# THE BATTLE OF BRITAIN

**T. C. G. James**

**Edited and with an Introduction by Sebastian Cox**

**with a Foreword by Air Chief Marshal Sir Peter Squire**

RAF OFFICIAL HISTORIES
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# THE BATTLE OF BRITAIN

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Edited and with an Introduction by
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# FOREWORD

## Air Chief Marshal Sir Peter Squire KCB DFC AFC FRAeS RAF
## Chief of the Air Staff

There are many battles that can clearly be seen to have changed the course of history for an individual nation or nations. Few, however, can be said to have influenced the future direction of mankind in so fundamental a manner as the Battle of Britain. The achievements of Fighter Command in the summer of 1940 not only preserved this nation from invasion, but turned the tide in the larger struggle of humanity and civilisation against the relentless advance of a regime which represented only evil and barbarity. It was the courage and self-sacrifice of those few hundred fighter pilots, who came from many nations in Europe and the Commonwealth as well as our own, sustained by the efforts of many on the ground, which allowed us to enter the new millennium with optimism and hope instead of in subjugation and despair. The sober prose and analytical approach of this volume, written as the Second World War reached a climax, remind us how close the world came to disaster, and how great the debt of gratitude is in both the victorious and vanquished nations.

*Ministry of Defence*
*July 2000*

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# EDITORIAL INTRODUCTION

*Sebastian Cox*

The Air Historical Branch was originally set up at the end of the First World War to assist in writing the Official History of air operations in 1914–18. This task was completed with the publication of the last of the volumes in the Official History in the mid-1930s, and shortly thereafter the Branch was disestablished. At some point it was decided that the Branch should be reconstituted, and placed under the direction of the formidable Air Ministry Librarian, J. C. Nerney. Nerney set about recruiting historians to assist him in this task, and amongst the first he recruited was a former history teacher, who was then undergoing training as a wireless operator with the RAF. Denis Richards had a first-class honours degree from Cambridge, and had taught history at Manchester Grammar School and Bradfield College. As a result, the Air Ministry swiftly concluded that his talent would better serve his country if he joined the newly resurrected Air Historical Branch, a decision which events were to prove amply justified.[1]

The Branch was formally reinstated in 1941, Denis Richards arrived in early 1942 and was followed later in the year by Cecil James. James, who had been taught by Richards at Manchester Grammar before going up to Cambridge, where he too gained first-class honours in history, joined the Branch when he was invalided out of the Army. Whilst Richards was already busy writing the history of the first of the RAF's major campaign, namely the 1940 campaign in France and Belgium, James was put to work on researching the development of Fighter Command and the United Kingdom air-defence system and the subsequent performance of the organisation during the fighting in 1940.

This study became Volume II of the Air Defence of Great Britain narrative, and concentrated exclusively on the Battle of Britain. The lead-up to the Battle, in the form both of the development of the air-defence system and of Fighter Command's part in the fighting in France, were both covered in the first volume of the same narrative.[2] The research and writing for this volume took place for the most part in 1943 and 1944, and the narrative was based largely on British documentary sources, including the operational records of the squadrons and groups, and of Fighter Command itself. Some use was also made of Air Staff files and appreciations by Air Intelligence. One of the most important sets of documents proved to be the Sector, Group and Command controllers' charts, showing what was known about the strength, height, direction and timing of the *Luftwaffe*'s attacks. Because these have not survived in any comprehensive form, this narrative represents in many ways the only true account based solely on primary records of the successes and failures of the early Chain Home radars and the raid-tracking organisation.

The most obvious lack in the narrative was a comprehensive knowledge of the German side of the Battle. Although a very few records of *Luftlotte* 3 had been captured by the time the narrative was in preparation, they were not comprehensive and could not provide an accurate picture of German intentions. Indeed, even when large quantities of *Luftwaffe* material were captured at the end of the war,

1 On the idiosyncratic recruitment process see Denis Richards, *It Might Have Been Worse – Recollections 1941–1996* (privately published, London, 1998), pp. 17–23.

2 Also to be published in the Whitehall History series as T. C. G. James, *The Growth of Fighter Command 1936–1940* (Frank Cass & Co, London, forthcoming).

there were still many gaps caused by the loss or destruction of records, and it is doubtful whether very many of the necessarily tentative conclusions drawn here would have been significantly altered had they been available earlier. There is, perhaps, a tendency throughout the narrative to credit the Germans with a more comprehensive campaign plan than was actually the case.[3] The German orders of battle included in the appendices were based on intelligence reports which themselves derived from Ultra intelligence gleaned from decrypts of German Enigma traffic. Whilst the listings of units and locations are by and large accurate, the reader should note that the figures given for establishment strength and reserves are just that. In other words, they do *not* represent the actual operational strength of the units at the time, which in most cases would have been lower, often substantially so. It should also be said that the influence of Ultra intelligence on the Battle has been wildly exaggerated by some historians.

On technical aspects, the lack of German documentation led to errors of fact. In particular, the British pilots' habit of consistently mis-identifying German aircraft in the heat of battle is reflected in the text, where there are repeated references to Heinkel He 113 single-engined fighters, and occasional references to Junkers Ju 86s, and other oddities such as Chance-Vought dive-bombers. None of these aircraft types participated in the Battle, and all references to Heinkel He 113s should be taken as referring to Messerschmitt 109s.

Whilst from the British side the narrative may therefore be considered both accurate and comprehensive, indeed more comprehensive than many later accounts, it should nevertheless be read in conjunction with more recent scholarship on German actions and intentions.

The narrative was never intended for publication, but was intended to form an accurate record of events as seen and appreciated at the time. It was also intended to provide the foundation for any later official history which might be written after the war. It was compiled more than half a century ago, and occasionally both its age and its original purpose shows in the writing. It also uses outmoded expressions and vocabulary, as for example in the use of 'RDF', rather than the more modern 'radar'. The first-person plural, as in 'we' and 'our pilots', also reads oddly to the modern historian's eye. Some minor editorial changes have been made here and there to improve the volume's readability for the modern reader, but many of these stylistic devices have been kept in order to retain as much of the flavour and intention of the original as possible.

The footnote references in the volume are also idiosyncratic. This was partly because it was not intended for publication and the sources were often obvious to the insiders for whom it was written, and partly because detailed footnoting was unnecessary for the narrative to serve its purpose. Where original sources are quoted with an Air Historical Branch reference (e.g. AHB IIH/120) the document, if it survives, will now be in the Public Record Office (PRO). The original Air Historical Branch references are listed opposite the document in the Public Record Office class lists, and can also be traced via the Air Historical Branch index cards, copies of which are held on microfilm at the PRO. Where only an original Air Ministry file reference is given (e.g. S.1234), these too, where they survive, can be found in the PRO.

Personalities and personal experiences were never intended to be included in the narrative. It may to some readers become somewhat wearisome as the almost daily accounts of raids, sorties and combats are recited. It is hoped, however, that, to misquote W. S. Gilbert, the narrative, if bald, is convincing: convincing especially in the fortitude of those involved in a battle lasting for more than two months,

3 The author of the Narrative could not know the extent to which the German High Command was divided over the future course of operations at the start of the Battle. The *Kriegsmarine* viewed any attempted landing in Southern or Eastern England as an operation fraught with danger, only to be attempted as a last resort. The *Luftwaffe* was more sanguine about its ability to defeat the RAF, and did not really consider that an opposed landing would be a realistic possibility. Hitler tended to accept Goering's optimistic view of the likely course of the air war, and believed that the quick achievement of air superiority would open up many military and diplomatic possibilities. On German planning see especially Klaus A. Maier, *Germany and the Second World War* (Oxford University Press, Oxford, 1991), Vol. III, pp. 374–83.

with scarcely a day's respite. Little imagination is required to appreciate the strain on pilots, ground staffs, controllers and commanders at all levels. And the stakes were very high.

It is legitimate to ask whether the Narrative served its original purpose in providing the first comprehensive and objective analysis by a historian of the Battle of Britain? Allowing for the understandable weakness of the analysis with regard to Germany, the answer is, surely, unequivocally positive. It is by no means an exaggeration to say that this account provided the firm foundation, directly and indirectly, for much of the subsequent British historiography of the Battle. In particular, it was one of the primary sources, as it had always been intended it should be, for the subsequent Official History. The chapters in the Official History on the Battle of Britain cite the Narrative as a "chief" British source for its account of the Battle, and an analysis of the text makes it obvious that this was so.[4] In addition, the two most detailed and influential books published on the Battle at either end of the decade in the 1960s, which are still widely accepted as being amongst the most authoritative accounts, both clearly drew on the Narrative as a basic source. In particular, Derek Wood and Derek Dempster's classic account in *The Narrow Margin*, reproduces exactly the phasing of the Battle adopted by the Narrative and many of the orders of battle and other detailed statistical information in this volume were reproduced as appendices in the book. The authors' pay fulsome tribute to the assistance they received from the Air Historical Branch, and that clearly extended to sight of this narrative.[5] In similar vein, Francis K. Mason wrote of his indebtedness to the Branch for tolerating his "presence daily for close on twelve months".[6] The influence of the Narrative is equally apparent in such aspects as references to Park's instructions to his controllers, and to the detailed daily accounts of the fighting. There is little doubt that both these impressive histories benefited enormously from the earlier work of Cecil James reproduced here. Both books also deservedly became 'classic' texts on the Battle, on which subsequent historians (including this one) have drawn heavily, and in this way the influence of the Narrative has been felt far beyond the confines of those who have actually read it. The Narrative's influence can also be seen in a later history of the Battle, that by Richard Hough and Denis Richards published to coincide with the fiftieth anniversary.[7] Given Richards's own intimate early connection with the Air Historical Branch, this is hardly surprising, but it bears out the degree to which the Narrative is still, more than half a century on, a key text for any historian who wishes to make a serious study of the Battle.

It would be tedious to review such an extensive text in detail, but there are one or two aspects, apart from the superb general analysis of the fighting, in which the perceptions of its author are sufficiently acute to be worthy of further comment. In particular, the analysis of what has subsequently become known as the 'Big Wing' controversy is both more balanced and more perceptive than much of the ill-informed, tendentious and not infrequently personalised, nonsense which has appeared in print since. Any historian seeking an impartial analysis of the pros and cons of each side of the debate would do well to start with the brief account which appears in Part VII of this volume.

Similarly, the treatment of the vexed question of claims, losses and published figures should be required reading for those of a cynical disposition who believe that in wartime *all* information is subject to official manipulation. The problem of establishing the exact numbers of aircraft lost by each side still taxes us today, even though the most detailed research has been conducted into the matter by historians working in concert across national boundaries. In part, it is simply a problem of definition, as, for example, when an operational aircraft is written off in a landing accident entirely unconnected to enemy action. Although it will probably never be possible to establish the true figure

4 Basil Collier, *The Defence of the United Kingdom* (HMSO, London, 1957 [official edition with unpublished sources]), p. 573, fn. 5 to Ch. XII.

5 Derek Wood and Derek Dempster, *The Narrow Margin* (Hutchinson, London, 1961), *passim*. See especially the authors' acknowledgements.

6 Francis K. Mason, *Battle over Britain* (McWhirter Twins, London, 1960), p. 13.

7 Richard Hough and Denis Richards, *The Battle of Britain: The Jubilee History* (Hodder & Stoughton, London, 1989).

with a mathematician's exactitude, modern research has produced a detailed analysis of losses which is unlikely to be seriously challenged, and which is sufficiently exact for all but the most pedantic soul.[8]

Given both the influence of the Narrative on subsequent studies of the Battle and the quality of much of the analysis, it was felt that it deserved a much wider audience amongst serious historians than it was ever likely to attain from the few copies available to the researcher in the PRO, Air Historical Branch, and the library of the RAF Museum. Hence, the decision to publish it in this the sixtieth anniversary year of the Battle, when its scholarly contribution may serve not only to inform but also to pay tribute to those, mostly young men, who gave their lives.

8 On this aspect see, in particular, the comprehensive day-by-day coverage of the losses on each side recorded in Winston G. Ramsey (ed.), *The Battle of Britain Then And Now* (5th edn, Battle of Britain Prints International, London, 1989).

# CHRONOLOGY OF PRINCIPAL EVENTS

*1940*

| | |
|---|---|
| 10 July | Opening of the preliminary phase of the Battle of Britain: attacks on Channel convoys and south coast ports. Fifty-two operational squadrons in Fighter Command. |
| 13 July | Headquarters, No. 10 Group, opened at Rudloe Manor Wiltshire. |
| 8 August | Beginning of intensive day operations: the second phase of the battle. |
| 12 August | Beginning of heavy attacks against coastal airfields. |
| 19–23 August | Five days' lull in the battle. |
| 24 August | Beginning of heavy attacks against fighter airfields near London: the third phase of the battle. Intensifying of German night attacks. |
| 7 September | First heavy daylight attack on London: the fourth phase of the battle. Beginning of heavy night attacks on the capital. Fifty-seven operational squadrons in Fighter Command. |
| 8 September | Introduction of the Stabilisation Scheme for Fighter Command. Invasion Alert No. 1 in force. |
| 15 September | Heavy daylight attack on London. |
| 17 September | State of Readiness relaxed: Invasion Alert No. 2 introduced. |
| 30 September | Final attack by long-range bombers against London in daylight. |
| 1 October | The fifth phase of the battle begins: fighters and fighter-bombers sweep towards London. Heavy night attacks on London continue. |

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# PREFACE

The following account of the Battle of Britain is very largely one of the operations of Fighter Command. Its chief concern is the phases by which the German offensive developed, how each of these phases was executed and what counteracting policy governed the operations of the fighter squadrons. These are, of course, the most important features of the battle. But there are others which had no little effect on the form that the battle took: the production and repair of aircraft, the training of pilots, signals and telecommunications, maintenance and servicing of squadrons, engine and armament problems, have each a place in any comprehensive narrative of the battle. Nor would such a narrative be complete unless it included more details of the work of Anti-Aircraft and Balloon Commands and the Observer Corps in defence, and of Bomber and Coastal Commands in the counter-offensive, than will be found in the following pages. These aspects have not been forgotten. But it has been found to make for the easier and speedier production of a final narrative if each of them is given separate treatment, the synthesis and co-ordination of the separate accounts representing the last stage of the work. Thus, narratives on Signals, Radar, Flying Training, Armament Development and other technical subjects, and on the work of the Commands associated with Fighter Command are being prepared; and the story of the Battle of Britain will not be complete until such parts of these narratives as are concerned with it have been incorporated in the narrative that follows, which is for this reason an interim account. Indeed, even when this has been done; there is a sense in which the story will not be comprehensive; for the battle could well be made the occasion for a review of the behaviour of the whole community – its morale, its health, its trade and industry – under heavy attack.

The reader should also bear in mind that there is much about the battle that is not yet certain. Details of the scale of the German attack, reliable information of the German targets and authoritative explanations of changes in German policy and intentions are still not available. In particular it is only possible to speculate as to why the Germans abandoned the invasion which they appeared to be preparing.

The records and documents that have served as a basis for the narrative are indicated in detail in the marginal references. Broadly speaking, the accounts of daily operations have been based on the Operations Record Books of Fighter Command, and of the fighter Groups and squadrons, the track charts prepared in the Filter Room at Fighter Command Headquarters, the combat reports of individual pilots and the consolidated combat reports made by squadron intelligence officers, the No. 11 Group Instructions to Controllers, the 'Y' Forms of the Command and Groups and a small number of captured German documents. Air Ministry, Fighter Command and No. 11 and 12 Group secret files, Air Chief Marshal Dowding's correspondence, a few of the Secretary of State's files and the branch folders of the Directorate of Home Operations and such secondary sources as the Commander-in-Chief's despatch and Air Vice-Marshal Park's reports on the fighting have been the foundation of the account of higher policy.

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# I

# INTRODUCTION: THE EFFECT OF THE GERMAN OCCUPATION OF EUROPE ON THE AIR DEFENCE OF GREAT BRITAIN

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When in March 1940 the Director of Home Operations had recommended that Fighter Command should be strengthened to sixty squadrons by September, it had been assumed that the Germans would be kept out of France. In those circumstances it was unlikely that the whole of the German bomber force would ever be concentrated against the United Kingdom,[1] or that many regions of the country would ever be attacked except on a light scale. Moreover, it was generally believed that unescorted German bombers attacking Britain by day *en masse* would suffer unacceptable losses. As a result of the fall of France, however, the Germans were free to concentrate on Great Britain; German long-range bombers could reach virtually every part of the country in considerable strength; German fighters and dive-bombers could operate over the Western Approaches from the eighth meridian, and over all England to the south of a line between South Wales and the Humber; and inside that area bombers could be given a fighter escort. At the same time, the occupation of Norway had exposed north-east Scotland, and the naval bases there, to a heavier scale of attack than formerly. In short, the general effect of the German occupation of Western Europe upon the air defence of Great Britain was to extend the area that was open to air bombardment and intensify the scale of attack that was to be expected. The counter-measures that were taken can thus be described under two heads: first, the extension of the air defence system to the newly threatened districts; second, the expansion of the fighter force and the associated defences to meet the increased scale of attack.

## I. EFFECT ON SHIPPING IN HOME WATERS

The March review had been chiefly concerned with the need for reinforcing the fighter line at its two extremities, north-east Scotland and south-west England. In each area the Air Staff and Fighter Command were concerned at the growing threat to shipping; and the new situation only heightened their concern. All ocean traffic within four hundred and fifty miles of the coast, all coastal traffic and every important harbour in the United Kingdom, was now open to attack. In particular, the presence of German sea and air units in Brittany was a threat to shipping using the Western Approaches. During June arrangements were therefore made with the Admiralty to route shipping up the west coast of Ireland, through the North Channel and into the Clyde, the Mersey and the ports of South Wales. Only coastal convoys of small ships were to ply between the Bristol Channel and London. This plan was put into effect from 15 July. It simplified the air defence problem to some extent as the Western Approaches could only have been protected if airfields had been available in the south and south-west of Eire, but it did not avoid a major expansion of the air defence system in the south-west and west of England in order to protect the great

1 It should not be forgotten, however, that all estimates of the air defences required by Great Britain had assumed the worst possible case, namely, that the Germans had it in their power to use the whole of the bomber force against this country, at any rate for a short period.

S.3553, Minute 23, DHO-DCAS, 28 June 1940

volume of ocean shipping in the Irish Sea from attacks by aircraft approaching from France. Moreover, in the opinion of the Director of Home Operations, Air Commodore Stevenson, whose duty it was once more to assess what new air defences were required, even this less extensive area could not be defended efficiently unless fighters could operate from stations near Dublin and Wexford. There could be no question, however, of using Eireann bases unless the Germans invaded Ireland, or Great Britain was invited to send forces into the country. All that was done, therefore, was to earmark a certain amount of mobile airfield and signals equipment for speedy use should the Irish situation change. Meantime the Fighter Command system had to be extended to Wales, Lancashire and Northern Ireland. In the south-west the position had to be improved not only in order that fighters there could intercept enemy aircraft on their way north, but so that coastal shipping passing up the English Channel could be protected west of Portland. In Scotland fighters were required near the Clyde, and more strength was needed in the north-east. About this time the first steps were also taken to provide long-range fighters in the Hebrides, but their provision was necessarily some way ahead.

## II. EXTENSION OF THE AIR DEFENCE SYSTEM IN THE WEST

With the exception of the last, none of these requirements was altogether novel. All the areas in question had been vulnerable since the outbreak of war, in theory at any rate, i.e. they were within the extreme operational range of the German long-range bomber; and in most cases preliminary measures had been taken for their defence. In the Bristol–Portsmouth area one squadron was already stationed at Filton, primarily to protect the works of the Bristol Aeroplane Company, and new fighter sector stations were being built at Middle Wallop and Colerne. The headquarters of the new fighter Group, No. 10, that was to control the defence of this area, had been under construction since February, and began functioning on 13 July. As for the western defences of the Midlands, the possibility of attacks from that direction had long been appreciated. As early as the summer of 1938 the Air Staff had decided to provide facilities at stations near Chester, Stafford and Birmingham for use by squadrons normally stationed further east at Digby, Wittering and Duxford. Not much progress had been made by the summer of 1940. There was a shortage of airfields in that part of the country, and the intelligence and signals requirements of an effective air defence system were sadly lacking. In the same area, but further to the west, the position was even worse. There were no RAF stations on all the long stretch of coastline between St David's Head and the Great Orme, while such few stations as existed between Liverpool and Carlisle and in Northern Ireland, were in full use by Coastal and Flying Training Commands. It was fortunate that the Germans did not operate in force over the western route to the Midlands and Liverpool, nor harass shipping in the Irish Sea, until the end of August. By that time some progress had been made with the big programme of airfield construction decided on in June and July.

## III. THE DEVELOPMENT OF NO. 10 GROUP

For obvious reasons attention was first of all concentrated on south-west England, and early in June the first commander of No. 10 Group, Air Vice-Marshal Sir Quintin Brand, was ordered to reconnoitre the district for suitable fighter aerodromes. West and south-west of Middle Wallop there were no fighter stations, with the exception of Filton, and a paucity of stations of any Command. However, St Eval, Exeter, Pembrey and Warmwell were brought into temporary use by fighter squadrons pending the construction of further aerodromes in the area. By 3 July there were seven fighter squadrons in the area bounded by Milford Haven–Bristol–Southampton–Land's End; a month before there had been one. This rapid expansion was primarily undertaken to provide protection for shipping in the western half of the Channel; and the new stations, especially Middle Wallop and Warmwell, proved of great value during the attacks on coastal shipping in July and early August. It was not until the second week in August, however, that No. 10 Group Headquarters was able to take over control of all the fighter stations in the Group area. Prior to that date Middle Wallop and Warmwell were operated by No. 11 Group. With this extension of the Fighter Command system west of Portsmouth the basic dispositions of the fighter force that was to fight the Battle of Britain were completed.[2]

## IV. PARALLEL EXTENSION OF THE RDF CHAIN AND THE OBSERVER CORPS

The formation of new fighter stations in the south-west was necessarily paralleled by the extension of the Observer Corps and the RDF chain in the same area. At the outbreak of war the RDF system extended only as far as the Isle of Wight, but by May 1940 more stations were under construction further west. Two were opened before the end of May and four more in June. On 23 June a temporary filter room began to function at No. 15 Group HQ, Plymouth, but on 30 July the stations were linked to a permanent filter room at No. 10 Group HQ. The stations were much more widely spaced than on the east and south-east coasts, and coverage in the Channel was far from complete.

The complementary expansion of the Observer Corps in this area was ordered early in June and took the form of a new Group in Devonshire, with its Centre at Exeter, and a Sub-Group on the Cornish coast, reporting to a Centre at Truro. The first commenced to operate on 17 July, the second on 2 August. As in the case of the RDF chain the individual observer posts in this area were too widely scattered to admit of accurate reporting.

2 It should not be forgotten that as the great day battles were being fought in south and south-east England new stations and Groups were being organised in the west of England and in Scotland. In brief, the plan of expansion required the formation of two more fighter Groups; No. 9 in north-west England with Headquarters at Preston and No. 14 in north-east Scotland with Headquarters at Inverness. There was no connection between the latter Group and the one which, similarly numbered, had fought in France and Belgium. In addition, No. 13 Group was extended westward to embrace the Clyde and the North Channel, and Ulster was provided with a separate air defence system. But serious operations did not begin in these new areas until the late summer and early autumn of 1940; and their interest belongs rather to the night attack on the great centres of population and to the Battle of the Atlantic than to the Battle of Britain.

## V. EXPANSION OF FIGHTER COMMAND

Until the middle of June Fighter Command was working to a programme of sixty squadrons, which were to be formed by September. But this was based on the strategical situation which applied before the collapse of France, and a further expansion of the fighter force was obviously necessary not only in order that the new extensions to the air defence system could be manned, but also to counteract the increase in the potential weight of attack on the country as a whole. The United Kingdom might now be attacked by the whole of the German Air Force, which in June was estimated at nearly 2,000 long-range bombers, 550 dive-bombers, 1,550 heavy and light fighters, and a number of coastal aircraft. Moreover, now that practically all Europe's industrial plants were at Germany's disposal, an accelerated expansion of her Air Force was likely. Adopting the previous Air Staff yardstick for calculating fighter strength[3] DHO estimated that one hundred and twenty fighter squadrons, containing 1,920 first-line aircraft, would be required, which would entail more than doubling the existing fighter force. No price was too high to pay for national security but such an expansion would have completely unbalanced the Metropolitan Air Force as planned, and could only have been achieved at the expense of the bomber programme, which was already behindhand. In any case, the immediate expansion of fighter strength was governed by the available resources of pilots and aircraft; and these were largely committed to the refitting of the squadrons which had suffered in the French campaign. It was therefore recommended by Air Commodore Stevenson that, as an immediate 'stop-gap' measure, ten squadrons should be formed immediately and another ten as soon as possible. By the time that these had been formed ultimate requirements might have been clarified by events.[4]

S.3553, Minute 23

ibid.

## VI. EFFECT OF SHORTAGE OF PILOTS

When, early in July, the DHO's proposal came before the Expansion and Re-equipment Committee of the Air Ministry the supply of fighter aircraft was more satisfactory than at any other time since war had broken out, but there was a notable shortage of pilots; and on that account the proposal was reluctantly turned down. Instead a compromise was arrived at whereby an additional flight of four aircraft was added to all the Hurricane squadrons in the Command, numbering thirty, and to six of the Spitfire squadrons.[5] Extra maintenance staff was added to these squadrons but no more pilots; the intention being that the aircraft should only be used in an emergency, in which case those pilots of the

AHB VB/14, Minutes of Meeting 3 July 1940

3 See pp. 98–100, Vol. 1.

4 Ultimate fighter strength would be influenced by a number of factors whose effects could not be estimated with any accuracy until the air battle was joined: 'Our bases, war potential, industry and manpower are concentrated in a relatively small area, encircled by our air defence system. On the other hand, the German areas vulnerable to attack by the British long-range bomber force stretch at present from Narvik to the Pyrenees. Thus, from the German first-line fighter strength, detachments must be made over a wide area to provide protection for important points. In consequence, it may be found, as experience accumulates, that something less than the ultimate standard of fighter strength now contemplated, may suffice.' (DHO-DCAS, S3553 28 June 1940.)

5 This decision affected Coastal Command, for it was DHO's original intention that five of the ten new squadrons should be long-range fighters for shipping protection. It was many months before Coastal Command's requirements for this sort of duty were satisfied.

squadron who would normally be resting or on leave would be called upon to fly them. The arrangement reflected the shortage of fighter pilots, and it was not intended to be permanent. As soon as it was prudent the additional flights were to be withdrawn and amalgamated into new squadrons. By the third week in July the allotment of aircraft and personnel to the thirty six squadrons had been completed.

This shortage of pilots was due, firstly, to a more rapid expansion of fighter strength during the first months of war than had been anticipated when the training programme had been provisioned; secondly, to a lower output of fighter pilots than had been expected, owing partly to the bad winter of 1939/40 and partly to the diversion of resources from Operational Training Units to first-line squadrons; thirdly, and most particularly, to the loss of nearly three hundred fighter pilots during the fighting over France.[6] This shortage remained the limiting factor of expansion throughout the period 1 July–30 September, during which time the only new squadrons added to the operational strength of Fighter Command were Canadian, Polish, and Czecho-Slovakian. Consequently, the strength of the Command remained fairly stable throughout the battle at sixty squadrons.

AHB ID/2/273, Encl 6B

The measures that were taken to increase pilot output during June and July chiefly concerned Flying Training Command and will not be examined here.[7] But the earliest important accession of strength, and the more welcome because it came so shortly after the heavy losses in France, was the result of an agreement with the Admiralty for the loan of Fleet Air Arm pilots. The matter was first discussed in the War Cabinet as the Dunkerque evacuation drew to a close; and the Prime Minister instructed the Air and Naval staffs to see whether any naval pilots could be transferred to Fighter Command. He had in mind an allocation of fifty pilots by the end of June. On 6 June the Admiralty issued instructions for the release of forty-five pilots (including seven RAFVR pilots who had been serving with the Fleet Air Arm), half of them trained, half semi-trained. The Air Ministry, however, asked for half the output of the two flying training schools serving the Fleet Air Arm to be allotted to the RAF, beginning with thirty pilots by the end of June. The Admiralty could not agree on the grounds that the casualties amongst their pilots in April and May had been nearly four times as large as postulated and that, in addition, the war with Italy meant more work for the Fleet Air Arm than had been visualised earlier. Thirty more pilots – making sixty-eight naval pilots in all – were loaned during June; but ten were recalled early in July for service in the Mediterranean; and later in the month the First Lord informed the Secretary of State for Air that no further attachments would be possible. The loans, however, were timely and, considering the Admiralty's difficulties, substantial. Casualties among the

S.65592, Minute, 6 June

Ibid. Alexander-Sinclair, 23 June

6 In May and June pilot casualties in battle and through flying accidents in Fighter Command and the fighter squadrons in France were as follows:

| | *Killed, Prisoners and Missing* | *Wounded and Injured* |
|---|---|---|
| May | 159 | 46 |
| June | 125 | 17 |
| Total | 284 | 63 |

7 See Air Historical Branch narrative on 'Flying Training'. PRO AIR 10/5551.

fifty-eight pilots who served in the RAF were heavy, eighteen being killed during the summer and autumn.

## VII. DISTRIBUTION OF THE FIGHTER SQUADRONS

The distribution of the fighter squadrons was on the territorial basis of four fighter Groups. No. 10 Group protected the country to the west and north-west of Portsmouth and the industrial towns of South Wales; its Headquarters were at Rudloe Manor in Wiltshire. No. 11 Group, whose Headquarters were at Uxbridge, covered London, the Thames Estuary and the south coast as far as Portsmouth. No. 12 Group was responsible for the defence of the Midlands and the east coast from Great Yarmouth to Scarborough, and its Headquarters were at Hucknall in Nottinghamshire. No. 13 Group, with Headquarters at Newcastle, protected the industrial areas round the Tyne and Tees, the Forth and Clyde, and the whole of the east coast of Scotland, with the exception of the extreme north, where a separate organisation – though one for which the AOC, No. 13 Group was responsible – based on Wick guarded the approaches to the Orkneys and Shetlands. These four Groups were the foundation of the air defence system.

## VIII. ANTI-AIRCRAFT COMMAND

The disposition of these Groups largely dictated the location of the AA corps and divisions with which they necessarily worked in co-operation. The fact that the Headquarters of both Fighter and Anti-Aircraft Commands, as well as those of Balloon Command and the Observer Corps, were adjacent at Stanmore was significant of the close liaison of the two organisations. The higher formations of Anti-Aircraft Command in July 1940, consisted of seven divisions, which were linked to fighter Groups as follows:

5th AA Division, HQ Reading, supported Nos 10 and 11 Groups
1st AA Division, HQ Kensington, supported No. 11 Group.
6th AA Division, HQ Uxbridge*, supported No. 11 Group.
2nd AA Division, HQ Watnall*, supported No. 12 Group.
4th AA Division, HQ Chester, supported Nos 12 & 13 Groups.
7th AA Division, HQ Newcastle*, supported No. 13 Group.
3rd AA Division, HQ Edinburgh, supported No. 13 Group.
*Also Fighter Group Headquarters.

As in the case of Fighter Command, the planned strength of Anti-Aircraft Command postulated a German Air Force based in Germany. A considerable expansion of anti-aircraft strength complementary to that of the fighter force was therefore required in the revolutionary situation in which the country found itself in June 1940. But even by the earlier standard Anti-Aircraft Command had a long way to go before it reached full strength. The last pre-war recommendation had been for the provision of 2,232 heavy and 1,860 light guns whereas on 28 July 1940 the Command held only 1,280 heavy and 517 light

CID 319-A
15 May 1939;
and COS(40) 589

guns.[8] The allocation to London and the Thames Estuary area, for example, included 480 heavy guns, but at the above date only 250 were in position. Portsmouth and Southampton, which should have had 104 heavy guns, could count themselves fortunate to have as many as 87. In the North of England and the Midlands the percentage deficiency was much the same as for London. Liverpool, for example, had only 52 heavy guns instead of 104, Birmingham 63 instead of 120. The light gun position was even worse, chiefly owing to a setback in the Bofors gun programme. Such guns as were available were utilised for the defence of RAF stations, and a few of the more important and vulnerable industrial targets amongst the many hundreds of vital points for which defence were required. The searchlight defences were in better shape, nearly four thousand lights being available, but there was an unilluminated belt of country in the West Midlands, and another to the south of Liverpool. Both gaps were filled by the autumn. Balloon Command had also approached more closely to its planned strength than had the gun defences. At the end of July out of an establishment of 1,870 balloons, 1,466 had been allocated to the various squadrons of the Command.[9] But the air defence system as a whole, more especially the gun defences, showed alarming deficiences. If it had been possible, as the Deputy Chiefs of Staff recommended on 1 June, to devote all new production to ADGB, the position would have improved sooner than it did; but as the defences of the Mediterranean were relatively even weaker than those of the United Kingdom only about 50% of gun production was allotted to the home theatre.[10]

## IX. ADDITIONAL AIR DEFENCES APPROVED: CHIEFS OF STAFF REVIEW

Although it was obvious that even the pre-war scale of air defence, much less a new and larger one, would not be completed for many months to come, the Chiefs of Staff gave instructions in July for the air defence position to be
COS(40) 632 reviewed in the light of the new situation. This review was circulated on 16 August and was approved by the Chiefs of Staff on the following day. It remained to a very great extent an ideal that was never realised, and, of course, the provision that it visualised was far larger than the forces that were available during the Battle of Britain. Yet it has a place in the story of that battle for two reasons: first, it shows how wide was the gap between the size of the forces that fought the Battle of Britain and those that the situation actually demanded; and,

8 See also Appendix 38.

9 Balloon Command Orders of Battle for July and August are given in Appendices 3 and 13.

10 The following table indicates the main requirements that had to be met, and the proportion of production despatched overseas during the Battle of Britain period.

Holdings of Heavy Anti-Aircraft Guns

| | *ADGB* | *Training* | *Middle East* | *Ports Abroad* |
|---|---|---|---|---|
| 22 June | 1,204 | 55 | 44 | 128 |
| 31 Oct | 1,412 | 121 | 124 | 158 |

second, it shows how far the Chiefs of Staff were willing to commit the war potential of the country to the production of purely defensive weapons.

The review did not attempt to estimate the full number of fighter squadrons that would be required to defeat the heaviest scale of attack that the Germans could mount. As we have seen, such an estimate had already been made by the Air Staff; and it was, in any case, somewhat academic, as there could be no question of virtually doubling the fighter force until the situation was clarified. But the review did approve those extensions of the air defence system to the West of England and Northern Scotland that have already been noted. It also approved the existing composition of the fighter force, with its emphasis on short-range day fighters such as the Hurricane and Spitfire. Before the end of 1940 the air defence needs of the country had changed, and the cry was for more twin-engined fighters. But it was clearly more prudent, as things stood in the summer of 1940, to expand the strength in terms of Hurricanes and Spitfires. The chief threat to the country's security at that time came from a sustained offensive by day, since only then could the Germans use their own short-range fighters to bring the RAF's to combat.

As for the ground defences, the review based its recommendations on two principles: firstly, that searchlights should be provided for all parts of the country over which the enemy could fly to reach important objectives, provided that their deployment was practicable; secondly, that gun defences were to be allotted to 'all communities of any size engaged in industrial work of national importance'. The following additions in order of priority to the existing searchlight zones were recommended:

1. South Wales
2. Midlands Gap
3. Edinburgh–Tyne corridor
4. Glasgow extension
5. Devon and Cornwall (to Hartland Point)
6. North Lancashire and Barrow
7. Northern Ireland
8. Carlisle district[11]
9. North Wales
10. Aberdeen district
11. Moray Firth
12. Stranraer district
13. Anglesey
14. Devon and Cornwall (to the Lizard)

Eighty-seven extra batteries[12] would be needed for these extensions. Sixty more were approved in order to increase the density of searchlights deployed in gun defended areas, though it was hoped that the radiolocation equipment for the control of gunfire against unseen targets would permit the cancelling of this last

11 Experience showed that extensions 8–14 would not be required, and in January 1941, at the request of the AOC-in-C, Fighter Command, they were deleted.

12 In the first nine months of war all searchlight units had been transferred from the Royal Engineers to the Royal Artillery, and all 'companies' had been renamed 'batteries', the latter containing the same number of lights as the former.

requirement. These additions, plus a small mobile reserve of twelve batteries, entailed an increase of nearly four thousand projectors over and above the five thousand already on establishment.

Extra guns were recommended on a similar large scale. 856 heavy guns were allotted to defend places open to a heavier scale of attack than when their defences had been originally planned, and 672 to towns which previously had been undefended. The chief places in the latter category were the industrial towns within forty miles of Manchester, and towns in the Midlands such as Leicester, Peterborough and Northampton. Over four hundred vulnerable points were added to the list of small targets requiring defence by light guns, and 2,550 40 mm. guns were approved for this purpose. These additions made the total authorised anti-aircraft gun defences of the country 3,744 heavy and 4,410 light guns.[13] The strength of the balloon barrages was also increased. New barrages were planned, chiefly for the protection of ports, harbours and anchorages against minelaying aircraft. Six hundred balloons were to be deployed, making the operational strength of Balloon Command two thousand six hundred balloons, with an equal number in immediate reserve.

It was estimated that Anti-Aircraft Command would probably need five more divisions to absorb the additional weapons that would be issued to it under this programme. In numbers and material it would then be larger than Fighter Command. The Chiefs of Staff thought it proper, therefore, to re-emphasise the paramount importance of Fighter Command in the air defence system. Air defence was to remain the prime responsibility of AOC-in-C, Fighter Command; he must have only a single anti-aircraft commander to deal with; and the territorial organisation of Anti-Aircraft Command must fall into line with that of Fighter Command.

## X. SIGNIFICANCE OF THE REVIEW

It would be difficult to imagine a situation, failing the invasion of some part of the British Isles, in which this country could be more seriously threatened, than that in which it was placed in the summer of 1940. The historical importance of the Chiefs of Staff review lies in the fact that, in the situation applying during the Battle of Britain and until Germany attacked in the east, it defined the maximum insurance for the security of the United Kingdom against air attack, relative to the size of the forces arrayed against it. At existing production rates, it would have taken years to complete the plan: e.g. the average monthly additions to Anti-Aircraft Command between June 1940 and February 1941 included only forty heavy anti-aircraft guns. In any case, as the war developed and the threat to this country lessened, it was possible to modify the plan. But it remains a striking example of the extent to which it might have been necessary

13 Some progress had been made by this date in perfecting the Unrotating Projectile (UP) weapon for use against low-flying aircraft, and as a result of the August review an order for eight thousand projectors was placed. As early as June 1940 it had been hoped that some projectors would be available by August, and it was intended to deploy them in defence of aircraft factories, but these hopes were disappointed. At this stage of development there was no means of ensuring the fragmentation of the case of the projectile, and for a time its use was prohibited except for fire to seaward. In July this restriction was removed by the Prime Minister, but the weapon did not become available in time to play any useful part either in the Battle of Britain or in the night offensive of 1940–41.

to use British industry and manpower for the production and manning of weapons useful for little else but defence.

## XI. IMPORTANCE OF THE AIRCRAFT INDUSTRY

The immense gap between the number of ground weapons recommended in the review and those that were actually available needs no emphasis. But for the country as a whole the shortage was worsened by the necessity for concentrating on the defence of a particular aspect of industry, the manufacture of aircraft and aero-engines. The importance of protecting the aircraft industry, especially in the early stages of a war with Germany, when she would hold the initiative in the air, had long been realised. Shortly after the outbreak of war Air Chief Marshal Dowding had been instructed to regard this as his most important single task; and the directive was still in force when the campaign in the West began. He had in fact carried out a certain measure of redeployment of ground defences with this purpose in mind in late September 1939. The policy was reaffirmed by the Prime Minister in May, when he gave instructions that 'the utmost available AA strength should be concentrated on the aircraft factories: they are more important than anything else'. On 15 June the Chiefs of Staff asked for details of the redeployment proposed by Air Chief Marshal Dowding; and a day or two later they reminded him of the peculiar importance of the fighter production side of the industry. His first measures entailed withdrawing nearly one hundred and twenty heavy guns from other areas, utilising a regiment of Bofors guns which had returned from Narvik, and distributing them chiefly to the assembly plants in the Thames Valley and Southampton. Forty of the heavy guns were withdrawn from London, a similar number from East Coast and Scottish ports, and the residue from a regiment which had been about to embark for France. In the next two weeks a few guns were taken from new production and allotted to the aircraft factories, and by 7 July the industry was protected by 25% of the heavy guns in Anti Aircraft Command.[14] In addition a number of factories were protected by the Parachute and Cable (PAC) device.[15]

S.4752, Encl 4A, Minute PM – General Ismay, 19 May 1940

COS(40)475

14 On 7 July the close defences of the most important plants included the following equipment:

| | *HAA Guns* | *LAA Guns* | *Balloons* |
|---|---|---|---|
| Derby | 36 | 12 | 32 |
| Crewe | 8 | – | 32 |
| Kingston | 12 | – | – |
| Langley | 28 | 4 | 24 |
| Brooklands | 16 | 4 | – |
| Brockworth and Cheltenham | 36 | 12 | 24 |
| Woolston and Eastleigh | 51 | 20 | 72 |
| Castle Bromwich | 21 | 8 | 100 |
| Filton | 12 | 8 | 24 |
| Coventry | 40 | – | 56 |
| Sheffield | 24 | – | 72 |

For a comprehensive table of heavy AA defences, see Appendix 38.

15 By this, a linear arrangement of rockets, to which light steel cables were attached, was electrically discharged on the approach of a hostile aircraft. The rocket ascended to a height of five or six hundred feet where a parachute, attached to the cable, opened and thus suspended the cable long enough for a curtain to be aligned before the approaching aircraft.

COS(40) 593

Throughout the Battle of Britain the protection of the aircraft industry remained the chief charge upon Fighter Command. Quite apart from the likelihood of attacks on the industry as part of an independent air offensive against this country, attacks on it on a large scale were expected to form a prelude to invasion, possibly accompanied by an offensive against fighter stations and communications in Kent and Sussex. Only when an invasion expedition was actually launched was Fighter Command to give priority to another task, namely the defence of the naval units that would be attacking the enemy's fleet. Air Chief Marshal Dowding attempted no new employment of his fighter squadrons the better to protect the industry; nor was one possible except the execrable method of continuous patrols over specific factories. The Fighter Command system had been designed to provide air defence for all threatened areas of the United Kingdom, with a particular emphasis on the defence of London. Within each of the fighter Group areas the number of worthwhile targets was so large that to allocate fighter strength to specific objectives would have meant so great a dispersion of squadrons that, unless fighter resources were almost unlimited, there would have been no fighter striking force available to meet what was the greatest aerial threat to the nation's security, attacks by mass formations of enemy bombers; nor would the necessarily small numbers of fighters allocated to particular targets have been capable of withstanding attacks of any size. Guns and balloons, on the other hand, were admirably adapted for close defence; and for this reason redeployment for the defence of the aircraft industry took place in terms of ground defences alone. But this did not in any way relieve the fighter squadrons of responsibility for the defence of the industry. Close defence was at best a deterrent and could never give security. Even if a particular factory or area could have been so heavily defended with ground weapons that attack on it meant virtual suicide, which was certainly not possible in the summer of 1940, the defence problem would not have been solved, for to do that for every vital target in the country would have involved such an immense production of defensive weapons that the war could never have been won. The defence of the aircraft industry, therefore, as of every other branch of the economy of the country, was predominantly the concern of Fighter Command, since only fighters could provide the general cover which would enable industry as a whole to continue working.

## XII. CONCLUSION

It is apparent from all this that the collapse in France extended and complicated the tasks of the air defence organisation at a time when the weapons available were insufficient, according to the calculations of the Air Staff, to give security even in the more favourable situation that had existed prior to May 1940. The need for extension and expansion also coincided with a period when Fighter Command was re-equipping and re-organising after its serious losses in May and June. Consequently the expansion of the Command's strength that was so clearly called for, was effectively postponed; and no new fighting units were added to the Command between the beginning of July and the end of September, with the exception of one Canadian, one Czech, and two Polish squadrons.

Without Dominion and Allied pilots it would probably have been necessary to 'roll-up' a number of fighter squadrons. As it was, the flow of new pilots during June and early July was insufficient to reinforce all squadrons to full strength; and on 7 July, just before the preliminary operations of the Battle of Britain commenced, the Command had a deficiency of 197 pilots out of an establishment of 1,450. Nevertheless the Command was extended in the south west, a beginning was made in its extension to the West Midlands, Wales, the shores of the North Channel, and also in Scotland, and as a complementary measure the RDF chain and the Observer Corps were expanded in these areas. As for Anti-Aircraft Command, the chief factor governing expansion was gun production, and this was insufficient to make any appreciable difference to the equipment available during the three crucial summer months. All that could be done was to make the best use of strictly limited resources. Here it seemed sound policy to deploy all that could be spared from other areas, up to the very extreme of legitimate risk, in order to protect the aircraft industry. If this could not be kept in continuous and large-scale production, the defeat of the fighter force was only a matter of time. Thus its protection was a matter of particular interest to Fighter Command, as well as to the country at large; and this task had priority over all others that the Command might have to perform. But it would be quite wrong to regard the fighter operations of August and September as a battle fought for the aircraft industry. They were to a great extent dictated by the German Air Force, and Fighter Command fought off their attacks without much thought for nice differences between the probable targets of the enemy formations.

# THE AIR DEFENCES OF GREAT BRITAIN
# AUGUST 1940

## LEGEND

TOWNS ..... •
GROUP HEADQUARTERS ..... ■
SECTOR " ..... ◉
SATELLITES ..... ⊙
GROUP BOUNDARIES ..... -----
R·D·F STATIONS ..... •
FIGHTER COMMAND HEADQUARTERS ..... ▨

A·A GUNS .....
SECTOR BOUNDARIES .....
OBSERVER CENTRES .....
" SECTOR BOUNDARIES .....
BALLOON BARRAGES .....
SEARCHLIGHT AREAS .....

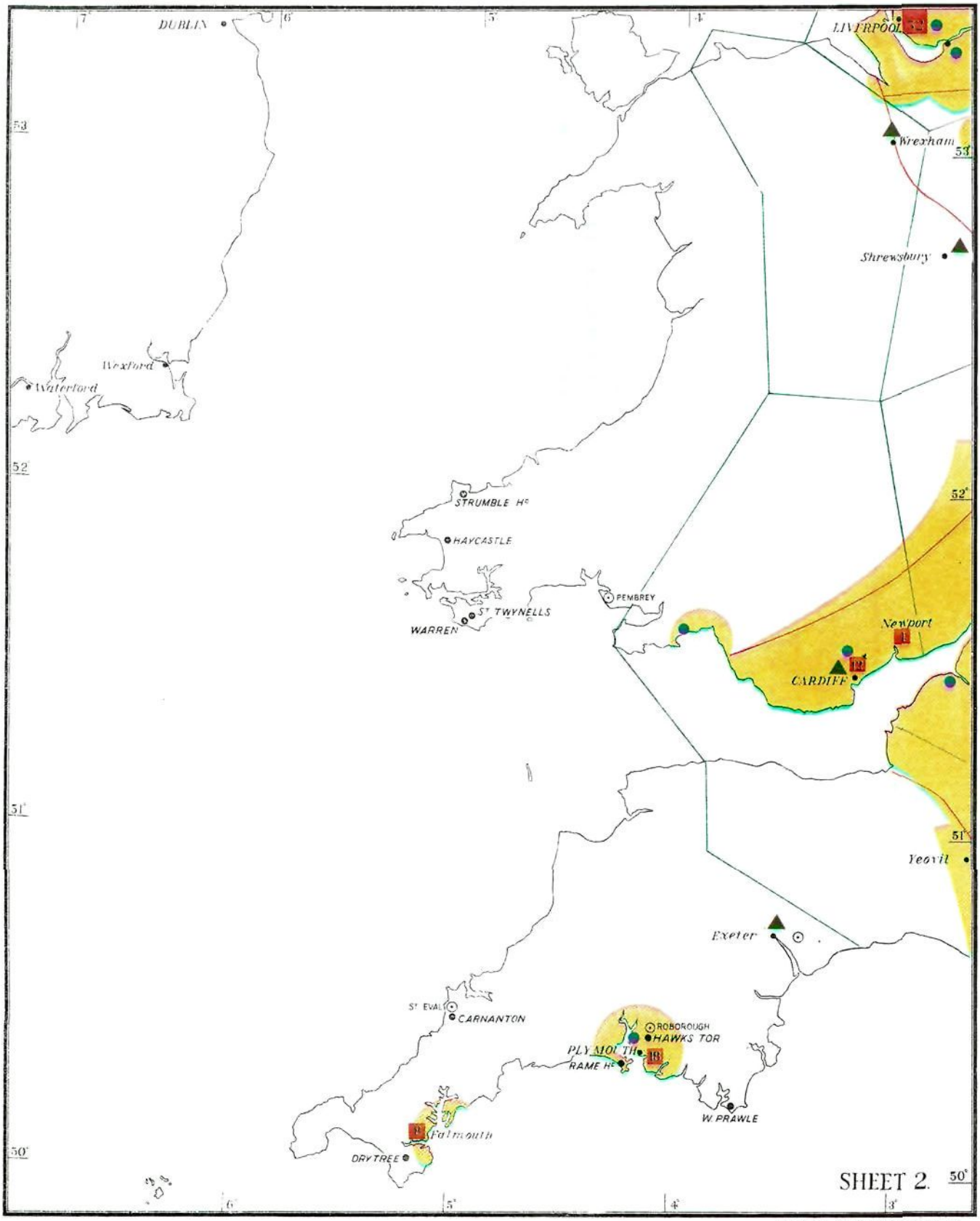
SHEET 1. S.E. ENGLAND & THE MIDLANDS
" 2. S.W. " & WALES
" 3. N.E. " & SHETLAND ISLES
" 4. S. SCOTLAND & N.E. IRELAND
" 5. N. " & ORKNEY ISLES

*NOTE :-* *Changes in the deployment of Anti-Aircraft guns during July-October are given in Appendix 35.*

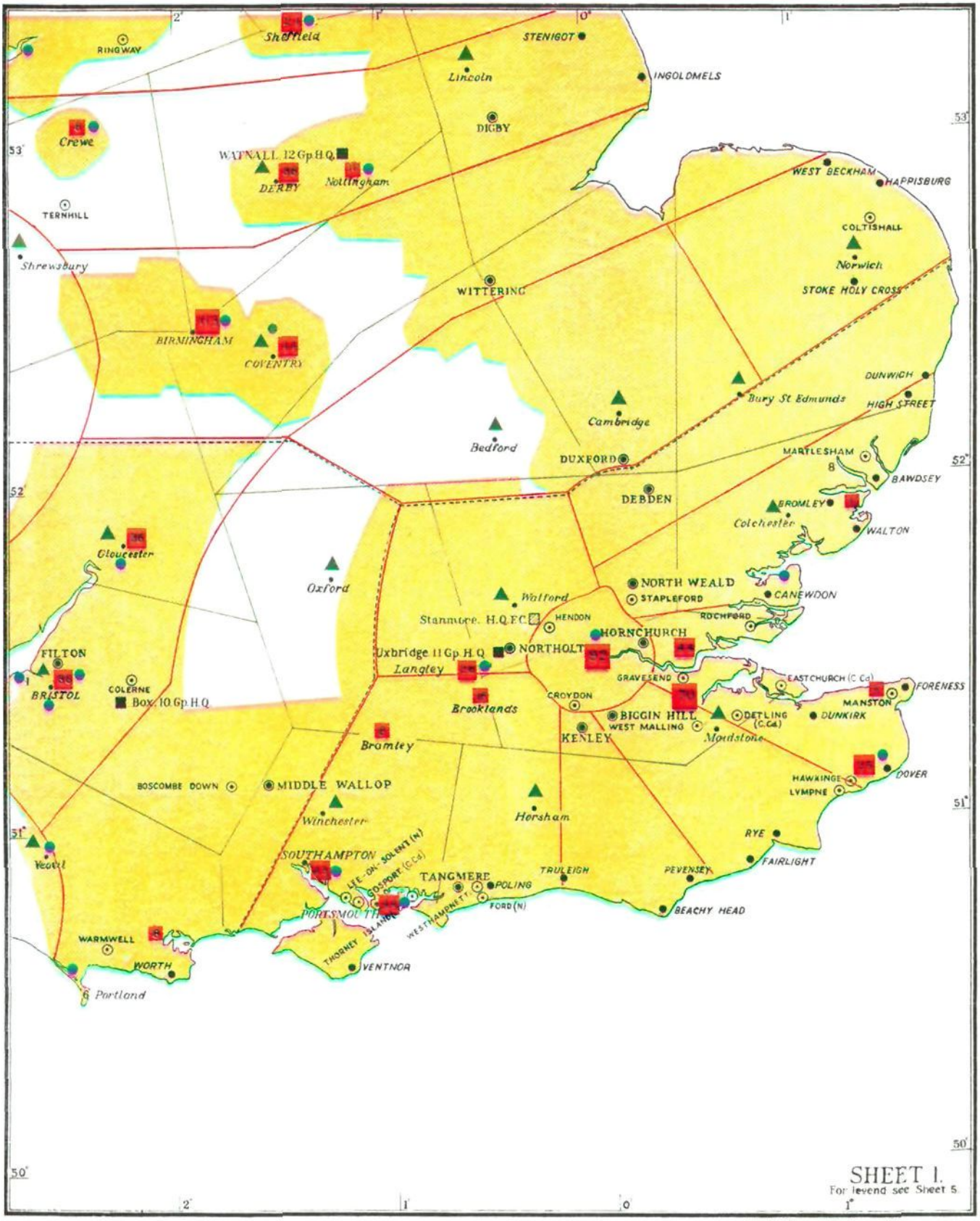
Scale 1:1,000,000

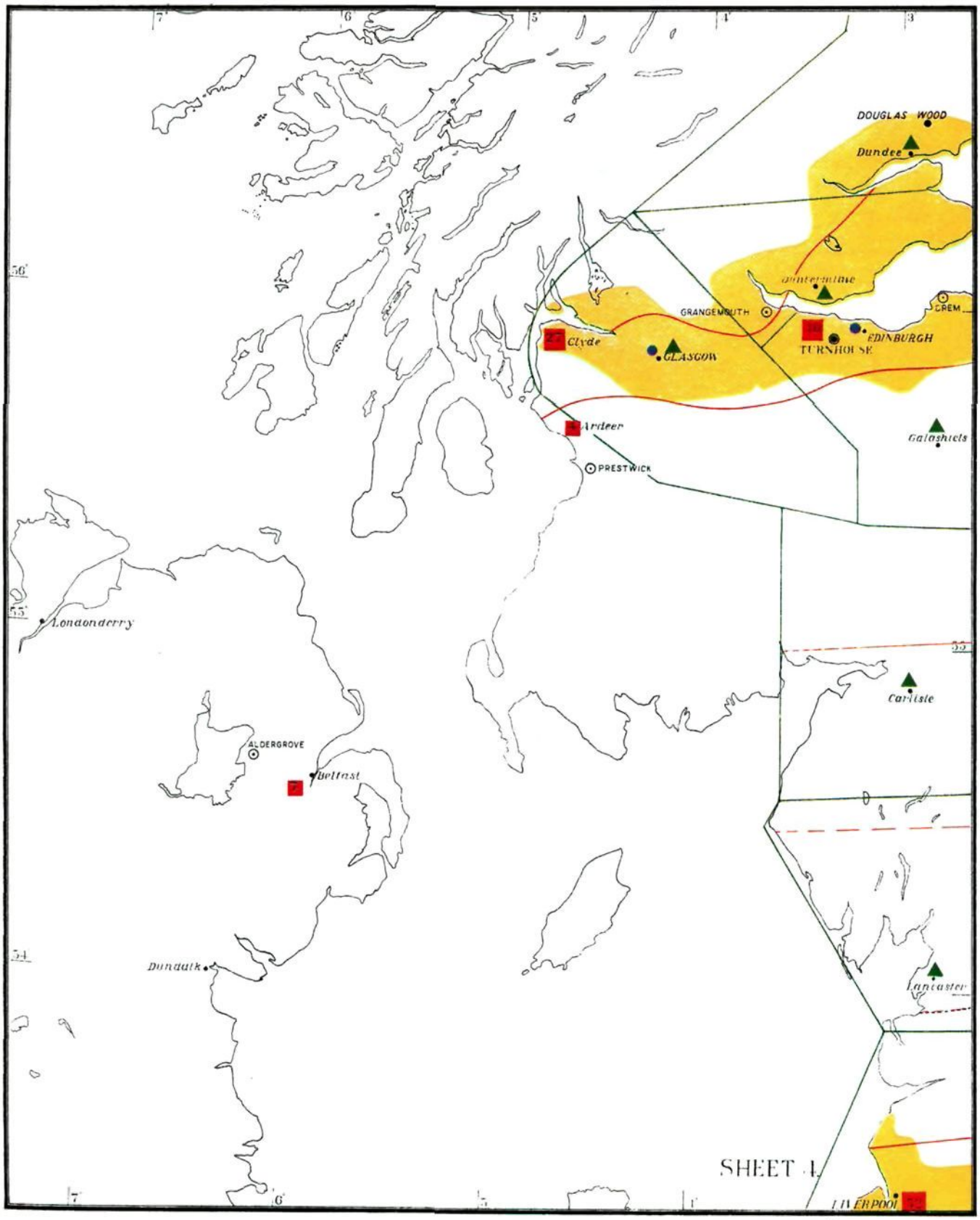
MILES 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

MAP Nº 115 DRAWN & COMPILED AT A·H·B 1.




MAP Nº 115 COMPILED & DRAWN AT A - 51


Sheffield
RINGWAY
STENIGOT
Lincoln
INGOLDMELS
DIGBY
Crewe
WATNALL 12 Gp H.Q.
DERBY
Nottingham
WEST BECKHAM
HAPPISBURG
TERNHILL
COLTISHALL
Norwich
Shrewsbury
STOKE HOLY CROSS
WITTERING
BIRMINGHAM
COVENTRY
DUNWICH
Bury St Edmunds
HIGH STREET
Cambridge
Bedford
DUXFORD
MARTLESHAM
BAWDSEY
DEBDEN
BROMLEY
Colchester
WALTON
Gloucester
Oxford
NORTH WEALD
STAPLEFORD
CANEWDON
Watford
Stanmore. H.Q.F.C.
HENDON
ROCHFORD
HORNCHURCH
FILTON
Uxbridge 11 Gp H.Q.
NORTHOLT
Langley
GRAVESEND
EASTCHURCH (C.Cs)
FORENESS
BRISTOL
COLERNE
Box 10 Gp H.Q.
Brooklands
CROYDON
MANSTON
BIGGIN HILL
WEST MALLING
DETLING (C.Cs)
DUNKIRK
Bromley
KENLEY
Maidstone
BOSCOMBE DOWN
MIDDLE WALLOP
HAWKINGE
LYMPNE
DOVER
Winchester
Hersham
Yeovil
SOUTHAMPTON
RYE
LEE-ON-SOLENT (N)
GOSPORT (C.Cs)
TANGMERE
TRULEIGH
PEVENSEY
FAIRLIGHT
POLING
PORTSMOUTH
FORD (N)
BEACHY HEAD
WARMWELL
WORTH
THORNEY ISLAND
WESTHAMPNETT
VENTNOR
Portland
SHEET 1.
For legend see Sheet 5.


DOUGLAS WOOD
Dundee
Glenmavis
GRANGEMOUTH
CREM
Clyde
GLASGOW
EDINBURGH
TURNHOUSE
Ardeer
PRESTWICK
Galashiels
Londonderry
ALDERGROVE
Belfast
Carlisle
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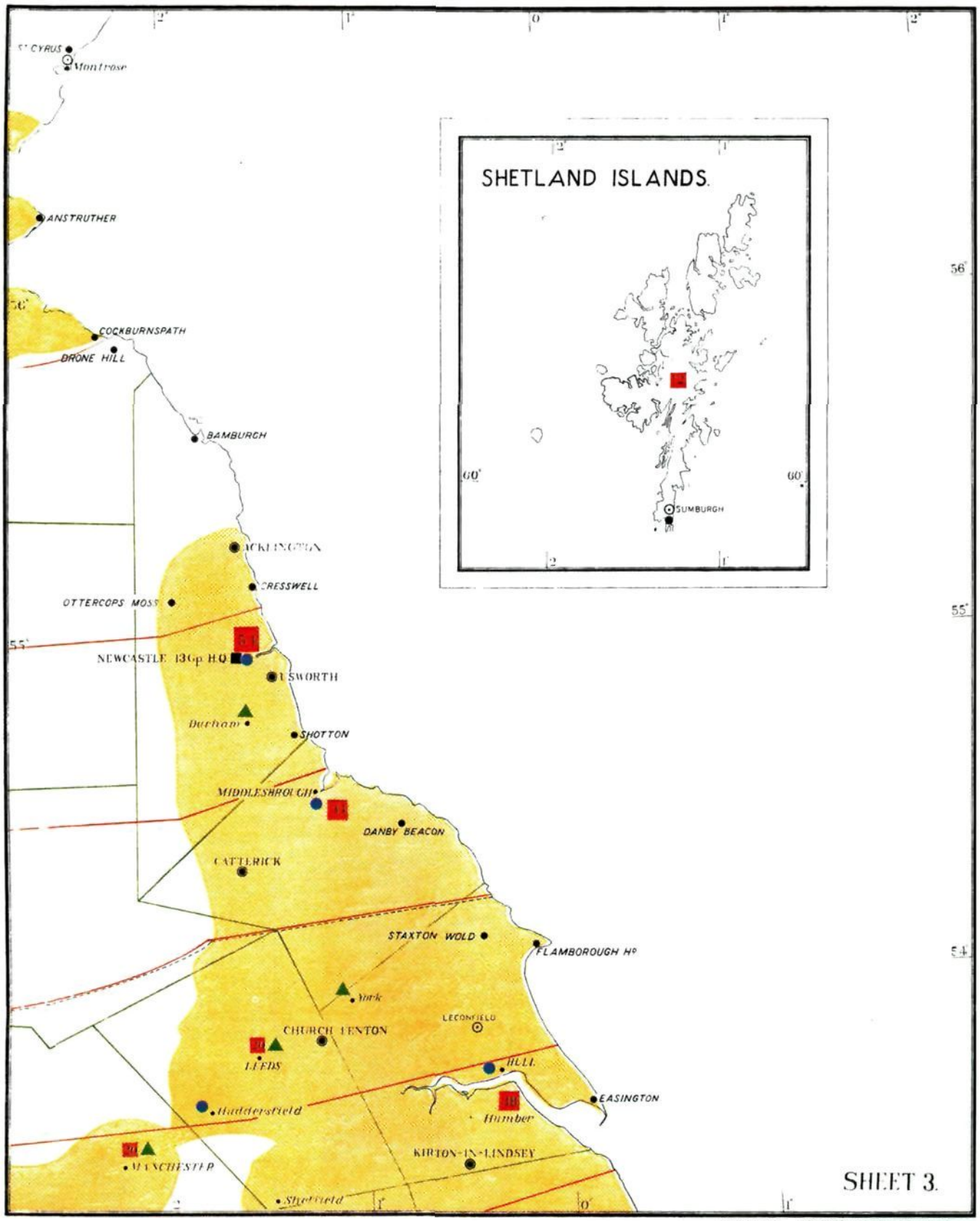
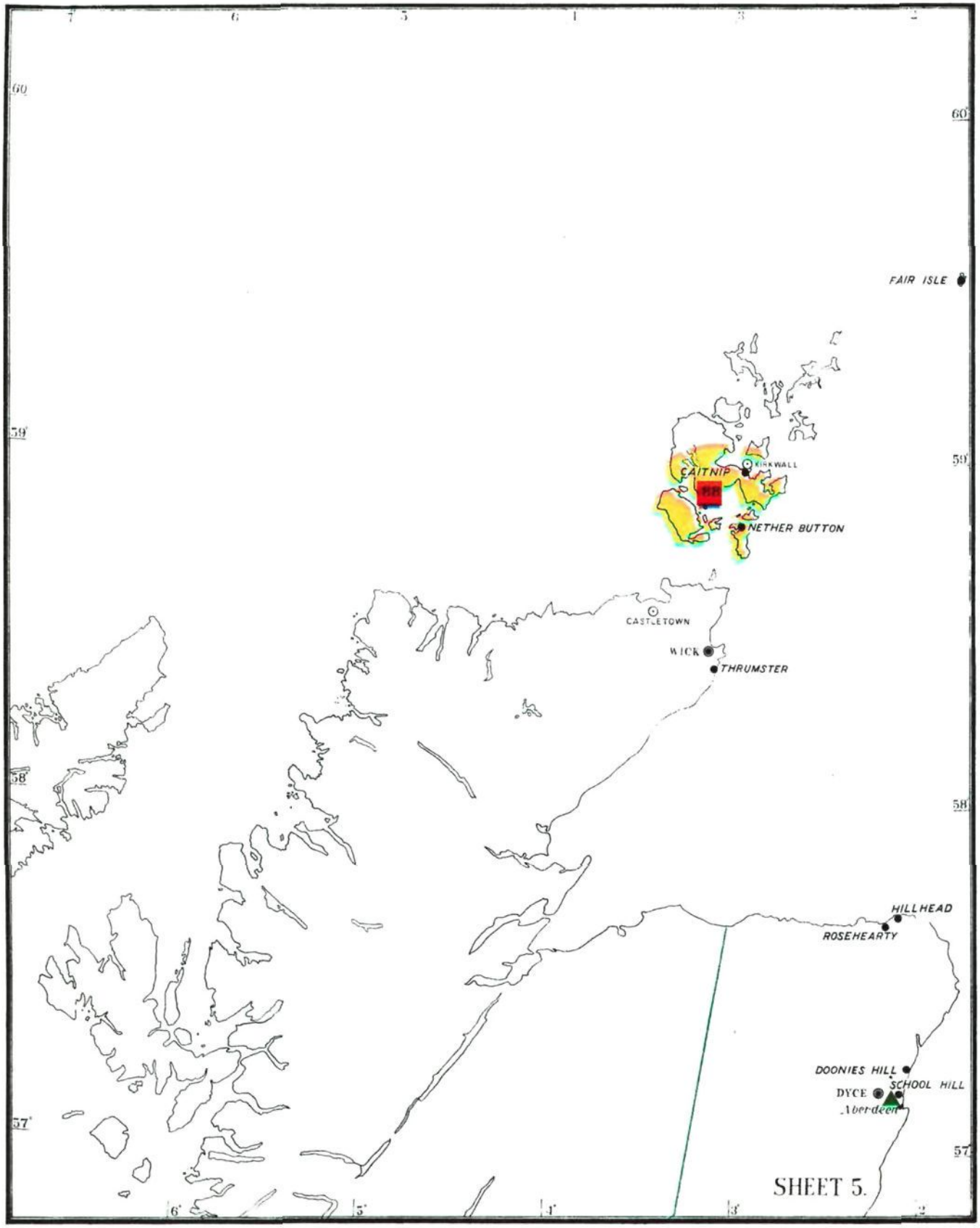
Lancaster
LIVERPOOL
SHEET 4
7°
6°
5°
4°
3°
56°
55°
54°


ST CYRUS
Montrose
ANSTRUTHER
COCKBURNSPATH
DRONE HILL
BAMBURGH
ACKLINGTON
CRESSWELL
OTTERCOPS MOSS
NEWCASTLE 13Gp H.Q.
USWORTH
Durham
SHOTTON
MIDDLESBROUGH
DANBY BEACON
CATTERICK
STAXTON WOLD
FLAMBOROUGH Hº
York
LECONFIELD
CHURCH FENTON
LEEDS
HULL
Huddersfield
Humber
EASINGTON
MANCHESTER
KIRTON-IN-LINDSEY
Sheffield
SHETLAND ISLANDS.
SUMBURGH
60°
56°
55°
54°
SHEET 3.
MAP Nº 115 COMPILED & DRAWN AT A.H.B.1

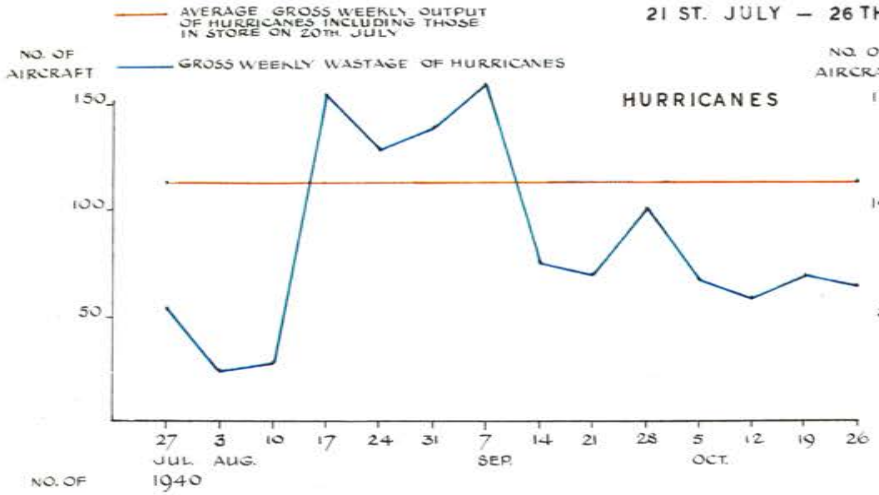

7°
6°
5°
4°
3°
2°
60°
59°
58°
57°
FAIR ISLE
CAITNIP
KIRKWALL
NETHER BUTTON
CASTLETOWN
WICK
THRUMSTER
HILLHEAD
ROSEHEARTY
DOONIES HILL
SCHOOL HILL
DYCE
Aberdeen
SHEET 5.

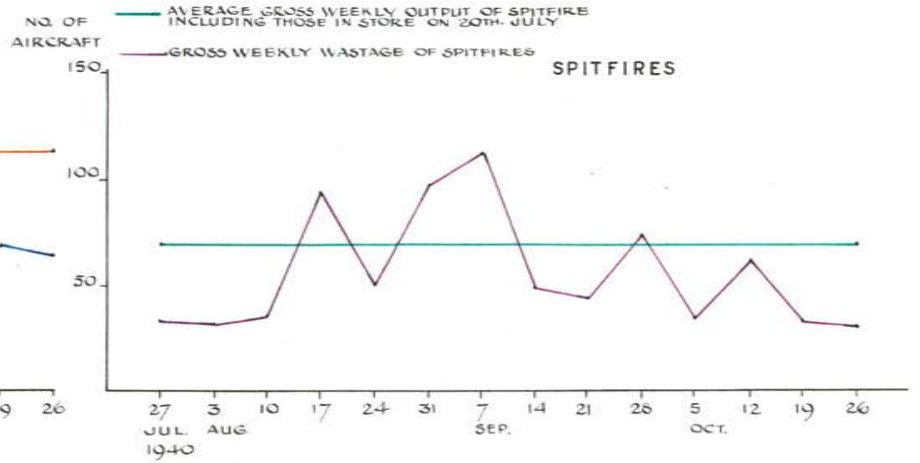
M. A. F.

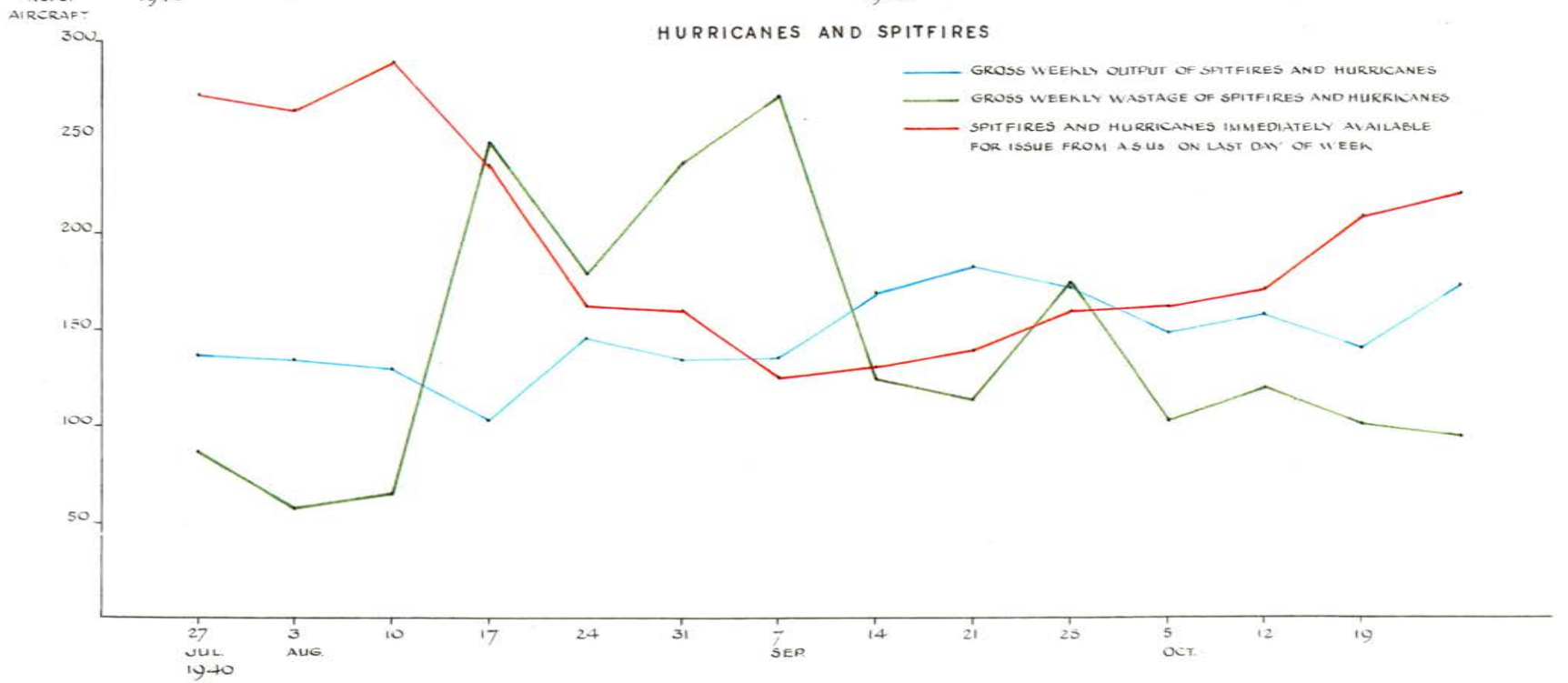
# HURRICANES AND SPITFIRES

## PRODUCTION, WASTAGE AND NUMBER AVAILABLE FOR IMMEDIATE ISSUE

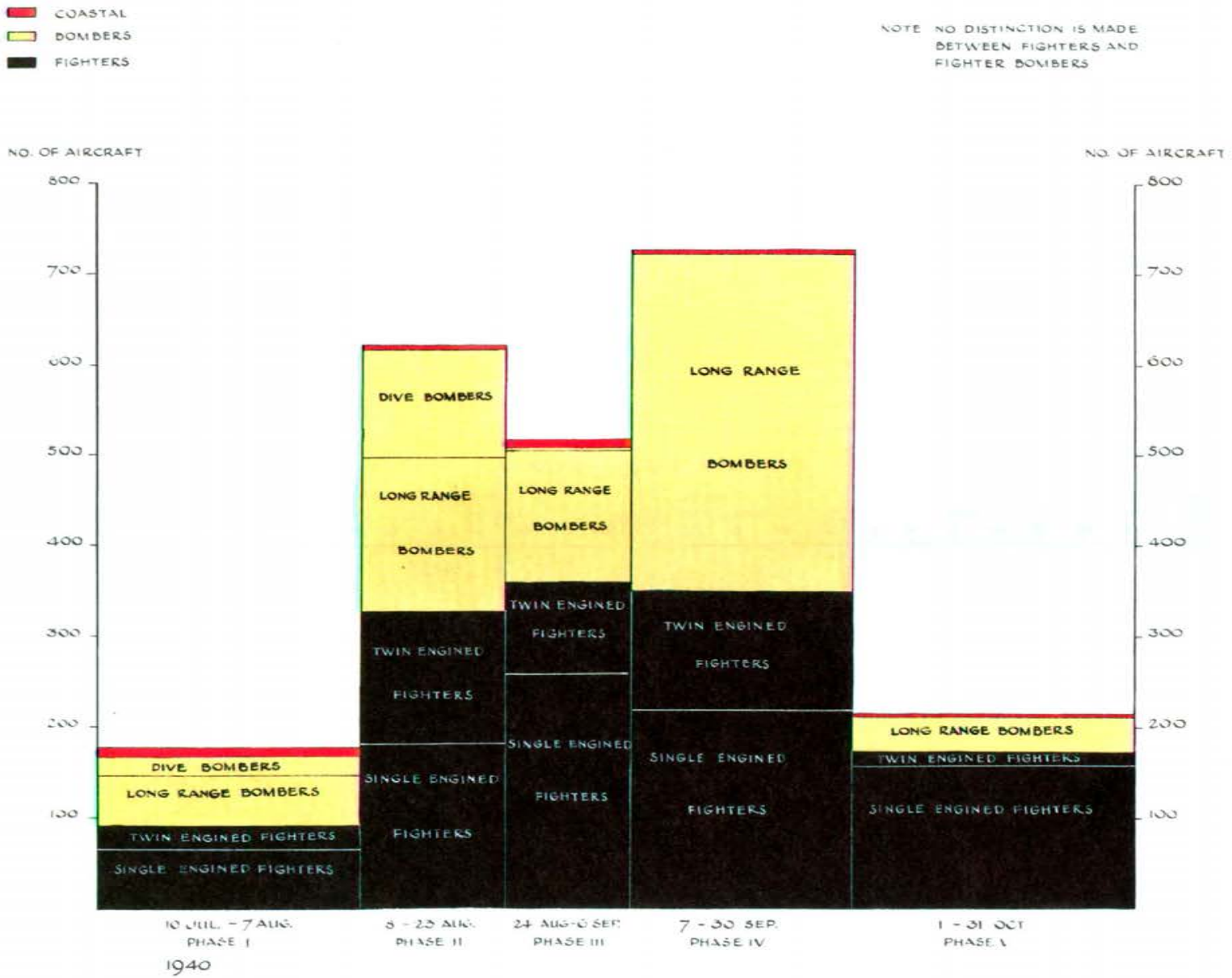
21 ST. JULY – 26 TH. OCTOBER 1940



# TYPES OF GERMAN AIRCRAFT CLAIMED AS DESTROYED BY FIGHTER COMMAND DURING THE BATTLE OF BRITAIN



1. Air Chief Marshal Lord Dowding and Air Marshal Sir Trafford Leigh-Mallory at a ceremony to mark the third anniversary of the Battle of Britain, 15 September 1943.

2. The RAF's political and military leaders during the Battle of Britain – the Secretary of State for Air, the Rt Hon. Sir Archibald Sinclair Bt PC CMG MP, and the Chief of the Air Staff, Air Chief Marshal Sir Cyril Newall GCB CMG CBE AM – at a meeting of the Air Council in July 1940.

3. King George VI in conversation with the Air Officer Commanding No. 11 Group Fighter Command, Air Vice-Marshal Keith Park, during a visit to RAF Northolt, 26 September 1940. Very few anti-aircraft weapons, such as the 40mm Bofors AA gun in the background, were available to protect Fighter Command's airfields in the South-East of England during the course of the Battle.

4. Five RAF Fighter Command Pilots, from left to right: Pilot Officer J. L. Allen, Flight-Lieutenant R. R. S. Tuck, Flight-Lieutenant A. C. Deere, Flight-Lieutenant A. G. ('Sailor') Malan and Squadron Leader J. A. Leathart. At a presentation cenemony held at RAF Hornchuch on 27 June 1940, His Majesty King George VI decorated the five pilots; four would survive the Battle of Britain and become outstanding RAF fighter leaders.

5. Squadron Leader E. M. 'Teddy' Donaldson, Officer Commanding No. 151 Squadron, and Wing Commander F. V. Beamish, Station Commander RAF North Weald, June 1940, in front of a Hurricane belonging to No. 151 Squadron. Victor Beamish flew operational sorties with the squadrons based at North Weald whenever possible, claiming two Luftwaffe aircraft destroyed, eight probably destroyed and a further five damaged between 12 July and 30 October 1940. He was killed in action on 28 March 1942 while serving as the Station Commander at RAF Kenley.

6. Flight-Lieutenant I. R. Gleed DFC pointing to his personal mascot ('Figaro the Cat') painted on the side of his Hawker Hurricane, November 1940. Ian 'Widge' Gleed flew with No. 87 Squadron during the Battle of France and subsequently the Battle of Britain, being awarded the DFC in September 1940; he went on to become one of the RAF's most successful fighter leaders prior to his death in action on 16 April 1943.

7. Hawker Hurricane of No. 85 Squadron, October 1940. Although lacking the performance of either the Supermarine Spitfire or the Messerschmitt Bf 109, the Hurricane was rugged, reliable and an excellent gun platform.

8. Pilots of No. 17 Squadron atop one of the squadron's Hawker Hurricanes, RAF Debden. From left to right: Flying Officer D. H. W. Hanson; Flight-Lieutenant W. J. Harper; Flying Officer G. R. Bennette; Pilot Officer L. W. Stevens; Pilot Officer G. E. Pittman; Sergeant G. Griffiths DFM.