombing of airfields; Ranger effort against railways, waterways and power stations; Serrate operations continued with success. |
| August | 551 (382 Intruders 56 Rangers 12 Mahmouds 101 Serrate) | 418, 141, 96, 25, 264, 410, 157, F.I.U., 605, 96, 3, 400, 198, 609, 168, 247, 195, 458, 245, 151, 182, 164, 137. | 68 | 12 (2 prob. dest. 7 dam.) | 396 | 8 | Mahmoud operations began on 22/23rd; increased attention paid to targets in Germany in support of Bomber Command. Single-engined fighters (Typhoons and Mustangs) supplement Intruder and Ranger effort. Intruders over Berlin. Ranger Flights being equipped with Mosquito VI fighter-bombers. |
| September | 378 (269 Intruders 7 Rangers 32 Mahmouds 53 Serrate 17 Misc. Off. Ops.) | 141, F.I.U. 418, 605, 157, 410, 264, 25, 3, 486, 56, 456, 263, 609, 1, 244, 195, 137, 164. | 84 | 20 (1 prob. dest. 2 dam.) | 181 | 7 | Free lance patrols by Intruders over Bomber Command target area began on 23/24th with good results. |
| October | 265 (168 Intruders 10 Rangers 2 Rhubarb 37 Mahmoud 48 Serrate) | 418, 605, 264, 157, 25, F.I.U., 400, 414, 141, 410. | 50 | 1 (1 prob. dest. 3 dam.) | 33 | 4 | Sharp decline in effectiveness of Intruder and Bomber Support operations partly due to poor weather and increased range of Bomber Command targets. |
| November | 271 (210 Intruder 6 Ranger 4 Rhubarb 23 Mahmoud 28 Serrate) | 464, 418, 456, 410, 261, 1, 3, 26, 157, 25, 141, 605, F.I.U., 56, 195, 609, 665, 271, 197, 486. | 19 | 2 (1 prob. dest. 5 dam.) | 101 | 9 | Poor results and heavier losses continue. |
| December | 100 (95 Intruders 5 Mahmoud) | 605, 418, 464, 25, 264, 456. | 15 | 3 (1 prob. dest. 2 dam.) | 15 | 1 | Bad weather curtails offensive operations. Operation Mahmoud discontinued. No. 100 Group Bomber Command becomes responsible for Serrate operations. |

SECRET

SECRET

| Date | No. of Sorties | Squadrons | | No. of Enemy A/C Claimed Destroyed | No. of Attacks Carried Out | Losses | Remarks |
|-------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----|-------------------------------------|----------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>1944</u> | | | | | | | |
| January | 187 (129 Intruders 58 Flowers) | 605, 418, 464. | 19 | 2 (3 dam.) | 40 | 4 | Mosquitos VI of No. 2 Group, previously in Ranger Flights, take part in Flower operations. No. 2 Group to become responsible for bombing of night fighter bases. |
| February | 230 (163 Intruders 14 Rangers 53 Flowers) | 418, 605, 487, 613, 157. | 44 | 17 (9 dam.) | 53 | 3 | German night fighters resume interceptions in bomber stream. Intruders on Flower operations no longer fly at maximum range to attack them. Increased destruction of aircraft on ground. |
| March | 428 (238 Intruders 8 Rangers 182 Flowers) | 487, 21, 613, 418, 605, 464, 157. | 60 | 18 (1 prob. dest. 15 dam.) | 111 | 5 | Patrolling and bombing of airfields in N.W. Germany continued. |
| April | 389 (292 Intruders 97 Flowers) | 418, 605, 151, 515, 487, 305, 464, 21, 98, 107, 613, 226, 88. | 31 | 11 (6 prob. dest. 10 dam.) | 144 | 3 | Activity as in previous month. |
| May | 508 (211 Intruders 233 Flowers 64 Misc. Off. Ops.) | 418, 605, 307, 151, 29, 3, 486, 107, 305, 613, 487, 464, 21. | 44 | 14 (2 prob. dest. 16 dam.) | 162 | 9 | Patrolling and bombing of airfields in N.W. Europe maintained; together with attacks on trains, barges, locomotives, motor transport and shipping. |
| TOTALS | 5,020 (3039 Intruders 87 Rhubarbs 732 Rangers 1075 Bomber Support 87 Misc. Off. Ops.) | | 694 | 134 (18 prob. dest. 100 dam.) | 2,131 | 84 | |

Authority: Fighter Command/Air Defence Great Britain Form 171 and ARAF Int/Ops Summaries (A.H.B./IIM/ALG/ID) for No. 2 Group Squadrons during April and May 1944.

SECRET

3

SUMMARY OF NIGHT OFFENSIVE OPERATIONS JUNE 1944 TO MAY 1945

| Date | No. of Sorties | Squadrons | No. of A/C Seen (Inc. A/C on ground) | No. of Enemy A/C Claimed Destroyed (Inc. A/C on ground) | No. of Attacks Carried Out | Losses | Remarks |
|-------------|----------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------|----------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>1944</u> | | | | | | | |
| June | 426 (368 Intruder 58 Bomber Support) | 605, 418, 29, 307, 25, 151, Fighter Interception Unit (F.I.U.) | 51 | 25 (4 prob. dest. 13 dam. + 8 flying bombs dest.) | 108 | 7 |) Intruder Sqdns. committed to support of Operation Overlord (low level attack on airfields in northern France and Low Countries, including dropping of 250 and 500 lb bombs) and to defence of Great Britain against the flying bombs. The F.I.U. experimented with A.I. Mk. VIII and IX over north west Europe. On 7 Oct., it was decided that Nos. 25, 307, 406, 29 and 151 Mosquito Sqdns. should specialise in Bomber Support operations. They were to be equipped with A.I. Mk. IX and backward-looking A.I. |
| July | 238 (All Intruders) | 29, 605, 418, 151, 307, F.I.U. | 32 | 16 (8 dam.) | 36 | 1 | |
| August | 306 (All Intruders) | 605, 418, 307, 29, 151, F.I.U. | 21 | 7 (2 dam.) | 67 | 1 | |
| September | 291 (All Intruders) | 605, 418, 29, 307, F.I.U. | 7 | 5 (1 dam.) | 172 | 5 | |
| October | 210 (All Intruders) | 605, 418, 29, 406, 307, F.I.U. | 28 | 15 (1 prob. dest. 15 dam.) | 140 | 5 | |
| November | 198 (36 Intruder/Ranger 162 Bomber Support) | 605, 418, 29, 406, Fighter Interception Development Sqn. (F.I.D.S.) | 12 | 3 | 82 | 3 | Nos. 605 and 418 (R.C.A.F.) Sqdns. transferred to No. 2 Group (2nd T.A.F.). Poor weather limited low level Bomber Support patrols over enemy night fighter bases. Four night fighter sqdns. equipped with A.I. Mk. IX training for Bomber Support operations. No. 406 Sqn. trained with long distance patrols to Lorient. |

SECRET

| Date | No. of Sorties | Squadrons | No. of A/C Seen (Inc. A/C on ground) | No. of Enemy A/C Claimed Destroyed (Inc. A/C on ground) | No. of Attacks Carried Out | Losses | Remarks |
|------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>1944</u> December | 103 (25 Intruder 78 Bomber Support) | 29, 151, 406, 307, F.I.D.S. | 6 | 1 (1 prob. dest.) | 30 | 6 (2 Air- crews saved) | Nos. 151 and 406 Sqdns., the first to be fitted with improvised type of Monica VIII (backward looking A.I.) to enable them to fly high level Bomber Support sorties. Bad weather hampers operations. |
| Total for June to Dec. 1944. | 1,772 (1,474 Intruders 298 Bomber Support) | 418, 605, 29, 151, 406, 307, 25, F.I.U./F.I.D.S. | 157 | 72 (6 prob. dest. 39 dam. + 8 flying bombs) | 635 | 28 (2 Air- crews saved) | |
| <u>1945</u> January | 121 (24 Intruders 97 Bomber Support) | 406, 25, 29, 151, 307. | 14 | 4 (1 prob. dest. 1 dam.) | 21 | - | Installation of modified Monica VIII enables high level as well as low level Bomber Support patrols to be flown in strength. |
| February | 381 (21 Intruder/Ranger 360 Bomber Support) | 29, 25, 307, 151, 406. | 26 | 6 (2 dam.) | 36 | 2 | Increased number of high and low level Bomber Support patrols over north west Germany. |
| March | 340 (51 Intruder/Ranger 289 Bomber Support) | 307, 406, 456, 151, 29, Central Fighter Est. (C.F.E.) Fighter Experimental Flight (F.E.F.) | 23 | 5 | 107 | 3 (1 Air- crew saved) | Ranger operations (Fighter Experimental Flight) recommenced. Number of attacks on road and rail transport in north west Germany. Attacks on airfields in eastern and southern Germany. |

SECRET

| Date | No. of Sorties | Squadrons | No. of A/C Seen (inc. A/C on ground) | No. of Enemy A/C Claimed Destroyed (inc. A/C on ground) | No. of Attacks Carried Out | Losses | Remarks |
|----------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------|----------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1945 | | | | | | | |
| April | 417 (151 Intruder/Ranger 266 Bomber Support) | 406, 29, 307, 151, 456, F.E.F., F.I.D.S. | 80 | 26 (1 prob. dest. 43 dam.) | 133 | 5 (1 Air- crew saved) | All Intruder Sqdns. take part in Ranger operations. Large number of aircraft destroyed and damaged on ground. Attacks on transportation continued. |
| May to 3/4th) | 3 (All Intruders) | 29, 406. | 21 | 4 (1 dam.) | 20 | - | - |
| Total for Jan. to May 1945 | 1,262 (250 Intruder/Ranger 1,012 Bomber Support) | 406, 29, 307, 151, 456, 25, F.E.F., F.I.D.S., C.E.F. | 164 | 45 (2 prob. dest. 47 dam.) | 317 | 10 (2 Air- crews saved) | |
| Grand Total | 3,034 (1,724 Intruder/Ranger 1,310 Bomber Support) | 605, 418, 406, 29, 307, 151, 456, 25, F.E.F., F.I.D.S., C.E.F. | 321 | 117 (8 prob. dest. 86 dam. + 8 flying bombs) | 952 | 38 (4 Air- crews saved) | |

Authority: Air Defence Great Britain/Fighter Command Form 'FY', 1944-1945.

PILOTS WITH MORE THAN TWELVE CONFIRMED VICTORIES OBTAINED WHILE SERVING IN
A.D.G.B. (INCLUDING FIGHTER COMMAND, 2ND T.A.F., B.A.F.F. AND
A.A.S.F.) UP TO 30 APRIL 1944(1)

S C O R E

| | Day | Night | Total |
|-----------------------------------------------------|------------|-------|---------|
| G/Capt. A. G. Malan, DSO & Bar, DFC & Bar | 30 | 2 | 32 |
| W/Cdr. L. Fimucane, DSO, DFC & Bars (Dec'd.) | 29½ | - | 29½ |
| W/Cdr. R. Stanford Tuck, DSO, DFC & Bars (P/W) | 27 | 2 | 29 |
| W/Cdr. J. R. D. Braham, DSO & Bar, DFC & Bar | 10 | 19 | 29 |
| S/Ldr. J. H. Lacey, DFM & Bar | 27 | - | 27 |
| W/Cdr. J. E. Johnson, DSO & Bar, DFC & Bar | 26 | - | 26(2) |
| F/Lt. H. S. Lock, DSO, DFC & Bar (Dec'd) | 24 | - | 24 |
| W/Cdr. D. R. S. Bader, DSO & Bar, DFC & Bars (P/W) | 22½ | - | 22½ |
| W/Cdr. M. N. Crossley, DSO, DFC | 22 | - | 22 |
| W/Cdr. R. F. Boyd, DSO, DFC & Bar | 22 | - | 22 |
| W/Cdr. D. E. Kingaby, DSO, DFM & Bars | 22 | - | 22 |
| S/Ldr. H. A. Stephen, DSO, DFC & Bars | 21 | - | 21 |
| S/Ldr. J. E. F. M. Demozay, DSO, DFC & Bar (French) | 20 | 1 | 21 |
| W/Cdr. A. C. Deere, DSO, DFC & Bar | 20½ | - | 20½ |
| G/Capt. J. Rankin, DSO & Bar, DFC & Bar | 20 | - | 20 |
| W/Cdr. J. Cunningham, DSO & Bars, DFC & Bar | 1 | 19 | 20 |
| S/Ldr. D. A. P. McMillan, DFC & Bars | 15 7/10(3) | 4 | 19 7/10 |
| F/Lt. G. Allard, DFC, DFM & Bar (Dec'd.) | 19 | - | 19 |
| S/Ldr. R. G. Dutton, DFC & Bar | 19 | - | 19 |
| F/Lt. K. M. Kuttelwascher, DFC & Bar (Czech) | 3 | 16 | 19 |
| S/Ldr. H. J. L. Hallows, DFC, DFM & Bar | 18 | 1 | 19 |
| S/Ldr. MacKellar, DSO, DFC & Bar (Dec'd.) | 18½ | - | 18½ |
| W/Cdr. F. R. Carey, DFC & Bar, DFM | 18 | - | 18 |
| W/Cdr. M. H. Brown, DFC & Bar (Dec'd.) | 17½ | - | 17½ |
| W/Cdr. C. F. Gray, DSO, DFC & Bars | 17½ | - | 17½ |
| G/Capt. T. F. D. Morgan, DSO, DFC & Bar | 11½ | 6 | 17½ |
| W/Cdr. W. D. David, DFC & Bar | 17 | - | 17 |
| Sgt. J. Frantisek (Czech) (Dec'd.) | 17 | - | 17 |
| S/Ldr. N. Orton, DFC & Bar (Dec'd.) | 17 | - | 17 |
| W/Cdr. M. L. Robinson, DSO, DFC (Dec'd) | 17 | - | 17 |
| W/Cdr. A. H. Boyd, DSO, DFC & Bars | 15 5/6 | 1 | 16 5/6 |
| F/O W. L. McKnight, DFC & Bar (Dec'd.) | 16½ | - | 16½ |
| W/Cdr. W. V. Crawford-Compton, DSO, DFC & Bars | 16½ | - | 16½ |
| F/Lt. R. T. Llewellyn, DFM | 16 | - | 16 |
| S/Ldr. J. G. Sanders, DFC | 11 | 5 | 16 |
| P/O G. L. Nowell, DFM & Bar | 16 | - | 16 |
| W/Cdr. R. H. Harries, DFC & Bar | 15½ | - | 15½ |
| S/Ldr. J. W. Villa, DFC & Bar | 15½ | - | 15½ |
| S/Ldr. W. Urbanowicz, DFC | 15 | - | 15 |
| S/Ldr. R. F. T. Doe, DFC & Bar | 14½ | - | 14½ |
| F/Lt. D. A. S. Lackay, DFM & Bar | 14½ | - | 14½ |
| F/Lt. R. P. Stevens, DSO, DFC & Bar (Dec'd.) | - | 14½ | 14½ |
| S/Ldr. J. Ellis, DFC & Bar | 13 | 1 | 14 |
| W/Cdr. J. I. Kilmartin, DFC | 14 | - | 14 |
| S/Ldr. F. J. Soper, DFC, DFM (Dec'd.) | 12 | 2 | 14 |
| S/Ldr. A. McDowell, DFM & Bar | 13 | 1 | 14 |
| W/Cdr. C. F. Curren, DSO, DFC & Bar | 14 | - | 14 |
| W/Cdr. R. M. Milne, DFC (P/W) | 14 | - | 14 |
| F/Lt. J. A. A. Gibson, DFC | 13½ | - | 13½ |
| S/Ldr. K. W. Truscott, DFC | 13½ | - | 13½ |
| S/Ldr. E. R. Thorne, DFC, DFM & Bar | 12 | 1 | 13 |
| G/Capt. G. R. Edge, DFC | 13 | - | 13 |
| G/Capt. J. W. Simpson, DFC & Bar | 11 | 2 | 13 |
| W/Cdr. J. A. Kent, DFC & Bar, AFC | 13 | - | 13 |
| S/Ldr. R. F. Hamlyn, AFC, DFM | 13 | - | 13 |
| F/Lt. J. C. Dundas, DFC & Bar (Dec'd.) | 13 | - | 13 |
| S/Ldr. J. C. Freeborn, DFC & Bar | 12½ | - | 12½ |
| S/Ldr. F. W. Higginson, DFC, DFM | 12½ | - | 12½ |
| S/Ldr. T. F. Neil, DFC & Bar | 12½ | - | 12½ |
| S/Ldr. J. Baldwin, DSO, DFC & Bar | 12½ | - | 12½ |

Headquarters,
Air Defence of Great Britain

21st May, 1944
ADGB/S.20457/Int.

(Reproduced as Appendix J.26 in
Fighter Cmd., O.R.B., Appendices.)

- (1) These figures cannot be verified with certainty but the list does contain the names of the outstanding fighter pilots.
- (2) Wing Commander J.E. Johnson was reckoned to be the top scoring R.A.F. pilot at the end of the war with a total of 38 claimed victories.
- (3) The second and third figures refer to aircraft probably destroyed and damaged respectively.