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R.A.F. NARRATIVE  
(FIRST DRAFT)

VOL 2

THE R.A.F. IN THE BOMBING  
OFFENSIVE AGAINST GERMANY

VOLUME II

RESTRICTED BOMBING  
SEPTEMBER 1939-MAY 1941

AIR HISTORICAL BRANCH (1)  
AIR MINISTRY



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VOLUME IIRESTRICTED BOMBING, SEPTEMBER 1939 to MAY 1941.INTRODUCTION

This second volume of the narrative on the bombing offensive against Germany sets out to show how the impact of war affected and was met by Bomber Command, whose early history has been traced in the first volume. It is entitled "Restricted Bombing" for two reasons, the first political and the second due to force of circumstances.

At the outset of the war the British and French governments had pledged themselves to restrict bombing attacks to purely military objectives (see Appendix A). As a result no bombing could be undertaken by the R.A.F. which involved the least risk of civil casualties, unless such bombing should be initiated by the enemy. These conditions held good for the first eight months of war, until the German bombardment of Rotterdam on May 14th, 1940 provided the occasion for the initiation of unrestricted air war.

Owing to the relatively small size of the British bomber force, however, restricted bombing continued. In this case the restriction was upon the type and number of objectives attacked. A balance had to be struck between the relative merits of alternative targets, and the bomber force conserved to the utmost with a view to building it up into a weapon capable of winning the war.

This conservation of the bomber force continued to apply in the next volume of this narrative. With the entry of Russia, and later of America, into the war, however, it became of less vital importance than it was in this early period when the British Empire stood alone.

This volume of the bombing narrative is divided into six parts. The first deals with the organisation of Bomber Command at the outbreak of war and its development during the period covered; the second with the use of the bomber force during the eight months of political restriction; the third covers the period of the land campaigns of April to June 1940, when the Command was suddenly called upon for a maximum effort in support of the Army. The fourth part deals with the period from June to October 1940, when German invasion of the British Isles was constantly expected, and the fifth with the beginning of the strategic bombing for which the Command had really been designed. The sixth and final part covers the progress of the war at sea, so far as this concerned the bomber force.

The sections on policy which will be found in Parts II, III, IV and V can be read consecutively if an outline of the development of bombing policy during the period is desired. The operational narrative is subdivided within each part according to the type of objective detailed for attack. Sources used are referred to in the margin, and can be consulted for further information. Certain specialist monographs and other narratives of the Air Historical Branch are referred to where they throw further light on any subject.

# CHRONOLOGY OF PRINCIPAL EVENTS

1939

- Sept. 3 British Ultimatum to Germany expired at 1100 hours.
- " 3/4 First Leaflet Operation carried out by Whitleys over Hamburg, Bremen and the Ruhr.
- " 4 First attack on enemy warships, by Blenheims and Wellingtons off Brunsbittel. Hits claimed on Von Scheer. F/O Doran was awarded the first D.F.C. of the war for this attack.
- Oct/Nov. Germans began to lay magnetic mines from the air round the British coast.
- Dec. 3 24 Wellingtons attacked warships at Heligoland
- Dec. 12 Whitleys commenced nightly patrols of enemy seaplane bases on the Frisian Islands.
- Dec. 18 Patrol of Wilhelmshaven by 24 Wellingtons - 12 shot down.

1940

- Jan. 2 First M.E. 110 shot down by Wellingtons
- Jan. 15 Formation of British Air Forces in France Command under Air Marshal Barratt.
- Mar. 11 German U-boat No.31 sunk by a Blenheim of No.2 Group in the Schillig roads.
- Mar. 19/20 Largest scale raid to date - 30 Whitleys and 20 Hampdens upon seaplane base at Hornum, on the Island of Sylt.
- Mar. 28 Air Marshal Portal succeeded Air Chief Marshal Sir E.R. Ludlow-Hewitt as A.O.C. in C of Bomber Command.
- April 9 German invasion of Denmark and Norway. 12 Wellingtons and 12 Hampdens attacked German warships at Bergen.
- " 11 First attack by Bomber Command on a mainland target. Six Wellingtons attacked Stavanger aerodrome.
- " 12 83 Bombers despatched to attack enemy fleet sighted at sea. Only 12 sighted a target.
- " 13/14 First minelaying operation carried out by Hampdens off Danish coast.
- May 10 Germans invaded Holland, Belgium and Luxembourg.
- " 10/11 Bomber Command aircraft bombed German airborne troops at Waalhaven and Ypenburg aerodromes and on the beaches north of the Hague.
- " 15 War Cabinet authorised bombing attack upon Germany east of the Rhine.
- " 15/16 First bombing attack on industrial targets in Germany, by 96 aircraft upon oil and railway targets in the Rhur.
- " 16 The Prime Minister (Mr. Churchill) visited France and agreed that heavy bombers should be used against the Meuse crossings
- May 17/18 53 aircraft despatched against the Meuse crossings, 78 against Hamburg and Bremen.
- 26/27 "Operation Dynamo", the evacuation from Dunkirk began. Concentrated effort by R.A.F. to assist evacuation.
- May 27 Belgians requested an armistice as from midnight.
- June 4 "Operation Dynamo" completed.
- " 10 Italy declared war on Allies.
- " 11/12 First bombing attack upon Italy, by 36 Whitleys from England, refuelling in Channel Islands.
- " 12 First V.C.s awarded to R.A.F., posthumously to Fg.Off. Garland and Sgt. Gray for attack on bridges over Albert Canal in Battle aircraft on May 12th.
- " 12 Surrender of 51st Division at St. Valery-en-Caux.
- " 16 British offer of union with France rejected.
- " 17 Marshal Petain announced that France had requested armistice terms.
- " 20 New Bomber Directive - to reduce the scale of air attack on Great Britain.
- " 21 France accepted armistice terms.
- " 25 Hostilities in France ended at 0135 hours.

/July 1/2

July 1/2 First 2,000 lb bomb dropped, against Scharnhorst at Kiel.  
 " 4 First Anti-invasion Directive.  
 " 4/5 Hamburg, Bremen, Wilhelmshaven, Emden and Kiel attacked.  
 " 13 New Directive to reduce scale of air attack upon Great Britain.  
 Aug. 12/13 Low-level attack on Dortmund-Ems aqueduct. Flt.Lt. Learoyd  
 awarded the V.C.  
 " 25/26 First attack on Berlin.  
 Sept. 8 Invasion alert No.1 in force. Major effort of Bomber Command  
 turned against German invasion preparations.  
 " 13/14 91 bombers directed against barges and shipping in France and  
 Belgium.  
 " 23/24 119 aircraft operated against Berlin.  
 Oct. 4 Air Marshal Sir Richard Peirse succeeded Air Marshal  
 Sir Charles Portal as A.O.C.-in-C., Bomber Command.  
 " 27/28 Skoda works at Pilsen, Czecho Slovakia attacked by Whitleys.  
 " 30 New Directive - Area Bombing initiated.  
 Nov. 16/17 Heaviest concentrated raid to date - 131 aircraft on Hamburg.  
 Dec. 16/17 First attack on an "industrial area" without specific objective -  
 "ABIGAIL - RACHEL" operation by 134 aircraft on Mannheim.

#### 1941

Jan. 1/2 ) Second "area attacks" - "Divan - Jane" raid on Bremen.  
 " 3/4 )  
 " 4 Hipper identified at Brest. 53 aircraft attacked that night.  
 " 7 Code-name for fullscale area attack changed from "Divan to  
 " "GOODWOOD".  
 " 15 New Bombing Directive - primary aim oil.  
 Feb. 10/11 "GOODWOOD" raid on Hanover by 221 aircraft.  
 " " First operation by Stirlings - 3 despatched against Rotterdam.  
 " 24/25 First operation by Manchesters - 6 despatched against Brest.  
 Mar. 10/11 First operation by Halifaxes - 6 despatched against Le Havre.  
 " 12 No.2 Group commenced regular daylight shipping patrols.  
 " 12/13 247 aircraft operated against Hamburg, Bremen and Berlin.  
 First operation by new heavy bombers against a target in  
 Germany - 3 Halifaxes and 4 Manchesters against Hamburg.  
 " 15 New Bombing Directive - Battle of the Atlantic.  
 " 28 Scharnhorst and Gneisenau identified at Brest. Heavy bombing  
 effort turned against them.  
 " 29 ) Attempted daylight attacks by Hampdens upon  
 Brest abandoned due to lack of cloud cover.  
 " 30/31 Brest attacked by 109 aircraft.  
 " 31/Apr.1 First 4,000 lb bomb dropped by Wellington on Emden.  
 April 3 ) Daylight attacks by Hampden aircraft upon Brest.  
 " 5 )  
 " 6 ) Germans invaded Greece and Yugoslavia.  
 " 7/8 228 aircraft despatched against Kiel, followed up by 159 the  
 next night.  
 " 9 Full effort of No.2 Group turned to daylight patrols. Aim to  
 force Germans to withdraw fighters from Greece.  
 " 22 Evacuation from Greece began.  
 " 27 First Stirling operation by day - one aircraft against Emden.  
 May 22 Evacuation from Greece ended.  
 " 5/6 150 aircraft operated against Mannheim.  
 " 8/9 340 aircraft operated against Hamburg, Bremen, Bremerhaven and  
 the Kiel Canal. Largest scale operation in the period.  
 " 11/12 173 aircraft operated against Hamburg and Bremen.  
 " 25/27 112 aircraft laid mines during three nights outside Brest and  
 St. Nazaire.  
 " 27 Daylight search for Prinz Eugen in Bay of Biscay by 53  
 Wellingtons and Stirlings without result.



LIST OF SOURCES

(WITH ABBREVIATIONS USED IN ALPHABETICAL ORDER.)

<u>ABBREVIATION</u>	<u>FULL DESCRIPTION</u>
A.D.I.(K)	Assistant Directorate of Intelligence Reports from German prisoners, etc.
A.H.B.	Air Ministry Air Historical Branch Folders, Narratives and Library Files
A.H.B.6.	" " " " " " Translations of German Documents.
A.M.C.O.	Air Ministry Confidential Orders.
A.M.W.R.	" " War Room statistical reports.
A.M.Sig.	" " Signal -
B.A.F.F.	British Air Forces in France Command.
B.C/S	Bomber Command Secret File.
B.C/O.R.B.	" " Operations Record Book.
B.C/O.R.B. App.	Appendix to B.C. " " "
B.C.Sig.	Bomber Command Signal
B.C.I.R.	" " Intelligence Report.
B.C.I.S.	" " " Summary.
C.A.S.	Chief of Air Staff Branch Folders.
C.C/S	Coastal Command Secret File.
C.F.A.P.	Personal File of Sir Charles Portal.
C.I.U.	Central Interpretation Unit Report.
C.L.N.	Personal File of Sir Cyril Newall.
C.O.S.	Chiefs of Staff Committee Minutes and Papers.
C.P.	Cabinet Papers.
C.S.	Secret Registered File of Air Ministry.
D.B. Ops. )	{ Directorate of Bomber Operations Branch Folder.
D.D.B.Ops. )	
D.H. Ops.	Directorate of Home Operations Branch Folder.
E.P.M.	Expansion Progress Meetings Papers and Minutes.
E.R.P.	Expansion and Re-equipment Policy Committee Papers and Minutes.
Form E	Results of Bombing Sorties.
Form 540	Operations Record Book.
N.I.D. 24	Naval Intelligence Department Statistics, and Translations of enemy documents.
No.1 Gp.	{ (No.1 Group) Operation Orders, Record Books,
No.2 Gp. etc.)	
O.O.	Operational Order.
O.R.B.	Operations Record Book.
O.R.B./App.	Appendices to Operations Record Book.
Ops.	Operations Branch Signal -
O.R.S.	Reports of the Operational Research Section, Bomber Command.
R.E.C.P.	Personal File of the Air Officer Commanding-in-Chief, Bomber Command (Sir R. Peirse)
S. -	Secret registered file of Air Ministry.
S.W.C. }	{ War Cabinet Minutes and Papers.
W.C. }	

Other sources of a special nature are referred to in full in the margin.  
References are also made to other Volumes, Parts or Sections of the narrative.

PART I

THE ORGANISATION OF BOMBER COMMAND 1939 - 1941

SECTION I

HEADQUARTERS ADMINISTRATIVE ORGANISATION

S.45882/IB  
S.55263

Origin and Revision. - The administrative organisation of Bomber Command traced its origin to the general re-organisation of the Royal Air Force under Scheme C of expansion in 1936. During 1939 it was reviewed in the light of experience gained since then and certain modifications were introduced. The revised organisation of Command and Group headquarters brought into force just prior to the war is shown in Appendix B.

The main feature of the old system was retained. This was the principle of one administrative authority only between the Station and the Air Ministry. This authority was the Group in respect of personnel and the Command in most other matters. Thus uniformity of procedure and efficiency were secured by the centralised control of his especial function by the chief of each administrative service. So long as the organisation remained on a small enough scale, this system was admirable. With the growth in size of the Command, however, and the specialisation of the Groups both in equipment and purpose, with their territorial distribution and the need for close contact in war it became necessary to modify the system by the addition of certain links at Group in order to provide a continuous chain of authority both in policy matters and in some branches of administration, such as that of equipment. This necessity had become apparent by the outbreak of war, at which date the Command contained six Groups. Each Group controlled some six Stations, or "Wings" if they were on a mobile basis. Most of these Stations or Wings were responsible for two Squadrons each.

S.55263 9A

2. Basic Principles. - The principles upon which the revised organisation was based were laid down by the Air Council in the following terms:-

"(a) At any stage of command a commander must be able to make an accurate assessment of the operational effort of which his command is capable. In order to do this he must have constantly available reliable information in the appropriate degree of detail concerning the state of his personnel and material.

(b) In the course of exercise of his command the commander relies upon two categories of subordinates in his headquarters.

The first category consists of those subordinates who assist the commander in framing his policy, by collecting, analysing and presenting to him (in a form which enables him quickly and easily to grasp the essentials of any problem) all the information he requires before he can make a sound decision, and who assist him in carrying out his policy by preparing on his behalf all the necessary plans, and similarly

/issuing

issuing all the necessary instructions to everyone concerned. These subordinates constitute the "Policy Staff". This policy staff is divided into two branches - the Air branch and the Administrative branch. The first of these is primarily concerned with the planning and execution of operations. The second branch deals with organisation and provision of personnel and material needs.

The second category of subordinates consists of those who, within the terms of the commander's operational and administrative policy and plans, can devote themselves single mindedly to the executive control of their own specialised organisations. These subordinates constitute the staffs of the Administrative Services. The head of each Administrative Service by virtue of his specialized knowledge, has also to perform the function of an adviser to the commander and his policy staff on matters concerning his service.

- (c) At every stage in the functioning of a Command, there must be sufficient decentralization of authority to ensure that commanders or other appropriate officers take decisions on a level with the responsibilities with which each is charged. Unless this is done congestion will occur at higher formations, owing to matters being referred to them which are within the province of subordinate commanders to decide."

3. Command Headquarters - The "policy" staff of Command consisted of the Senior Air Staff Officer (S.A.S.O.) and the Air Officer in charge of Administration (A.O.A.) together with their assistants. The "Air" branch dealt with operational plans, the conduct of operations, intelligence and training; the Administrative branch dealt with administrative planning, organisation - including establishments, the supply and upkeep of material, movements, quartering and works - and personnel.

The heads of the administrative services had complete executive control within their departments subject to the policy laid down. They were responsible for the technical administration and the efficiency of their services, and they were also the advisers of the C.-in-C. and policy staff in matters affecting their own services. The staff of each service was intended to assist the head of the service in his executive function, and varied in number according to the nature and size of the service and of the functions it was expected to perform.

4. Group Headquarters - The revised organisation provided an administrative branch at Group headquarters containing organisation and personnel section so as to be similar, on a reduced scale, to the administrative branch at Command headquarters. This completed the Group "policy" staff with its air and administrative branches as at Command. It will be seen from the diagrams at Appendix B that the Command and Group headquarters organisations were very similar. The main difference was in the volume and nature of administrative work at Group headquarters, which allowed of a much smaller organisation section, and of the absence of representatives of many of the administrative services. The control of these was centralised at Command headquarters.

It was decided to decentralize to some degree five of the services only, i.e. Armament, Navigation, Signals, Engineer and Medical. One or more representatives of each of these was

/attached



attached to Group staffs to discharge the following duties (1 Sqn.Ldr. Equip. was added on 12th September 1939):-

- (a) To advise the Group Commander and his policy staff on matters in which his service might influence operations and training.
- (b) To keep the Group Commander and his policy staff fully informed regarding the technical state of the units as far as his service is concerned.
- (c) To keep the head of his service fully informed regarding the problems affecting his service that arise within the units of the lower formation.
- (d) To voice any special requirements of the Group Commander to the head of his service.
- (e) To exercise a limited executive control of the sections of his service within the units controlled by the lower formation.

It will be seen that the scope of the jurisdiction of Bomber Groups was very limited. Their principal purpose was to maintain close contact with stations, and to give them day-to-day assistance and to interpret in detail for them the policy laid down at Command headquarters. In personnel matters alone they continued to exercise routine administration. The Group Commander was also responsible for operational control.

S.45882 8A

5. Station Headquarters - The headquarters organisation of a bomber station was designed to undertake all routine administrative functions for the squadrons established within it. This allowed the squadrons to concentrate upon maintenance and operational readiness. The Station Commander's responsibilities included the co-ordination and supervision of his squadrons, and responsibility for their training and operations, in addition to the routine administration of the station and its defence arrangements. The Squadron Commander was responsible to him for the organisation of training and maintenance in his squadron, for fulfilling the operational demands made upon him, and for maintaining discipline and morale.

Note: For further details of the system of administration at this date and improvements proposed, the Report of the Jones Committee presented in August 1939, should be consulted.



SECTION IICOMPOSITION AT THE OUTBREAK OF WAR

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Design of the Force. - The expansion schemes of the Royal Air Force which had been adopted in turn since 1934 had been designed to keep pace with political developments. The standard on which they were based was, so far as Bomber Command was concerned, that of a bomber force at least comparable in striking power with those components of the strongest foreign air force capable of attacking this country and our sea-borne trade. These are the words used in an Air Staff paper circulated throughout the Service in November 1938. The air strategy of Great Britain was planned, as will be seen later, on that assumption. The rate of expansion had gradually fallen behind that of Germany, a position which had been recognised by the Air Staff. It was hoped, however, that quality and higher bomb lift in the new type British bombers would compensate for any numerical inferiority. By 1939 the expansion of the Command had reached a level which appeared, on paper, to be fairly satisfactory.

2. Strength. - At August 31st 1939, Bomber Command consisted of fifty five squadrons containing nine hundred and twenty initial equipment aircraft (see Appendix C1). When war broke out on September 3rd, however, there were available for operations from bases in England only twenty five squadrons, numbering three hundred and fifty two aircraft, not all of which were fully trained for operations. The reasons for this disparity were:-

S.46371

- (a) No.1 Group, consisting of ten Battle squadrons of one hundred and sixty aircraft (i.e. was reduced to 16 on mobilization) crossed over to France on September 2nd to form the first echelon of the Advanced Air Striking Force. Its role henceforward was dependent upon the armies in France. Although it remained at first nominally a part of Bomber Command, its purpose was entirely distinct. This was recognised in January 1940, by the formation of a separate Command, the British Air Forces in France, to which it was transferred. Its full story is contained in the narrative on the Campaign in France and the Low Countries. Only its activities in connection with the bomber offensive are contained in this narrative.
- (b) Two Blenheim squadrons were earmarked and reserved for the Air Component of the Field Force in France, coming under army command on their move to France at the end of September.
- (c) Seventeen squadrons were non-mobilizable, being used for training and reserve. They all lacked either training, personnel or equipment. Nine squadrons were employed on training, but this number was immediately increased to thirteen on the outbreak of war. The remaining four non-mobilizable squadrons were kept as a reserve for their Groups of both aircraft and personnel.

/(d)



- (d) One squadron, No.78, was due to join the list of mobilizable squadrons, but had not completed its training to operational standards.

A further reduction in the available strength was temporarily caused by the "scatter scheme" which had been devised to disperse Bomber Command when war became imminent. This was to guard against a lightning attack on aerodromes such as the Germans had carried out in Poland. It meant that most of the operational squadrons were scattered at rearward aerodromes for a week or more after the war began. This created difficulties of control and delays in operations.

The changes of command and movements of units are given in some detail below to illustrate the resulting disorganisation. This might have had serious consequences in limiting the activities of the force in the vital first few days of hostilities, if the war had followed the same course as the German "blitzkrieg" on Poland. In the event, it was fortunate that eight months breathing-space was allowed, in which the Command could complete its preparations.

3. No.1 Group. - When No.1 Group was reconstituted as the A.A.S.F. and moved over to France, the nucleus of a new No.1 Group headquarters was left at Benson, commanded by the S.A.S.O. of the old group - Air Commadore A.C. Wright. It was intended, that this new group should, on completion, move to France with the second echelon of the A.A.S.F., there to take over command of the Battle squadrons of the original No.1 Group under A.A.S.F. headquarters. When it was decided not to send the second echelon overseas, as a result of the shortage of aerodromes available in France, as well as the conviction that the squadrons could be better employed from England, this headquarters was no longer necessary. It was closed down on December 22nd 1939. The headquarters reformed on June 18th 1940, on the return of the remnants of the A.A.S.F. squadrons from France.

4. No.2 Group. - On September 1st 1939 No.2 Group, under the command of Air Vice Marshal C.T. Maclean, took over the stations and squadrons of No.6 Group, which then became the training group. In exchange it handed over the group pool stations with their squadrons to No.6 Group. No.2 Group then comprised ten Blenheim squadrons, with an initial equipment of one hundred and sixty aircraft. Group headquarters were at Wyton, and the squadrons were disposed as follows:-

No.79 Wing.	No.21 Squadron No.82 Squadron	at Watton
No.81 Wing.	No.90 Squadron No.101 Squadron	at West Raynham
No.82 Wing.	No.114 Squadron No.139 Squadron	at Wyton
No.83 Wing.	No.107 Squadron No.110 Squadron	at Wattisham
No.70 Wing.	No.18 Squadron No.57 Squadron	at Upper Heyford

The first eight of these were intended to form the second echelon of the A.A.S.F. Nos.18 and 57 Squadrons were to be No.70 Wing of the Air Component, Field Force.

On September 2nd the scatter scheme was carried out by moving 50% of the aircraft as follows:-

No.79 Wing	-	to Horsham St. Faith
No.81 Wing	-	to Weston on the Green
No.82 Wing	-	to Hullavington
No.83 Wing	-	to Ipswich (satellite)

Further moves on the 3rd, 5th and 7th dispersed squadrons as far afield as Sealand, Netheravon and Brize Norton. On September 15th the scatter scheme was modified, leaving the squadrons disposed as follows:-

No.79 Wing	-	No.21 Squadron at Watton No.82 Squadron at Netheravon
No.81 Wing	-	No.90 Squadron at Upwood No.101 Squadron at West Raynham
No.82 Wing	-	No.114 Squadron at Wyton No.139 Squadron at Alconbury
No.83 Wing	-	No.107 Squadron at Benson No.110 Squadron at Wattisham

In the meantime the decision had been taken to postpone the move of the second echelon to France, and on September 11th No.70 Wing had been transferred to No.6 Group, pending its move to France with the Field Force. On September 8th it had been decided to make up the number of training squadrons, considered to be necessary, by the addition of No.90 Squadron. This unit was accordingly handed over to No.6 Group on September 20th. On the 25th No.101 Squadron was designated as reserve squadron to the Group. Thus only six first-line Blenheim squadrons were left operational in the Command after less than a month of war.

5. No.3 Group. - The Wellington Group, under the command of Air Vice Marshal J.E.A. Baldwin, was located in East Anglia, with headquarters at Mildenhall. It consisted of six mobilizing squadrons, with an initial equipment of seventy two Wellington aircraft, disposed as follows:-

Nos.99 and 149 Squadrons	at Mildenhall
Nos.38 and 115 Squadrons	at Marham
No. 37 Squadron	at Feltwell
No. 9 Squadron	at Honington

There were also two non-mobilizing reserve squadrons:-

No.214 Squadron	at Feltwell
No.215 Squadron	at Honington

The group pool squadrons, Nos.75 and 148 at Stradishall, were transferred to Harwell and handed over to No.6 Group between September 4th and 17th.

/The

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The operation of the "scatter" scheme disposed the squadrons as follows:-

No.99 Squadron, Upper Heyford; No.149 Netheravon

No.37 Squadron, Kemble; No.214 Aston Down

No.38 Squadron, South Cerney; No.115 Marham

No. 9 Squadron, Boscombe Down; No.215 Little Rissington

On September 14th the scheme was relaxed on condition that not more than one squadron was located on each aerodrome, with its aircraft well dispersed. As a result Newmarket, Methwold, Barton Bendish and Bramcote were used respectively as satellites.

On October 27th, as the output from the training squadrons was found to be insufficient, No.215 Squadron was handed over to No.6 Group for that purpose, and moved to Bassingbourn. This left six operational squadrons and one reserve in No.3 Group.

6. No.4 Group. - No.4 Group under the command of Air Commodore A. Coningham, was located in Yorkshire and equipped with Whitley aircraft. The headquarters was at Linton-on-Ouse and it controlled five mobilizable squadrons, one which had not completed its training, and two group pool squadrons. These were stationed as follows on September 3rd 1939:-

No.10 Squadron	at Dishforth
No.78 Squadron (training)	at Ternhill (scatter station)
No.77 Squadron	at Drifffield
No.102 Squadron	at Cottom (satellite)
No.58 Squadron	at Linton-on-Ouse
No.51 Squadron	at York (satellite)
No.166 Squadron (pool)	at Leconfield
No.97 Squadron (pool)	at Shawbury (scatter station)

The two group pool squadrons, Nos.97 and 166, were handed over to No.6 Group, and moved to Benson on September 17th. Finding the airfield unsuitable for the use of Whitleys, the Squadron was moved on to Abingdon on the 19th. No.58 Squadron was loaned to Coastal Command for anti-submarine and escort duties on September 30th, and moved to Boscombe Down. It did not return to the Group until February 15th 1940.

7. No.5 Group. - The Hampden Group, under the command of Air Commodore W.B. Calloway, was based in Lincolnshire, with its headquarters at Grantham. It comprised six mobilizable squadrons of seventy two initial equipment aircraft, and two reserve and two group pool training squadrons, distributed as follows:-

Nos.49 and 83 Squadrons at Scampton, part dispersed to  
Newton

Nos.44 and 50 Squadrons at Waddington, part dispersed  
to Tollerton

/Nos.61

9.

Nos.61 and 144 Squadrons at Hemswell, part dispersed  
to Speke

Nos. 7 and 76 Squadrons at Finningley, part dispersed  
to Doncaster

Nos.106 and 185 Squadrons at Cottesmore

The scatter scheme effected a further dispersal on  
September 6th.

On September 23rd the two group pool squadrons, Nos.7  
and 76 were transferred to No.6 Group and moved to Upper  
Heyford, No.106 Squadron taking their place at Finningley.  
On September 14th Air Vice Marshal A.T. Harris had taken  
over command of the Group.

8. No.6 Group. - On the outbreak of war No.6 Group, under  
the command of Air Commodore Macneece-Foster, was withdrawn  
from the list of operational groups to assume control of  
operational training for Bomber Command. The mobilizable  
Blenheim squadrons which had formed this Group were handed  
over to No.2 Group, and seven training squadrons were taken  
over from that Group:-

Nos.35 and 207 Squadrons at Cranfield

Nos.52 and 63 Squadrons at Upwood

Nos.104 and 108 Squadrons at Bassingbourn

No.98 Squadron at Hucknall

The first three of these stations were also taken over, in  
addition to Abingdon, Benson, Bicester, Harwell and Boscombe  
Down. The latter was passed on to Training Command on  
September 18th, No.6 Group merely undertaking the transfer  
on behalf of the former No.1 Group, which had vacated these  
stations on crossing over to France. Hucknall remained a  
Fighter Command station.

On September 11th, No.6 Group took over Upper Heyford  
and the squadrons stationed there, Nos.18 and 57. These  
squadrons, which had been earmarked for the Air Component  
of the Field Force, went over to France for that purpose,  
on September 30th, thus leaving Upper Heyford free for use  
as the Hampden training station.

The further transfers which took place in order to  
implement the decision to put No.6 Group in charge of all  
operational training for the Command are tabulated below:-

Sept.13th Nos.75 and 148 Squadrons to Harwell from No.3 Group.

Sept.13th No.52 Squadron from Upwood to Kidlington.

Sept.13th No.63 Squadron from Upwood to Abingdon.

Sept.16th Nos.104 and 108 Squadrons to Bicester.

Sept.19th Nos.52 and 63 Squadrons to Benson.

Sept.19th Nos.97 and 166 Squadrons to Abingdon from No.4 Group.

/Sept.21st

Sept. 21st No. 90 Squadron to Upwood from No. 2 Group.

Sept. 22nd Bassingbourn station transferred to No. 3 Group.

Sept. 23rd Nos. 7 and 76 Squadrons to Upper Heyford from No. 5 Group.

Sept. 27th New Zealand Flight to Harwell from No. 3 Group.

Oct. 27th No. 215 Squadron and Bassingbourn from No. 3 Group.

The composition of No. 6 Group, once it settled down, therefore, was as follows. It is arranged in order of aircraft types on which the crews were trained.

Battles - Nos. 35 and 207 Squadrons, Cranfield.  
Nos. 52 and 63 Squadrons, Benson.  
(No. 98 Squadron, Hucknall.)  
(No. 98 Squadron later crossed to France as reserve to the A.A.S.F.)

Blenheims - Nos. 104 and 108 Squadrons, Bicester.  
No. 90 Squadron, Upwood.

Wellingtons - Nos. 75 and 148 Squadrons, Harwell.  
No. 215 Squadron, Bassingbourn.

Whitleys - Nos. 97 and 166 Squadrons, Abingdon.

Hampdens - Nos. 7 and 76 Squadrons, Upper Heyford.  
No. 185 Squadron, Cottesmore.

9. Distribution. - The air striking force was thus located along the eastern side of England, with its training squadrons to the west of it. Each group was concentrated in an area designed to suit the range of its aircraft and the purpose for which it was to be used. No. 2 Group with its Blenheims had headquarters at Wyton, and aerodromes rather scattered around that area, but advanced landing grounds for refuelling near the East Anglian coast. This group was intended principally for close support work with the army, and for reconnaissance and attacks on targets at sea by day. No. 3 Group with its Wellingtons was concentrated in East Anglia; No. 4 Group on Whitleys in South Yorkshire, and No. 5 on Hampdens in Lincolnshire. These three groups were intended for the longer-range work, both at sea and on land. It was hoped to use the Wellingtons and Hampdens by day, and the Whitleys at night. All three, however, had soon to be used almost entirely by night, as will become apparent later.

This arrangement of units enabled control by each group headquarters of its own squadrons to be close and direct. At the same time the aim was to allow the aircraft the maximum range towards Germany consistent with available aerodromes. In order to give a greater range to the north, the aerodromes near Inverness at Kinloss and Lossiemouth were later used for temporary detachment.

The training group, No. 6, took over the rearward aerodromes belonging to Bomber Command. These were too remote for operational squadrons, and had the advantage of being more secure from enemy attack. Interruption of the training programme, which involved almost continuous use of these aerodromes, was not so likely as in the more forward areas.

Note: The term "heavy bombers" is used throughout this period to describe Wellington, Whitley and Hampden aircraft. With the introduction of four-engined bombers later in the war the above types came to be classed as "medium Bombers".

SECTION III

RE-ORGANISATION OF TRAINING

S.45639 Enc.12A Supply of Aircrew. - Up to the end of 1938 the supply of pilots to Bomber Command came from the Flying Training Schools direct to squadrons, where their training was completed. The remainder of the crew was made up of part-time observers, wireless operators and air gunners. In October 1938, the full-time employment of these categories was decided upon.

S.50693 Enc.1A It soon became apparent that the squadrons could not undertake the training of the vastly increased flow from the Flying Training, Air Observer and Air Gunnery schools without seriously impairing their own readiness for operations. There was a shortage of instructors and of experienced personnel and a low rate of serviceability. As a result it was found that the progress of operational training had not kept pace with the expansion, by which the R.A.F. had trebled itself in five years, nor with the improvements in organisation and equipment. The new types of aircraft coming into service were infinitely more complicated and difficult to master than the old.

S.46938 Group pool squadrons were therefore nominated in each group, whose function was defined in January 1939. They were:-

- (i) To provide each operational group with a reservoir or pool from which replacement crews can be drawn;
- (ii) to train the output of the F.T.S.'s up to an operational standard before it passes to the operational squadrons."

S.1925 Part I At the outbreak the group pool squadrons consisted of the following:-

- No.1 Group - Nos. 52 and 63 Squadrons
- No.2 Group - Nos.104 and 108 Squadrons
- No.3 Group - Nos. 75 and 148 Squadrons
- No.4 Group - No. 97 Squadron
- No.5 Group - Nos. 7 and 76 Squadrons

It was arranged that No.6 Group should take over administrative responsibility for these squadrons, but that each group should be responsible for the supervision of training in its own pools.

S.47667 Part I 2. Navigation Training. - As a result of the very low standard of navigation in squadrons a new navigational training policy was laid down in May 1939. The captain of an aircraft was to have a thorough knowledge and experience of practical navigation. This would enable him to superintend his navigator in the air and, should his navigator become a casualty, to bring his aircraft safely back. The air observer was to be trained to the highest

/standard



standard required. He should be able to carry out the navigation of the aircraft under the direction of the captain.

Observers had formerly been recruited from the ranks of experienced wireless operators, and given the necessary further course of training. With the expansion it was found to be impossible to obtain the requisite number of the right type from this source. Observers were therefore taken direct from civil life. In order to attract the best available they were offered the rank of sergeant as an inducement. Later it was found necessary to offer some commissions, in addition, to improve the future prospects in this category, and to put them on a par with pilots and air gunners.

3. Training Squadrons. - As soon as war began it was realised that a revision of the operational training programme was essential, if the supply of aircrew to Bomber Command was to be adequate. The training squadrons could not replace the anticipated rate of wastage; nor could they absorb the output of training establishments allocated to the command. This last-minute realization of the problem led to a series of conferences modifying the policy and causing considerable confusion in the training units. This can best be illustrated by observing the moves of some of them during this period, as shown in the description of No.6 Group in the previous section. (Sect.II).

S.1925/I Enc.16B

8. On September 16th 1939 the A.O.C.-in-C., issued a revised memorandum dealing with the organisation of Bomber Command in war. The main points which concerned group pools were:-

- (a) The small supply of trained crews in group pools must be preserved at all costs for training reinforcements. They must not be drawn upon to make up deficiencies in first-line squadrons.
- (b) In order to relieve operational groups of a training commitment, entire responsibility for Group Pool training and output was to be taken over by No.6 Group.
- (c) Reserve Squadrons (formerly non-mobilizing squadrons) were to be used as a supplement to Group Pools for training crews, and "as reservoirs between first-line squadrons and Group Pool stations, in order to clear the latter of crews under training immediately a course is completed."

S.1925/I Enc.33A

Even after the re-organisation of the operational training squadrons in September, 1939, when their number was increased to 15, it soon became apparent that a bottleneck would occur at this final stage of training. In the case of pilots alone, approximately twice as many would be available from F.T.S. as could be handled by the Group Pools. The matter was investigated during October, and it was found that in order to give adequate operational training, estimated at 55-60 hours per pilot, to either the whole flow from the Flying Training and other schools, or for the estimated rate of casualty replacement, more aircraft would be needed in the training squadrons than in all the existing front-line squadrons.

Enc.47A

Under these circumstances Air Ministry proposed, at a conference on October 14th, to cut down the length of course, which had been agreed at 60 hours for medium and 55 for heavy bombers, in order to speed up the output. The A.O.C.-in-C., was

/emphatically

emphatically opposed to this suggestion, pointing out that it was only in view of a promised improvement in the output from Flying Training Schools that he had agreed to so low a figure. "The length of the course had already been reduced to the very minimum in which it would be possible under the most intensive system to produce pilots and crews capable of taking their place, even relatively efficiently, in an operational squadron."

In December it was found necessary to increase the length of the course temporarily from six weeks to eight and nine weeks owing to the weather, and this state of affairs continued during the winter. A slight saving was effected by building up a pool in each training unit of aircrew awaiting a course, who could be given preliminary ground training and used to fill any gaps which might occur owing to speeding up or casualties. The Group Pools had already been organised on a station instead of a squadron basis, and it was decided that further expansion of the existing units was more practicable than the creation of additional ones.

S.1925/I Enc.99A

The position of operational training was still acute late in January 1940, owing to the inadequate size of the heavy bomber group pools. For a total of operational aircraft in Nos. 3, 4 and 5 Groups of 84, 72 and 84 respectively, the numbers behind them in the group pools were only 48, 32 and 48 respectively. In February, therefore, it was decided to increase their aircraft establishment to:-

S.60810 Enc.1A

Type	Operational Type a/c			Training Type a/c		
	I.E.		I.R.	I.E.		I.R.
Battle	54	+	18	18	+	6
Blenheim	27	+	9	9	+	3
Hampden	29	+	10	29	+	10
Wellington	40	+	13	13	+	4
Whitley	40	+	13	13	+	4

It had been suggested that each heavy group pool or operational training unit as it was coming to be called should have an establishment of 72 I.E. + 14 I.R. aircraft, but Bomber Command pointed out that it would be impossible to operate this number from one grass aerodrome and one satellite, and the target number was therefore reduced to a total of 72, for Wellingtons and Whitleys.

The building up of this establishment was to have equal priority with the provision of seven projected new squadrons, in order to match training output with increased operational strength. Meanwhile the training unit at Harwell was to be brought up to the full establishment of 40 + 14 Wellingtons and 14 + 4 Ansons in April so as to get an idea of the capacity of such a unit.

S.46938 Enc.123A  
S.60810 Enc.11B

4. Operational Training Units. - It was finally decided to transform the training squadrons into "operational training units". The new name came into force on April 4th and 8th. (Appendix D1 contains a list of the units at this date). Economy in maintenance personnel was secured in these units by the use of a "garage" system for all major maintenance.

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All major inspections, engine changes and other large repair jobs were carried out by the station maintenance organisation. A skeleton servicing staff only was required in the flights.

The operational training system which thus took shape was a spontaneous growth due to the needs which became apparent rather than a "cut and dried" scheme worked out in advance. In order to keep pace with the output required of them the training units resorted to various devices. At the same time the air staffs both at Air Ministry and Bomber Command exercised all their ingenuity to establish an adequate organisation without overmuch reduction of the bomber effort.

The organisation which was developed at Harwell in September 1939, and after, became the model for the later operational training units. The two squadrons at this station had pooled their resources and formed four training flights:-

(a) Wellington Conversion Flight - 8 Wellingtons,

To pass out pilots solo day and night.

(b) Navigation Flight - 8 Ansons.

Air observers to do navigation and photography.  
Wireless operators to do W/T training.

(c) Armament Flight - 8 Wellingtons.

Pupil pilots to fly and do bomb aiming.  
Air observers to do turret work and bomb aiming.  
Air Gunners and wireless operators to do turret work.

(d) Operational Flight - 8 Wellingtons.

Crews formed and practiced operational flying.  
Pilots passed as first pilot day and night.

In the six weeks course pilots spent two weeks in each of the Conversion, Armament and Operational flights. Air observers and wireless operators spent their first two weeks in the Navigation flight before joining the pilots and air gunners for armament training.

5. Training Devices. - In view of the difficulty of providing an output from the O.T.U.s adequate both in size and training owing to shortage of aircraft and flying instructors, a number of synthetic training devices were resorted to. By means of them aircrew trainees were accustomed to their role in the air before they began flying in operational types. Such a device was developed at No.5 Group reserve squadron, in which the pilot was placed in a link trainer, the navigator, wireless operator and air gunner being in their appropriate positions in a fuselage which was broken apart for ease of training. They were then put through a reproduction of an actual flight - the navigators were given suitable practice and had to drop their bombs, the W/T operator and gunner likewise were given practice, including surprise attacks from model Messerschmitts from which to judge range etc., and the procedure and signals which the W/T operator would get in actual operations.

A system similar to this was developed at Harwell. The "Harwell Box" was devised which gave the wireless operator similar conditions to an aircraft, and a synthetic trainer was

/built

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built up from it, in which the pilot and navigator co-operated in finding their way to the target by means of a cine projected scene with all contingencies and sound effects provided. Dummy fuselages were provided for cockpit drill, and practice in ditching and abandoning aircraft, and spot-light trainers and turret training stands of progressively improved design for gunnery training.

6. Air Gunners and Wireless Operators. - The policy at this time was to train all air gunners in W/T as well. It was found that there was not time to give all of them a full course on both subjects in the O.T.U.s. One operator in each crew was therefore trained fully in W/T, whilst the others were given a short course only, most of their time being spent on air gunnery training. As the initial W/T course took so long, it was eventually decided to train a proportion as air gunners only. An additional reason was the urgent need for some commissioned air gunners to act as gunnery leaders. A certain number of these could be obtained by commissioning W/T operators already in the Service. Better material could be found, however, by selection from direct entry air gunners.

S.1925/I Enc.125A

Enc.1320

As a result the majority of commissioned air gunners were not trained in W/T. A senior officer of the directorate of training expressed the opinion in a D.O. letter "that the more highly intelligent the person the harder it is to transform him into a really efficient W/T operator." A proportion of those air gunners not commissioned were also trained in gunnery alone. The duties of gunnery leaders were to take charge of the training of air gunners and the development of air gunnery tactics and technique.

S.1925/II Enc.4A

7. Training Organisation in May 1940. - As a result of the representations of the A.O.C.-in-C., (now Air Marshal Portal) a meeting was held at Air Ministry on May 14th 1940, at which the urgency of the question of operational training was faced up to. The chairman (V.C.A.S.) explained that "the present organisation was insufficient to meet the wastage of the existing force and was in fact only able to maintain a force of fourteen squadrons. It appeared in the light of the present offensive that the Germans were trying to force a decision this summer. We must, therefore, evolve a short-term programme to provide the most effective bomber force possible during the next three or four months." The problem was not only one of replacing the crews which were lost, but also of providing replacements for those who must have a rest. Wastage was calculated at the rate of one crew per squadron per week and the C.-in-C. considered that an additional crew per week would be needed to replace those needing a rest, or sick. Thus each squadron would need 8 crews per month. This would mean that for a force of twenty four squadrons, 192 crews would be required each month, and even so this would make no allowance for the existing shortage of 258 crews in Bomber Command.

The Director of Personnel said that the present output was 146 crews per month. With two additional O.T.U.s this figure could be raised to 200 per month. It was therefore decided to:-

- (i) Disband the new operational squadrons then forming.
- (ii) Replace them by two new O.T.U.s.

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(iii) Place the provision of satellite landing grounds for O.T.U.s on a priority basis.

(iv) Investigate the advisability of utilising pre-O.T.U. training school pilots, pilots on overseas training schemes, and A.A. co-operation pilots to fill the O.T.U. vacancies caused by the expansion.

Enc.22B At this conference sharp criticism was levelled at the projected formation of new operational squadrons without any O.T.U. organisation behind them. It was agreed that any future operational expansion should be preceded by the formation of appropriate additional O.T.U.s at least six weeks in advance. The acceptance of this principle represented a reversal of the previous Air Ministry decision under which the formation of new squadrons was accorded priority over the expansion of Operational Training Units.

Consequent upon this decision the existing O.T.U.s were to be brought up to establishment immediately and two and a half new ones formed. The number would then be:-

Enc.27B	1 Battle	O.T.U. at Benson.
	1 Polish	O.T.U. on Battles at Hucknall.
	3 Blenheim	O.T.U.s at Bicester, Upwood and Wyton.
	2 Hampden	O.T.U.s at Upper Heyford and Cottesmore..
	2 Whitley	O.T.U.s at Abingdon and Kinloss.
	2½ Wellington	O.T.U.s at Harwell, Bassingbourn and Lossiemouth.

S.60810 Enc.22A Two of the new O.T.U.s were formed at Kinloss and Lossiemouth, the latter at half-strength - during May; No.19 on Whitleys at Kinloss and No.20 on Wellingtons at Lossiemouth. The third projected O.T.U., No.21 on Blenheims at Wyton, did not materialise owing to a reduction in the number of medium operational squadrons on the fall of France. The establishments of existing O.T.U.s were revised and brought up to full strength.

B.C.540 (Admin) App.B. 8. O.T.U. Development from June 1940. - In July 1940, No.7 Group was formed under the command of Air Commodore the Hon. R.A. Cochrane to take over the Blenheim and Hampden O.T.U.s from No.6 Group. The Units taken over were No.13 O.T.U. at Bicester, No.14 at Cottesmore, No.16 at Upper Heyford and No.17 at Upwood. Group headquarters were established at Huntingdon, and moved to Brampton, near by, in August. This left No.6 Group in control of the Wellington, Whitley and Battle O.T.U.s. The latter, No.12 at Benson and No.18 (Polish) at Hucknall, shortly converted on to Wellingtons, and the Polish O.T.U. moved to Bramcote in November. These two remained at half strength on conversion to Wellingtons.

S.60810 Enc.33A Enc.40A

S.46938 Enc.174A Otherwise the O.T.U. organisation remained in this state until February 1941, when Lossiemouth was increased to full strength. On October 30th 1940, the question was raised of providing O.T.U.s with Halifax, Manchester and Stirling aircraft to provide backing for these types in operational use. The C.-in-C. was opposed to this, his argument being that crews for these new types should be specially picked, and

S.1925/II Enc.85A

/have

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have operational experience on old types first. Conversion to the new type was therefore undertaken in the squadrons.

Early in 1941 it became necessary to provide for further expansion. The number and type of O.T.U.s required to provide for and maintain "Target Force A" (see Section V. (3)) was worked out during February. An increase was proposed of four Wellington O.T.U.s and the bringing up to full strength of Benson and Bramcote. One extra Hampden and one extra Blenheim O.T.U. were also proposed, all to be in operation by 1st June, 1941. Modifications were made to this programme as a result of the reduction in numbers of Blenheim squadrons. A Blenheim O.T.U. at Upwood was converted to Wellingtons and an additional Wellington O.T.U. opened at Lichfield in place of the extra Blenheim one at Cranfield. The expansion of the Benson O.T.U. to full strength was delayed until it could be moved to a more suitable aerodrome, and the formation of No.24, proposed to be at Chipping Warden, was delayed until August and transferred to Honeybourne. Appendix G gives the final lay-out of the O.T.U. organisation in May 1941. At that date the whole O.T.U. organisation was revised on account of the introduction of American type bombers. For "Target Force E" there were required: 12 Wellington

2 Whitley

3 Hampden

and 8 American type O.T.U.s

The execution of this plan falls within the next period of this narrative (Volume 3).





SECTION IVSUPPLY PROBLEMS

Introduction. - Problems of the supply both of aircraft and aerodromes with their equipment, and of personnel to service and man them, obviously had a very large influence upon the efficiency of Bomber Command. Such problems, however, do not come within the scope of this narrative except where they had a special and direct bearing upon the Command. The question of the supply of trained aircrew has been dealt with in the previous section. This section will therefore summarise that of aircraft and accessories, aerodromes and skilled ground staff.

CP.218 (38)

In October 1938, the Secretary of State for Air submitted to the Cabinet a Memorandum surveying the strength of the Royal Air Force, and suggesting the steps necessary to improve the position. The main proposals affecting the bomber force were:-

- (i) The expansion of the aircraft industry to the extent necessary to achieve equality of output with Germany.
- (ii) The re-equipment of the bomber force, so as to achieve a bomb-lift comparable with that of the German long range striking force.
- (iii) The provision of adequate material and personnel reserves.

S.D.145

S.1503 Enc.2A

These proposals resulted in the adoption of "Expansion Scheme M" as a basis to work on. This envisaged the creation of a force of 1,360 bomber aircraft, or 82 squadrons by April, 1941. By the end of that year the bomber force was intended to consist entirely of the new heavy bombers: 950 Stirlings, 950 Manchesters and 350 Halifaxes should have been produced by then. This force should have a total bomb-lift of 3,785 tons, as compared with Germany's expected lift of 3,600 tons by April 1940.

These figures were modified in July 1939, owing to factors which reduced our own bomb-lift and increased that of Germany, i.e.:-

- (a) Germany's increased expansion programme.
- (b) The reduction in bomb-lift due to the added weight of armour, cable-cutters, de-icing equipment, and later gun turrets on the British bombers.
- (c) Reduction in aircraft output, now estimated at:-  
600 Stirlings, 850 Manchesters and 600 Halifaxes by the end of 1941.

For these reasons the total bomb-lift was now estimated at 3,150 tons against a German lift of 4,000 tons by June 1941. In order to equal the German bomb-lift an addition of 18 heavy or 22 medium squadrons to the programme would be required.

/The

The Air Council considered the situation on July 7th 1939, and although agreeing to the need for ultimate expansion, deferred any action until October, on the grounds of:-

- (a) The serious financial commitments caused by present Air Force and Naval expansion;
- (b) The lack of detailed plans in this respect; and
- (c) The difficulty of increasing the rate of expansion further without a serious decrease in efficiency.

2. Aircraft. - It could be stated in an Air Council memorandum in July 1939, that "the state of production indicates that the programme of 12,000 aircraft for delivery during the two years ending in March 1940, will almost certainly be achieved and may conceivably be exceeded." This sounded satisfactory, but the types being delivered were already becoming obsolescent, and considerable delays had been experienced in the development of the new types due to come into service. None of the new bombers or fighters had yet passed its preliminary trials, and only one of the new heavy bombers had been in the air.

The outbreak of war brought the calling up of large numbers of skilled men from the aircraft industry. In spite of this and of black-out conditions output was maintained. The "shadow" aircraft industry which had been planned before the war was rapidly built up on the outbreak, with the maximum amount of sub-contracting to provide dispersal in case of air attacks. With the introduction of the new types of bomber in the autumn of 1939 there was an inevitable falling-off in production during the changeover.

After this the principal difficulties encountered with regard to aircraft supply were brought about by changes of policy which had not been envisaged, by the innumerable modifications required in the light of operational experience, and by the unexpected failure of certain types of aircraft and engine. This failure was due to the necessity for ordering untried aircraft in bulk off the drawing board. The outstanding examples were the Blackburn "Botha" whose failure involved the transfer to Coastal Command of much-needed bomber aircraft; and the Avro "Manchester", whose Rolls-Royce "Vulture" engines did not stand up to the strain of operational use.

The first two causes were inter-dependent. The policy regarding the proportions and use of different types of bomber, depended upon the state of production of each type, whilst the modifications in many cases were due to the uses to which they were put. The outstanding modifications or other causes of hold-up in different types are briefly reviewed below.

- A. Wellington:- The re-arming of the Wellington squadrons with Mark IA instead of Mark I aircraft was the first change, which was carried out between September and December 1939. Much of the equipment had to be transferred from one to the other owing to a severe shortage which is discussed below. In January 1940, a further modification was begun with the introduction of self-sealing ("semaped") tanks. The process was slow owing to the shortage of tanks, but aircraft were replaced by degrees, the aircraft with non-sealing tanks being passed on to Group Pool squadrons for training purposes. This re-equipment was not completed

/until

until May 1940, in which month balloon-cutting equipment was added. The provision of more powerful engines, the Bristol "Hercules", planned for later in the year, was held up for another year owing to the short supply and other calls upon this type of engine.

- B. Whitleys:- One of the main difficulties experienced by Whitley crews in their night operations in the winter of 1939/40 was the severe icing conditions. Improved internal heating and a succession of de-icing devices had to be provided. Even with these, aircraft still experienced severe trouble, as shown by the following report:-

B.C./S.8365 Enc.34

"10 Squadron: 4 Whitley aircraft experienced severe icing conditions night 27/28/6 Frisian Islands area. One aircraft fell from 16,000 to 4,000 feet in an uncontrollable flat spin. Goodrich wing de-icing, airscrew spray and kilfrost, also hot air intakes all in use."

B.C./S.20135/I  
Enc.1A

- C. Hampden:- Engines were the principal cause of delay in delivery. Wellingtons were given priority in the supply of Pegasus XVIII engines. It was estimated at the outbreak of war that of the Hampden production of 28 per month 12 would be without engines, and this deficit would continue for up to five months. To compensate for this, the Hereford was used as far as possible for operational training in place of the Hampden.

- D. Battle and Blenheim:- The Battle was already an obsolescent aircraft by the time it began to take an active part in operations in France. It was virtually defenceless from the rear and its speed was insufficient for evasion when attacked by fighters. It was realised that it would be costly in use, but it was hoped that the accuracy of its low-level bombing would justify the cost. In any case, there was not a supply of Blenheims sufficient to take its place. Two Battle squadrons only, Nos.15 and 40, were replaced by Blenheim squadrons, and brought back to England to re-equip with Blenheims, before the capitulation of France. The remainder were lost either in the air or on the ground at that time, or re-equipped in England shortly after.

B.C./S.23546  
Enc.2A

Enc.7A

The supply of Blenheims was reported to be satisfactory in December 1939, and it was proposed to expand four squadrons to an I.E. of 24 aircraft instead of 16. But at the end of January 1940, the position had worsened, making it necessary in February to cancel the proposed expansion. The supply in July was insufficient to re-equip the ex-Battle squadrons which had returned from France, so that they had to wait for heavy types or the American types which were just coming over.

S.5714

- E. Stirling:- Many delays were suffered in the changeover of squadrons to new types owing to the hastening of their delivery. This meant that they had not undergone adequate trials, and had to be held up for one modification after another. The first Stirling squadron No.7, was formed at Leeming under No.4 Group on August 1st 1940. It was transferred to No.3 Group at

RECP 1/ 26.12.40

/Oakington

S.59160 Enc.9A

Oakington on November 1st in order that the latter group might be equipped entirely with Bristol manufactured engines. By this arrangement training and the stocking of stores, and liaison with the manufacturer was made easier. Operations were delayed by the fact that the Hercules II engine gave an operational ceiling of only 10,000 feet, and by a serious defect in the structure of the tail wheel, as well as by numerous minor modifications. The Hercules X engine began to be delivered in January 1941.

RECP 1/ 25.1.41

The need to avoid icing conditions still restricted operations for some time. As late as August 1941, the following comment was made on a report of the icing-up of a Stirling:-

B.C.8365/34  
Enc.17A

"Little experience has yet been obtained concerning icing of Stirling aircraft, but with the high wing-loading of this type of aircraft it would appear that a small degree of icing will invariably cause the aircraft to become unstable, and very serious consideration must be given to operating aircraft when icing conditions are probable".

- F. Manchester:- No.207, the first Manchester squadron, was formed at Waddington under No.5 Group on November 1st 1940. These aircraft were promising at first, although requiring minor modifications to such items as cabin heating. They began to operate in February, but turned out to be one of the least satisfactory of the new types produced. Losses were suffered due to failure of bearings in the "Vulture" engines and a tendency to catch fire in the air after engine failure. These defects could not be cured, in spite of the aircraft being grounded several times for modification. On April 13th they were grounded for inspection for signs of bearing metal deposit. Released on April 14th they were grounded again on April 24th for modifications to the oil tanks. Further grounding from May 30th to August 1st, followed by numerous restrictions on flight and engine life, resulted eventually in their replacement by the Lancaster. This had a similar airframe but four Merlin engines in place of the two Vultures.

B.C./S.19351/II  
Encs.3A  
4A  
I/31A  
B.C.7674/II  
Encs.1A and 11A

- G. Halifax:- The first Halifax squadron No.35, was formed at Leeming under No.4 Group on November 7th 1940. This aircraft also developed a defect in its tail wheel assembly, which was cured successfully. It began to operate in March 1941, but was out of commission again in April due to hydraulic trouble, and other minor defects, which took until June to rectify.

EPM.149/39

RECP./9C 7.2.40

A drastic revision of the research and development programme was undertaken in November 1939, in the light of war experience. The necessity had already appeared for a high speed photographic reconnaissance aircraft, and the idea of a fast, virtually unarmed bomber later fitted in with this, and eventually resulted in the D.H. Mosquito. Whilst the need for a replacement for the Stirling, Manchester and Halifax class was borne in mind even at this early date when none of these had been tried out. The Whittle aircraft of jet design was also under development.

MAP 2nd Report

From August 1940, the German air force began to attack the British aircraft industry on a considerable scale, which resulted in further serious delays to production. On

/August

August 15th an attack on Shorts factory at Rochester resulted in the loss of three months' output of Stirlings, and the abandonment of the plant. On September 4th the plant of Vickers at Weybridge was damaged with a loss of about 125 Wellingtons. The raids which followed on Coventry and Birmingham mainly affected the supply of training aircraft.

The actual bombing of factories was not the most serious effect of these attacks. A more serious factor was the loss of working time due to alarms; and the refusal of personnel to work at night, in many cases, for fear of raids. This further reduced production to a serious extent. The shortages in aircrew which were a serious factor limiting expansion at this time were aggravated by the shortage of trainer aircraft resulting from these raids and their after effects.

EPM.20/40

3. Appendix A Equipment. - With every aircraft manufactured a schedule of airframe equipment called Appendix A is prepared. This schedule specifies in columns 7 and 9 all the equipment which has to be fitted to the airframe:-

- (a) in order to put it into flying trim for delivery from the contractors' works.
- (b) in addition to (a), in order to make the aircraft operationally fit.

Column 7 shows the equipment which is fixed, or practically fixed to the aircraft. Column 9 shows the equipment which is easily removable.

The column 7 equipment is either:-

- (a) "embodiment loan" equipment fitted into the aircraft by the contractor, e.g. flying instruments and fixed fittings for electrical, wireless, armament and oxygen services, or
- (b) fitted into the aircraft by the Air Force after delivery from the contractor, e.g. guns, bomb carriers, clocks.

Column 9 equipment is all fitted by the Service, e.g. gun magazines, gun sight, bomb sights, wireless, cameras, drift sights, chart boards and other navigational instruments, oxygen cylinders, dinghies.

EPM.18/40  
ERP.3  
RECP.13 10.12.39

EPM.28/40

On February 15th 1940, as a result of complaints of shortages from Bomber Command and extensive inquiries as to difficulties encountered, the question of Appendix A equipment was taken up by the War Strength and Development Committee. There were general shortages in both embodiment loan items and in items fitted by the Service A.S.U. The reason for this shortage was the method of ordering such equipment up to July 1939, which had caused a time-lag of many months in its supply. It had been ordered after the aircraft, and no margin had been allowed. This was altered by bulk ordering to correspond with the planned output of the aircraft industry.

Up to June 1940, however, many aircraft remained unavailable for long periods solely owing to this deficiency, and many man-hours of labour were wasted in transferring items of equipment from aircraft brought in for repair, and later

/transferring



transferring them back again. The urgency of the question of supply of this equipment caused the Secretary of State to call a special meeting on February 19th 1940 attended by the Commanders-in-Chief, to try to find a way of speeding it up. Manufacturers of certain items had fallen seriously short of their contract, and caused bottlenecks in the supply of apparently insignificant parts such as a special type of switch, which resulted in the holding-up of Appendix A equipment. By a redistribution of contracts, and the use meanwhile of equipment for which every unit was combed, this cause of delay was gradually brought under control.

4. Bombs. - At the beginning of the war the standard bomb in use was the 250 lb. G.P., but the emphasis was soon transferred to the 500 lb. G.P. It was found to be far more effective, in spite of the extra margin of error allowed by the use of twice the number of the lighter type. The manufacture of the 1,000 lb. G.P. bomb was intended to correspond with the introduction of four-engined bombers. 2,000 lb. A.P. bombs were being manufactured to be carried by the Beaufort and the Hampden, and additional plant was provided soon after the outbreak of war to increase the production of 500 lb. S.A.P. bombs, for use against shipping, and modern concrete buildings. 250 lb. S.A.P. were used but were not very effective.

When a review of the bomb position was undertaken in February 1940, there was a shortage in reserves of the 250 lb. "B" bomb and the new incendiary bombs, 33 lb. and 42 lb. The supply of 4 lb. and 25 lb. incendiaries was adequate, and the position with the other bombs used by Bomber Command was satisfactory. An estimated reserve for six months was held ready filled. Further details of bomb development and supplies can be found in the A.H.B. monograph on Bombs.

5. Aerodromes. - Owing to the failure to maintain the expansion envisaged the supply of aerodromes at the beginning of the war was fully adequate. The size and surface of many of them, however, were not suitable for the heavy bombers which they had to accommodate. This factor increased non-operational casualties, and very soon had to be taken into account. The majority of pre-war aerodromes had to be provided with runways and increased in size. This work, added to the programme of building new aerodromes, caused delays to both, and produced difficulties at a later period.

During the first winter of the war the problem was brought to the fore by the unserviceability of many of the grass aerodromes for considerable periods, especially at the O.T.U.s, where the ground had to stand up to particularly hard wear. O.T.U. courses had to be extended owing to soft ground, thus adding to the shortage of output already experienced. There was a proposal in February, 1940, to move some O.T.U.s to France or the Dominions owing to shortage of aerodromes in the British Isles. The summer weather resolved this problem for the time being.

In June 1940, with the extension of German occupation to the North French coast and the threat of invasion, urgent efforts were made to produce new aerodromes quickly. New fighter stations were needed to cover the western areas, and it was thought that some advanced aerodromes might have to be abandoned. Orders and counter-orders went out from Air Ministry, which resulted in increasing the number of landing grounds immediately available, whilst delaying some of the more permanent work which had been put in hand.

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W.P.(41) 18.

This threat subsided, however, to be succeeded by the renewed problem of soft aerodromes as the winter weather came on again at the end of 1940. This emphasised the need for replacing grass surfaces by runways, which had not yet been done to any appreciable extent. A serious shortage of cement held up this work. The building of new aerodromes was progressing well, several of them having come into use by the end of 1940.

The question of a possible "saturation point" for bombers operating from the British Isles was considered in April 1941, in view of the expected arrival of American units. It was then estimated that there would be 128 operational bomber aerodromes by the middle of 1942, and 170 by the beginning of 1943. No fear of a "saturation point" in the air was anticipated within these figures of available aerodromes, which could accommodate a maximum of some 9,000 heavy bombers of four-engined types by 1943. The difference in the number available at the beginning of the war, and in April 1941, can be seen by reference to maps I(a) and (b).

6. Ground Staff. - The supply of personnel for expansion was even more complex than that of equipment. The difficulties encountered in training an adequate flow of aircrew have been dealt with in the earlier section on "Training". Many types of ground staff, however, also required a long and complex course of training, whilst there were many other important calls on skilled manpower for the other services and for industry.

S.1503/1A App.B

The question was stressed as early as July 1939, by the Director of Organisation at Air Ministry in a note on the "Organisation of Further Expansion beyond Scheme M" - "Although it may be possible to produce the necessary aircraft for this further expansion by 1942; to recruit the actual numbers of personnel required; and even to provide the necessary stations by that year; it must be pointed out that to attempt to complete this expansion scheme by then would merely result in a most serious deterioration of the efficiency and organisation of the present force. The main restricting factor is the shortage of trained and experienced Group I tradesmen".

The vastness of the organisation needed to provide the 50% increase suggested beyond Scheme M is clearly shown in Annexure II to the above extract, which gives a list of the "principal increases in staffs, training and maintenance units". Excluding overseas and aircrew training requirements these are:-

- 2 Schools of Technical Training
  - 1 Wireless School
  - 1 Aircraft Repair Depot
  - 1 Armament School
- 10 Aircraft Storage Units
- 2 Equipment Depots
- 2 Hospitals
- 2 Service Training Centres

/Also

Also 4 extra Group Headquarters and 3 Maintenance Wings. The number of regular and reserve ground staff required for this expansion was estimated at 90,000. The length of time needed for their provision was emphasised - "it appears probable that the pilots could be produced by the end of 1941, but it is most unlikely that the proper proportion of skilled tradesmen necessary for the efficient maintenance of aircraft and equipment would be available until late in 1945".

This question of the supply of ground staff is too comprehensive to be dealt with here, and does not come properly under the heading of the "Bombing Offensive". Having indicated the vastness of the problem, therefore, it is left to the A.H.B. monograph on "Personnel" to relate the course of its solution.

## SECTION V

RE-ORGANISATION, MAY 1940 TO MAY 1941

S.60810

Up to the Fall of France - During the early months of 1940 it was decided to convert seven of the former training squadrons into operational squadrons. Their existing organisation having been taken over by the O.T.U.s these squadrons were put on a number only basis pending the formation of new operational squadrons to absorb them. The squadrons proposed were Nos.215, 185 and 75, which began to form during April, and Nos.148, 7, 76 and 97.

Ibid Enc.20A &  
28A

S.1844 Enc.12A

Up to May 1940 the formation of these new squadrons was given priority over the expansion of the O.T.U.s to full strength. It was then decided that the serious position in regard to supply of aircrew necessitated the reversal of this priority. Six of the squadrons in process of formation were disbanded immediately to strengthen the O.T.U.s, the only one allowed to complete its formation being No.75 (New Zealand) Squadron, at Feltwell, which was made up of New Zealand personnel from the R.N.Z.A.F. and the R.A.F. It was at last realised that new squadrons could not successfully be planned until the training framework had been expanded sufficiently to supply them. The only squadron added by May 1940, was therefore, No.75 Squadron. In addition it had been decided to increase the establishment of the heavy bomber squadrons from an initial equipment of twelve aircraft to sixteen, using for this purpose the immediate reserve aircraft already in the Command. It was proposed to hold no I.R. aircraft for heavy bomber squadrons, but finally two I.R. were held per sixteen I.E.

Two of the Battle squadrons of the A.A.S.F. had returned to England in December 1939, No.40 Squadron on the 2nd and No.15 on the 9th to be re-equipped with Blenheims. They were replaced in France by Nos.139 and 114 Squadrons respectively from No.2 Group. It was intended that this process of exchange and re-equipment should continue, but the scheme was indefinitely postponed after these first two on account of shortage of Blenheim aircraft.

ERP. 6th

2. Re-equipment of Medium Squadrons - On the return of the eight Battle squadrons from France in June 1940, the question of their future was debated. The personnel of the two Blenheim squadrons (Nos.114 and 139) returned without their aircraft, and the squadrons were reformed in No.2 Group. It was decided that a close-support bomber force of maximum strength must be retained until the threat of invasion should diminish in October. In spite of the need for extra personnel for the heavy bomber squadrons it was decided to keep six of the squadrons on Battles and to convert two (Nos.105 and 218) to Blenheims. These two were replaced by the formation of two new Polish squadrons (Nos.300 and 301) on Battles. The reserve Battle squadron (No.98) was reconstituted and despatched to Iceland.

S.5714 Enc.8A

ERP. 7th

ERP. 8th

The vulnerability of the Battle which had long been recognised made it highly desirable to re-equip these squadrons, but the supply of Blenheims was insufficient for this in addition to overseas commitments. It was finally decided to re-equip the Battle squadrons with American types such as the Douglas DB.7 (Boston) as these became available.

/If

If losses were too great in the mean time they would have to be converted to heavies.

ERP. 7th

S.5714 Encs.6A-9A

On August 17th the Expansion and Re-equipment Committee decided that eight medium close-support squadrons would now be adequate. These were to be equipped with Bostons as soon as possible. The remaining fifteen medium squadrons were to be converted to heavies. Twelve of them were to be converted immediately into twelve new heavy bomber squadrons at half strength. Two Battle squadrons (Nos.103 and 150) were already converting on to Wellingtons and two new Polish squadrons (Nos.304 and 305) were being formed on Battles to replace them. A Czech squadron (No.311) was being formed simultaneously on Wellingtons. The method of conversion of Nos.103 and 150 squadrons adopted was to attach crews to No.214 squadron for conversion, and then to squadrons in No.3 Group for experience. They finally returned to complete the conversion of these two squadrons by October 7th.

Ibid Enc.15A

The following further re-equipment was undertaken as a result of the above decision:-

Nos.300 and 301 (Polish) Squadrons at Swinderly to Wellingtons

Nos.304 and 305 (Polish) Squadrons at Bramcote to Wellingtons

Nos.15 and 40 Squadrons at Wyton to Wellingtons in November

Nos.12 and 142 Squadrons at Binbrook to Wellingtons in November

Nos.57 and 105 Squadrons were originally to be re-equipped with Whitleys at Driffild; a Coastal Command squadron (No.612) however was given priority for the Whitleys, so it was decided to equip these two with Wellingtons. Eventually No.218 Squadron was substituted for No.105.

ERP. 13th  
S.5714/ Enc.43A

Nos.88 and 226 Squadrons were to re-equip with Bostons (DE7) as soon as they were available, and

Nos.107 and 110 Squadrons were to follow them.

ERP. 24th

In point of fact these last four squadrons remained on Battles and Blenheims throughout this period, owing to the use of Bostons for other purposes, principally as "Havoc" night fighters. Nos.88 and 226 Squadrons eventually re-equipped with Boston IIIs and Blenheims respectively.

ERP. 23rd.

In April 1941, it was decided that the number of old medium squadrons should be reduced to a minimum. The only army commitment was to provide 5 support squadrons, but the War Office would be quite ready to accept heavies. The production rate of heavy bombers unfortunately did not allow of the conversion of all medium squadrons for some time. The supply of pilots could not be absorbed by the heavy squadrons, and a large number of American medium bomber aircraft were on order. So it was finally decided to absorb the surplus aircrew by forming Boston squadrons, until sufficient heavy aircraft were available to replace them. Appendix C3 shows the position at November 14th 1940, and Appendix C5 at May 29th 1941.

S.67148 Enc.1A

S.60810 Enc.45A  
ERP. 23rd

ERP.105

3. Expansion - The expansion which had been planned for Bomber Command was to "Target Force A" of 75 Heavy and 20 Medium bomber squadrons by December 1941, and to "Target Force C" of 100 Heavy and 20 Medium squadrons by mid-1942. 50% of this latter force should be of the new 4-engined bomber types. This was modified, as seen above, by the decision to reduce the number of medium squadrons to a minimum. During the latter half of 1940 fairly good progress was made towards this expansion by the conversion of medium squadrons to heavies and the formation of Polish squadrons; by reconstituting the Group reserve squadrons as operational squadrons in July; and by the formation of the first 3 new heavy squadrons, on Stirlings in August, and on Manchesters and Halifaxes in November. After this, however, the despatch of two squadrons (Nos.37 and 38), and crews to supply additional squadrons, to the Middle East, and the provision of pilots for ferrying duties and to form new squadrons in Coastal Command, seriously delayed expansion.

ERP. 23rd

During the early months of 1941, there was considerable discussion as to the best methods of further expansion. When this became possible, in April, the outcome of the debate was the adoption of five methods of expansion as follows:-

S.67148 Enc.21B

- (i) The re-equipment of selected medium bomber squadrons with heavy bombers.
- (ii) The addition of an extra flight of 8 + 1 aircraft to existing Wellington, Whitley and Hampden squadrons.
- (iii) The formation of new Wellington, Whitley and Hampden squadrons. This was an alternative to (ii) where that was impracticable owing to accommodation.
- (iv) The re-equipment of selected Wellington, Whitley and Hampden squadrons with new heavy types.
- (v) The formation of new type (i.e. Stirling, Manchester, Halifax, etc.) squadrons at 16 I.E. + 2 I.R. It was intended that the crews for these should be selected from old type squadrons to begin with

S.5714 Enc.31A

The method of adding aircrews and maintenance crews to existing squadrons, which had been suggested in order to make the fullest use of the aircraft, was rejected. It was considered that the use of an aircraft by more than one crew would be both demoralising and uneconomical. The alternative at (ii) above was strongly advocated by Bomber Command as giving economy in aerodromes and in squadron staff, whilst giving an increased number of flight commanders the advantage of experience.

S.67148 Enc.21B

Method (i) had already been used and the further squadrons Nos.101, 105 and 110 of No.2 Group were now detailed to be re-equipped.

Method (ii) was adopted by the addition of an extra flight to six Hampden squadrons during May and June, 1941.i.e.:

Ibid Enc.21A

No.44 at Waddington, No.106 at Coningsby, No.144 at Hemswell,

No.50 at Lindholme, and Nos.49 and 53 at Scampton.



4. New Bombers - The new heavy bombers now coming into service were the 4-engined Stirling and Halifax and the twin-engined Manchester. One squadron each of the 4-engined types had been formed by May 1941, and one more of each was about to form. Three Manchester squadrons had been formed, but as the Vulture engine fitted to this aircraft proved unsatisfactory (cf. Section IV), they had to be re-equipped temporarily with Hampdens, whilst awaiting a solution to the technical faults. These were eventually found to be insoluble, and the Manchester was replaced by the 4-engined version of the type - the Lancaster.

These 4-engined aircraft now came to be known as "heavy bombers", whilst the former "heavies" became "medium bombers", and the former "mediums" became "light".

The "Mosquito", which had been designed for high-speed photographic reconnaissance, was just coming into service for this purpose at the end of the period. It was later found to have such an excellent performance that large deliveries were ordered, modified for night fighting and for bombing.

5. Command Organisation - As the planned expansion of Bomber Command began to take effect it became necessary to review its organisation in order to keep it abreast of this expansion. Various alternatives were suggested, such as two Bomber Commands, or a Northern and a Southern area under Bomber Command. Finally it was decided to retain the existing chain of control suitably expanded. Headquarters staffs were of necessity steadily increasing.

A second O.T.U. Group, No.7, had been formed in July 1940, owing to the unwieldy growth of No.6 Group. No.1 Group had been reconstituted to administer the eight A.A.S.F. squadrons returned from France. It continued to control the four Polish Wellington squadrons and the four Wellington half-squadrons which had replaced the Battle squadrons by January 1941. In May 1941, No.2 Group consisted of nine squadrons, its original seven with the addition of No.18 from the Air Component and No.105 from the A.A.S.F.

Nos.15, 40, 57 and 218 Squadrons transferred to No.3 Group in November 1940, on being equipped with Wellingtons. In addition to these, in May 1941, No.3 Group had four of its original six operational squadrons. No.37 and 38 had gone to the Middle East. It also included No.75 (New Zealand) Squadron, No.214, previously the reserve squadron, No.311 (Czech) Squadron, and No.7, the first Stirling squadron. It thus consisted of ten British and one Czech Wellington squadrons, and one Stirling squadron.

No.4 Group had its original six Whitley squadrons, including the former reserve, No.78, with the new Halifax squadron, No.35 added.

No.5 Group now consisted of its original seven Hampden squadrons. No.106, the reserve squadron, became fully operational only in early 1941, some time after the other Group reserves. This group also contained the first Manchester squadron, No.207.

There were thus thirty-one full squadrons and four half squadrons in Bomber Command on February 1st 1941. It was

/planned

planned at this time to form another operational group, No.8, as soon as the state of expansion warranted it. This was expected to be about the end of the year.

S.60810 Enc.42B

6. Final Composition June 1941 - By the end of March there were thirty-two "old heavy" squadrons, five "new heavy" (although the two new Manchester squadrons had many setbacks), and nine medium. The expansion forecast to the end of the year is shown at Appendix C4.

The only changes in the bomber force after this before the end of the period under review were:-

Ibid. Enc.43A

- (a) the conversion of one further Blenheim squadron, No.101, to Wellingtons in April 1941. The intended conversion of Nos.105, 107 and 110 Squadrons at the same time was postponed.
- (b) The withdrawal of Nos. 15 and 57 Squadrons from the front-line to provide crews for the Middle East. Following on this No.15 Squadron was re-equipped with Stirlings by degrees, and a new squadron, No.405 (Canadian) was formed to replace it in No.4 Group on Wellington II. No.57 Squadron was intended eventually to re-equip with Wellington IV, but for the present came back into the line on Ic.
- (c) A second Halifax squadron - No.76 - formed in May from the third flight of No.10 Squadron. It took 6 aircraft from No.35 Squadron and with 2 new ones became operational in June.
- (d) The re-equipment of No.61 Squadron with Manchesters took place in June.
- (e) A Boeing Fortress (B19) Squadron - No.90 - was formed in No.2 Group during May and June.

The final Order of Battle at the close of this period, May 29th 1941, is set out in Appendix C5.



## PART II

THE OPENING OF THE OFFENSIVE - SEPT. 1939 TO MAY 1940SECTION IPOLICY AND PLANNING

COS.549

S.41432

Early History - In February 1937, a paper was drawn up under the direction of the Chiefs of Staff outlining the role of the various armed services in the event of a war with Germany. This suggested the kind of plans which ought to be prepared, the part of Bomber Command being based on the theory that counter-offensive is the best means of defence in the air. On the basis of this paper the Western Air Plans were drawn up. During the succeeding years they were modified in the light of political developments, and further strategical considerations discussed between the planning section of Air Ministry and Bomber Command. By the outbreak of war they had reached the stage of development outlined in Appendix F.

Meanwhile, the Munich crisis of September 1938 had shown the probability of Germany taking the offensive in the east, whilst remaining on the defensive in the West. This possibility introduced political considerations which forbade the immediate use of those plans which had been decided upon as strategically the most sound. In addition, the faster growth of the German Air Force than the R.A.F. made it necessary to conserve the latter in the opening phases. An interim bombing programme had, therefore, to be decided upon for use at the outbreak of war. This resulted in the policy of restricted bombing which governed the first phase of the war, up to the German offensive in the West.

2. Political Aspect - In the event of Germany refraining from air bombardment in the west, the onus of initiating air warfare would be left to the Allies. Under these circumstances it was most important that no action should be undertaken which could be interpreted as an attack on civilians or non-military objectives. Such action might be used by the Germans as an excuse for indiscriminate bombing, and might also alienate neutral sympathies from the Allied cause. The policy agreed upon by the British and French Governments, therefore, and publicly affirmed just prior to the outbreak of war, was the limitation of air attack to objectives of an indisputably military nature (see Appendix A3).

AHB/II/43/98A

The objectives covered by this ruling were:-

- (a) Navy - Warships - including auxiliaries attendant on the fleet - at sea or in harbour

Dockyards

Barracks, storage units or dumps and other establishments manned by naval personnel.

- (b) Army - Army Units

Fortifications and coast defence works.

Barracks, camps, billets, depots, dumps and other establishments manned by military personnel.

## (c) Air Force - Air Units

## Military Aerodromes

Depots, storage units, bomb stores and other establishments manned by Air Force personnel.

## (d) Transportation Targets - Troop transports at sea or in harbour.

Roads, canals and railways used for military communications - excluding railway stations.

Trains, road and inland water transport which can reasonably be presumed to be of a military character.

N.B. Factories and bulk stocks of fuels, other than military dumps in the field or in military establishments, not to be attacked.

S.41432/32c.

3. Strategic Aspect - The best policy from a purely strategic aspect had been decided to be an early attack on the Ruhr. This area, smaller than that of Greater London, concentrated within it 70 to 80 per cent of Germany's coal and coke supplies, and 67 per cent of her supplies of pig-iron, as well as 75 per cent of her steel capacity, and most of her basic chemical production. If an early attack were made, before the defences were fully efficient, a crippling blow might be struck at the outset. This view had long been held by the British staffs, together with the opinion that an attack on oil would effect an equally immediate reduction in Germany's capacity to wage war. After the collapse of Poland and the German agreement with Russia, this latter opinion was altered as new sources of oil became available. Further investigations caused its adoption again prior to the German attack.

S.2426/1A

The French continuously held the view that these targets should not be attempted until a later stage. Their reasons were primarily a fear of retaliation by the more numerous German bomber forces against their factories, virtually defenceless owing to lack of an efficient fighter defence organisation; and secondarily their wish to use the whole Allied bombing strength for close support of the armies in the field. Owing to the political considerations already discussed, these British plans were held in abeyance at the outbreak of war, and did not come to the fore again until the main German offensive became imminent. Their further progress is discussed in the next section.

The strategic value of the targets now laid down was considered by Plans Section of Air Ministry at the end of August 1939. It was decided that naval dockyards, military camps and operational aerodromes did not offer economical targets, for the following reasons:-

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## (a) Warships, military forces and aircraft are mobile.

Dockyards, camps and aerodromes may not be occupied therefore at the time of attack.

## (b) Unless raids directed against permanent buildings or fortifications at such bases are repeated at frequent intervals, the damage could be repaired in a comparatively short time.

/(c)

- (c) Military camps are scattered objectives and unlikely to be worth the effort involved.

Railways and roads in non-populous areas of a highly organised system such as that of Germany were not considered worth attacking unless heavily burdened with military transport. This was unlikely if Germany was on the defensive in the west.

The remaining targets which were considered strategically worth while then resolved themselves into:-

No.	Plan No. & Target	Advantages	Disadvantages
<u>NAVAL OBJECTIVES:-</u>			
1.	W.A.7(a), Warships in the Schillig Roads near Wilhelms-haven	Territorial penetration limited to less than 20 miles.	Warships may not be present. Bombs available unlikely to sink warships. Defences very concentrated.
2.	W.A.12. Enemy warships at sea	A strictly military target	Difficulty of location and attack in time
3.	W.A.7 Dockyards	Little penetration required for bases on North Sea coast.	Not a very vulnerable target. Heavy gun defences.
<u>ARMY OBJECTIVES:-</u>			
4.	Army targets selected by reconnaissance	A strictly military target	If no attack in the west, targets likely to be small & unimportant. Heavy losses likely.
<u>AIR FORCE OBJECTIVES:-</u>			
5.	W.A.1. Aerodromes, parks & depots; not factories	Damage to permanent installations or stores would hamper air activity	German aerodromes very numerous, difficult to find, and involve deep penetration. Heavy defences likely.
<u>COMMUNICATIONS:-</u>			
6(a)	W.A.5(a) & (b). The two Dortmund-Ems canal aqueducts.	Stop all inland water traffic between the Ruhr & north & central Germany; and between the north ports & central & eastern Germany. Both in open country, therefore permissible military objectives. More vulnerable than bridges, and easier to locate at night.	Repeat attacks at intervals necessary to keep aqueducts out of action.
(b)	Mittelland canal aqueduct at Minden.		

/After

After study of these targets it was decided that the only ones which were both politically permissible and strategically worth while were naval targets in the Schillig Roads and at sea, and the aqueducts mentioned in 6(a) and (b) above. The latter were also ruled out, however, owing to the possible danger of hitting civilians or civilian property. Thus the only target which could be bombed from the outset was the German Navy.

These limitations did not affect the plans which had been made (Plan WA 14) for propaganda raids over all parts of Germany. These sorties in addition to their value as a means of disseminating propaganda to the German people by means of leaflets dropped from the aircraft, were intended to be a means of familiarising crews with the conditions to be encountered. As such they turned out to be of great value in preparation for the bombing missions which were to follow.

4. Anglo-French Discussions - Both before the war and during this period of static warfare, interminable discussions were carried on both in the Air Staff, the Chiefs of Staff Committee and between the British and French staffs, as to how bombing should be directed once the major offensive on land should commence. It would be fruitless to do more than summarise them here, as many of the arguments were repetitive, and also the subject is dealt with in the narrative on the Campaign in France and the Low Countries.

At the outbreak of war the rôle of Bomber Command, both at home and in France, was envisaged as a number of alternatives. It could be either strategic, in conformity with one of the major Western Air plans which had been prepared. Or it could be tactical, attacking German columns and communications in support of the land forces. The British and French views conflicted as to this major division of rôle.

The view reached by the British staffs was that the heavy bombers were best adapted for a strategic rôle, or at most for indirect support, such as the attack of communications and depots deep into Germany, east of the Rhine. Such attacks could be combined with one of the major plans, such as that on the Ruhr or on oil targets, which were considered to be the most economical and effective employment for heavy bombers. The medium bomber's rôle should be that of direct support, the Battle and Blenheim being considered suitable for this. Even here, however, the British view was that a strategic rôle might be demanded of the Blenheim squadrons, to maintain the attack into Germany by day.

The French staff continually put forward the view that all bomber forces should be used in immediate support of the army, by attacking communications and troop concentrations and depots. They were impervious to the argument that heavy bombers were totally unsuited to this work, and were strongly opposed to attacking the Ruhr or other targets in Germany east of the Rhine, until the enemy had initiated similar attacks himself. On September 11th 1939, for example, "As, however, General Gamelin still has grave fears for the security of his lines of communication during the period of concentration of the French army, he is opposed to our taking the initiative", and again in a report on meetings with General Gamelin on April 13th and 14th 1940, Air Marshal Barratt said that "Gamelin was obsessed with fear of attack on his own road and rail communications", and that "as regards initiating attacks on industry in the Ruhr and elsewhere he was strongly opposed, using the argument that with

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the three or four to one superiority of German bomber forces, the French could not afford to take the risk. Arguments showing how German occupation of Holland and Belgium would strengthen the Ruhr defences --- fell on deaf ears."

These diametrically opposed views - the British based on long-term strategical considerations with a view to ultimate victory, the French on staving off the full impact of war by every means, in view of the enemy's superiority - could not be reconciled. As a result no definite plans could be settled in advance, everything being left to the circumstances of the moment. Consequently all hope of taking the initiative was lost. The Anglo-French talks did achieve some results, however. The general strategy for the conduct of the war was agreed before hostilities began - a defensive period of economic pressure and restricted bombing, followed by an ultimate offensive, when time (which was agreed to be "on our side") should allow the Allied strength to be built up. The various alternative moves open to Germany were discussed, and the Allied counter-moves decided. Attacks on German railways, oil and industrial targets were also discussed. But the only decision reached regarding the bomber forces by April 1940 was that attack on a German land advance would be a primary commitment of Bomber Command.

On April 22nd and 23rd 1940, the French were at last persuaded at the Supreme War Council to agree that the main force of heavy bombers should carry out the assault on marshalling yards and oil refineries in the Ruhr, in the event of German aggression against Holland or Belgium. It had already been arranged that two Whitley Squadrons would be available for the night attack of communications from the first night of attack, under the orders of BAFF. A directive was issued to Bomber Command regarding the attack of vital objectives in Germany, but executive orders from the Air Ministry were still to be awaited, since War Cabinet authority was required. On May 9th the day before the attack, the Chief of the Air Staff had to recapitulate all the arguments in favour of an immediate attack into Germany at a meeting of the Chiefs of Staff, since the General Staff had suddenly gone over to the French view. On seeing the imminence of the German attack they evidently lost their detached long-term view, and requested the maximum assistance in direct support which the R.A.F. could provide.

5. Conservation of Forces - In addition to the political and strategic aspects, bombing policy had to be examined with a view to economy of forces and minimum wastage. Owing to a later start with the expansion of the R.A.F. and slower progress, Great Britain entered the war with a considerable numerical inferiority to the German Air Force. In order to build up a force large enough for the ultimate defeat of Germany it was essential to conserve resources, both of crews and aircraft, to the utmost in the early stages. This course was also indicated owing to the restrictions imposed on bombing in the initial period, which prevented the attack of those targets which promised the best results.

It was, therefore, decided to restrict bombing activity to the utmost in the first phase, reserving the Command's resources for a critical period later such as a full-scale German offensive; or for the time when the unrestricted bombing of land targets by Germany should give an opportunity to

/retaliate



retaliate in kind. Meanwhile, we should build up our forces, whilst giving them useful experience in comparative safety by confining their activities over Germany to leaflet dropping by night. The inclusion of plans for attack against the German fleet was dictated by political pressure for some offensive action by our air striking force, and by the conclusion that this was the most useful and economical way of satisfying it. Even the German attack on Poland which drew us into the war did not alter this policy, as it was considered impossible for us to give any direct assistance to Poland; and so there was no point in throwing away our resources in efforts foredoomed to failure. Better service would be rendered our Allies by conserving our strength for final victory leading to their release.

6. Resultant Policy - In consequence of these considerations, in which expediency predominated over humanity, no attacks on land targets were undertaken in the first phase of the war. The first such attack was, as it was officially declared to be, in retaliation for German air attack on Scapa Flow in the Orkney Islands. In attacking the naval base, bombs were dropped on land. So the R.A.F. attacked a similar target, the seaplane base at Hornum in the island of Sylt, on March 19th 1940. The first case of an attack on a mainland target was the attack on Stavanger aerodrome when the Germans invaded Norway.

Ever since the German Air Force turned from the attack of purely military targets to the unrestricted bombing of Polish towns on September 14th 1939, the Allies had held themselves justified in adopting similar tactics. As they were not then ready to undertake this, and risk retaliation, however, the occasion was ignored. Military targets in the narrowest sense only were attacked until after the German bombing of the city of Rotterdam, which was held to release the Allies from any obligation to restrict their targets. When this decision was taken Bomber Command were at last able to initiate the Ruhr plan, the first attack taking place on the night of May 15th 1940. Night operations had by now become the rule for all heavy bombers, as the far higher wastage in day operations was not justified by the increase in accuracy and ease of navigation obtained.

The British air policy during this period is lucidly summed-up by the following extracts from a personal letter from the Chief of the Air Staff (Sir Cyril Newall) to the C.-in-C. Bomber Command (Sir Edgar Ludlow-Hewitt) on August 23rd 1939:-

"Our policy governing air bombardment at the outbreak of a war, as agreed with the French, is that we should not initiate air action against other than purely military objectives in the narrowest sense of the word, i.e. Navy, Army and Air Forces and establishments; and that as far as possible we should confine it to objectives on which attack will not involve loss of civil life". "You will understand of course that the restrictions voluntarily accepted under the agreed policy may have to be relaxed at a very early stage in the war should the enemy adopt unrestricted air action".

"As far as can be foreseen at present we are likely to be presented with no straightforward issue like an immediate air attack on this country, which would let us know exactly where we stood, and would free our hands to adopt immediately such plans as would most rapidly reduce the scale of attack on this country while at the same time bringing the heaviest pressure

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to bear upon our enemies". "This attitude, while it would have some advantage in giving us a breathing space in which to make such adjustments in our plans as appear necessary, would nevertheless put us in a very difficult and delicate position, since it would put the onus on us of starting offensive action in the west". "Finally, we are still seriously short of reserves, both of aircraft and personnel, and we cannot foresee the extent to which enemy action will curtail the production of aircraft or trained personnel from our factories and schools. It would be manifestly unwise to expend a high proportion of our best aircraft and crews at the very beginning when there are so many unknown factors in air warfare of which we have to gain experience. This would be all the more undesirable during a phase when, for political reasons, we are confined to a course of action which is neither economical nor fully effective". "A time will come, probably sooner than later, when we shall be free to put plans of wider scope into operation; and, when this opportunity is open to us we shall need all the strength we can muster to take advantage of it".

7. Development of the Western Air Plans - During these early months of restricted activity the Western Air Plans which had been drawn up before the war, and are dealt with in the first volume of this narrative, were further developed. The Ruhr plan (W.A.5(b)), remained the most important and promising of them. The importance of this area has already been noted, and the fact that five out of ten lines of communication of the German army in the West ran through it, strengthened the arguments for its selection. The targets chosen within it varied from time to time in priority, from blast furnaces, oil installations and factories, to power stations and marshalling yards. The final choice during April fell upon oil plants and marshalling yards, this plan being given the designation W.A.4(c). The moment for attack was to be that in which Germany invaded the Low Countries. The bombing force could then fly direct to the Ruhr across Holland and Belgium, a direction of attack which would be shorter and least defended. Other advantages anticipated from this timing were:-

- (a) Interference with the military rail communications supporting the German advance.
- (b) Effect on the morale of the population immediately behind the German armies, which was likely to reduce the spirit of the German soldiers themselves.
- (c) Drawing German fighters away from the theatre of operations.

The plan for attack on oil plants (W.A.6) which came into increasing favour at the time of the German attack was closely bound up with the Ruhr plan. Nine out of the 17 synthetic oil installations were situated in and around the Ruhr, and six oil refineries, producing 70% to 80% of the German output of high-grade lubricants, could also be reached with less than 150 miles penetration of the German defences. These were at Bremen, Hanover, Salzbergen (north of the Ruhr) and Hamburg. A Cabinet Committee which studied the German oil situation early in 1940 recommended these six oil refineries and nine hydrogenation (synthetic oil) plants as

/first

S.2057/43A

S.46368/I 37A

S.43293/11B

first priority targets. Synthetic oil plants were considered the most vulnerable of all known objectives. Their average area was over 400 yards square, and they contained pipelines carrying hydrogen at a pressure of 3,000 to 6,000 lbs. per square inch.

S.46368/I 37B

Plan W.A.8 for attack on Germany by night was prepared as a result of the need for conserving the limited British bombing strength. Its aim was to dislocate German war industry by:-

- (a) Material damage to specific plants.
- (b) Denying such plants to the workers by the use of delay action bombs.
- (b) The threat of attack leading to Air Raid warnings.

This plan was complementary to the two former, in that the actual objectives could be the same.

47A

After the German attack on Norway in April 1940 the priority of these plans was laid down. If Germany did not invade Holland or Belgium but authority was given for unrestricted air action, Plan W.A.8 (night attack) was to be implemented in the following order of priority:-

- (a) Oil plants (W.A.6.)
- (b) Electricity and coking plants (W.A.5a)
- (c) Self-illuminating targets (W.A.8)

If Germany should invade Holland or Belgium, the first objectives would be targets in the Ruhr (W.A.4c) including:-

- (a) Oil plants (synthetic) at Sterkrade Holten, Wanne-Eickel, Gelsenkirchen, Bottrop, Kamen, Homberg, Dortmund, Castrop-Rauxel and Duisburg.
- (b) Communications, i.e. the Marshalling yards at Hamm, Schwerte, Souest.
- (c) Troop concentrations (the two Whitley Squadrons only).

The operations of the heavy bombers were to be confined mainly to night action, but dawn or dusk attacks could be carried out at the discretion of the A.O.C.-in-C., Bomber Command. The principal weight of attack was to be on oil plants, whilst self-illuminating targets such as coke-ovens could be used as last resort targets if the others could not be identified. This was the stage of planning reached when the offensive took place. It governed operations in the first phase, and further developments are dealt with in their context in the next part of the narrative.

## SECTION II

### THE DROPPING OF PROPAGANDA LEAFLETS

Pre-war Plans - Propaganda may be defined as the presentation of a case in such a way that others may be influenced. It should therefore be based upon truth, and should reveal truths which have been concealed, or distorted, so tending to undermine the confidence of the enemy. Consequent upon the Munich crisis of 1938, a conference was held on September 17th, at which the possibility of issuing leaflets as a form of warning, should Germany take such action as would justify reprisals in kind, was suggested. These warning notices were to be on the same lines as those issued in frontier warfare, and were intended to help to secure neutral (especially American) opinion firmly on Britain's side should some reprisal action be necessary. The actual dropping was to be done at night from a great height, that the risk of casualties might be diminished. By September 23rd 1938 the matter had been launched as one of the utmost urgency, while the Air Staff indicated on September 25th that they were in full agreement, and suggested two occasions on which it was particularly valuable to drop leaflets during the opening stage of a war, i.e.

- (a) Immediately after the declaration of war, when no bombing had taken place, to present the true facts to the German people.
- (b) Before the bombing of a selected area, advocating evacuation of the civilian population. The purpose of this was both to minimise the loss of civilian life, and to increase the difficulties of the enemy in maintaining discipline among the civilian workers.

By September 27th 1938 the first pamphlets to be dropped - "A Message to the German people from the British people" - were being translated; while at the same time the limitations to dropping leaflets by aircraft were recognised and defined.

These were:-

- (a) The plan could not be employed before the outbreak of war.
- (b) Bad weather would prevent its use.
- (c) Air Ministry would be reluctant to employ front-line aircraft exclusively for this duty at the expense of weakening the offensive or defensive power.
- (d) As compared with the broadcasting system of propaganda, leaflet dropping involved a certain delay, because the composition, printing and conveyance to the aerodrome, of the leaflets all took time.

On November 28th 1938, D.C.A.S. suggested that the C.I.D. should be asked to form a permanent body, with defined terms of reference, given the duty of:-

- (a) Carrying out a close study of public opinion in potential enemy countries, especially Germany.

/(b)

- (b) Preparing and keeping up-to-date according to the changing political situation, the material to be used for influencing public opinion in Germany, both before and after the outbreak of war.
- (c) Co-ordinating other organisations, e.g. B.B.C., in connection with the conveyance of information across national frontiers in peace and in war.

The Air Staff at the beginning of April 1939, once more urged that, if pamphlets were to be drafted in advance, a ruling was required. At a meeting of the Strategical Appreciation Sub-Committee on April 6th, it was decided that a Ministerial Committee should examine the measures to be adopted regarding propaganda in time of war, and all necessary preparations for the production of a propaganda leaflet were to be completed in time of peace, for dropping in the event of war. The actual decision to drop these leaflets must remain a matter for the War Cabinet.

At a second meeting of this Ministerial Committee on April 18th 1939, the general policy was defined. Leaflets were to be disseminated as widely as possible over densely populated areas, without incurring undue risk of loss to the aircraft involved. The methods employed were to be special dropping by Bomber Command aircraft stationed in England, and using aerodromes in France as auxiliary landing grounds where necessary, and dropping by means of the balloons of No.1 "M" Balloon Unit stationed in France.

The legality of this method of warfare was considered just prior to the outbreak, and approved. Article 21 of the Hague Draft, upon which Britain's policy was based, stated that :-

"The use of aircraft for disseminating propaganda shall not be treated as an illegitimate means of warfare. Members of the crews of such aircraft must not be deprived of their rights as prisoners of war on the charge that they committed such an act".

These raids were known by the code-name "Nickel", and the leaflets which they dropped came to be commonly referred to as "Nickels".

2. Object and Method - By flying over all parts of Germany at night and dropping leaflets from high altitudes over populous areas such as Hamburg, the Ruhr, Magdeburg, Leipzig and, later, Berlin, it was hoped to impress their vulnerability upon the German people. This might cause difficulties to the German government. Dislocation should also be caused by the necessity for defence measures, such as dispersal and evacuation, interruption of work in factories, and of rest at night. And finally these trips would be invaluable training to prepare crews for later offensive penetration of Germany. It would accustom them to the conditions of flying and navigation at night over enemy territory. They were ordered to study landmarks, the effectiveness of black-out, the identification of dummy towns, activity at aerodromes, the position and effectiveness of searchlights, A.A. guns and enemy aircraft, and to familiarise themselves with the enemy country.

S.1764/3B

BC Form 540  
App. B1

The leaflets consisted of sheets measuring  $8\frac{1}{2}$  by 5 inches. They were done up in bundles of 1,500 or 3,000, each bundle held together by a rubber band one third distance from the end,

/and

and by a light string lengthwise. The rubber band held the bundle together long enough to prevent them blowing back into the tail of the aircraft. The string was removed prior to dropping. Each bundle weighed 5 lb (or 10 lb). The rate of fall depended on air conditions. In still air it was 220 feet per minute, and it was taken as approximately 12,000 feet per hour. In a 30 m.p.h. wind, therefore, the drift from 12,000 feet would be 30 miles. It was recommended to fly across wind for maximum spread within a target area. Examples of the nickels used with their interpretation can be found in Appendix D of Bomber Command Operations Record Book.

3. Operations, September 1st to 10th. - On September 1st 1939, Bomber Command issued the first operation order "to drop nickels by night" over area 1(a) (see Appendix G1) and Hamburg and Bremen. On September 3rd seven Whitleys of No.58 Squadron and three Whitleys of No.51 Squadron operated from Leconfield (Linton-on-Ouse being unserviceable) and dropped the nickels successfully. There was no opposition and little searchlight activity, but weather conditions were severe, with electrical storms and much icing. One aircraft crashed at Dormans, near Amiens, through the seizure of both engines, but the crew escaped.

On September 4th, seven Whitleys of No.77 Squadron left Driffield to drop nickels over the Ruhr. Six aircraft dropped their leaflets from between 15,000 and 17,000 feet and returned via Northern France. Owing to deteriorating weather conditions, heavy rain and bad visibility, some forced landed and returned to base after refuelling. No enemy opposition was encountered.

Orders were issued to Dishforth for seven aircraft to drop leaflets over area 1(a) on September 5th but, owing to reports of advance information being sent to Germany regarding raids, by agents in the vicinity of No.4 Group stations, these were cancelled. No.51 Squadron at Linton was given the task of dropping leaflets over areas 1(a) and 1(e). Seven aircraft left and refuelled at Rheims. One was too late to take part in the raid, and two were held back on account of fog. So four only took off from Rheims by the light of car headlights, as no night flying facilities were available.

On September 6th/7th six aircraft from Driffield were organised for a nickel raid in an endeavour to trap the enemy agents thought to be working near No.4 Group stations. The captains of the aircraft were given secret orders, curtailing their task and ordering them to return to base after 1½ hours flying. A Fighter Command W/T station had picked up a message "Achtung, Achtung" one minute after the first Whitley had crossed the English coast on its way out on September 4th/5th. The Post Officer had posted a detector, which had picked out a transmission North or south of Bedford.

Eight Whitleys of No.10 Squadron dropped nickels over area 3 excluding Bremen and Hamburg on the night of September 7th. They returned by the northern route to base. German fighters attacked twice but did not press home the attack, "swish-tail tactics" being employed by the

/Whitleys.

Form 540 App.A

Whitleys. Considerable but ineffective anti-aircraft fire was met in all areas.

Wellingtons were used for the first time on nickel raids on the night of September 8th. Four aircraft of No.99 Squadron (Mildenhall) were detailed to go to Hanover and Brunswick. One aircraft failed to take off due to engine trouble and another returned owing to faulty loading of leaflets and crashed on landing. Of the two which went to Germany, probably only one reached its objective, as it was believed that the second reached the vicinity of Berlin. On the same night eleven Whitleys of No.77 Squadron were detailed to drop nickles over Munster, Osnabruck, Cologne and the Ruhr. There was ten-tenths of cloud over Germany, and this operation proved expensive. One aircraft landed on a French fighter at Bue while forced landing in France; another refused to land when intercepted by a Belgian fighter and shot the fighter down, while a third landed in Belgium and the crew were interned; the Germans claimed to have shot another down over Cassel, where leaflets were dropped. The crew were taken prisoner. Three aircraft completed the task and landed in France to refuel, and the remainder returned to England.

Eight Whitleys proceeded to Rheims during September 9th to operate under the command of the A.A.S.F. They were ordered to drop nickels on Frankfurt, Mannheim, Nuremburg and Stuttgart, but the operation was postponed until the next day. Only six aircraft took part, as one crashed after take-off, and one failed to get sufficient height and jettisoned its nickels near Rheims before returning to base. One aircraft completed its task over Frankfurt and was attacked by fighters but not damaged. Another dropped its load over Kaiserslauten in mistake for Mannheim. Two were successful over Nuremburg, one over Stuttgart, while the other dropped its load en route. A.A. fire was heavy on the Franco-Belgian frontier.

4. Political and Navigational Problems - As the result of a War Cabinet decision to stop the dropping of nickels on September 19th, no further operations took place until September 24th. The fact that Polish towns and villages were daily being bombed while the R.A.F. dropped only leaflets on Germany, was causing bitter comment in Poland and other foreign countries, and much dissatisfaction at home. The Prime Minister, on September 16th gave it as his opinion that this form of propaganda should be continued. The annoyance of the German government showed that it was bearing fruit, and it depended on repetition for its effectiveness. The War Cabinet finally agreed to its continuance on a reduced scale and at irregular intervals. Publicity was to be reduced to a minimum, and the nickel raids were to be referred to only as special reconnaissances. In fact they were frequently carried out after this as a subsidiary duty on a reconnaissance trip. Orders were issued to Bomber Command on September 21st to continue nickel dropping only two or three times per week. On September 28th incidental dropping of nickels by A.A.S.F. Squadrons on reconnaissance was also authorised forthwith.

Operations were resumed on September 24th/25th when one Whitley operated over the Ruhr and two over Bremen and Hamburg. There was no opposition, and the glow of the Ruhr steel works was casily seen. On September 25th/26th three aircraft carried out a reconnaissance along routes Bremen - Hanover - Minden - Hamm, Oldenburg - Osnabruck - Munster - Hamm, and other areas of North-West Germany, dropping nickels as a subsidaary task. They experienced little anti-aircraft opposition, but mist made

/reconnaissance

S.46650/I 76A

S.2434  
17th Meeting  
of War Cabinet

AM.Signal  
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X.471 28/9/39

reconnaissance difficult. This task was repeated on September 27th and 28th, to ascertain rail and road movements along north German routes. One aircraft on the 28th emerged from ten-tenths cloud to find himself over the Zuider Zee and followed the shortest route to the Ruhr, thereby violating Dutch territory. As a result of this Bomber Command were ordered to refrain from dropping nickels over the Ruhr or near Kiel, in order to avoid the risk of infringing neutral territory.

A similar operation on September 30th was followed by the first raid on Berlin on October 1st, by four Whitleys of No.10 Squadron. Three aircraft reached the area and dropped their load from over 20,000 feet. The fourth lost itself in extremely bad weather conditions - ten-tenths cloud and icing at 18,000 feet - and dropped its nickels over Denmark. This aircraft was last heard of 180 miles from St. Abb's Head.

As a result of these infringements of neutral territory nickel operations were once more suspended on October 2nd. It was essential that infringements should cease, and an argument arose between the A.O.C.-in-C. of Bomber Command and the Air Staffs as to the best route to use to avoid them.

S.46650/I 91B The C.-in-C. considered the north-about route the best to lessen this risk, and pointed out that the south-about route had the following disadvantages:-

- (a) Crews were faced with an outward and return journey of 725 miles over enemy territory as compared with 410 miles.
- (b) Crews encountered the same defences on the return journey as they had stirred up on their inward journey.
- (c) Crews had to navigate, on their return, to an outlet between neutral territories which subtended an angle of  $16^{\circ}$  as against  $25^{\circ}$ , and to fly by night through a narrow corridor for safe passage through the French Plan Balisage.
- (d) There were only a few prominent landmarks on the southern route while the German coast offered a good landfall on the northern route.

S.46650/I 91A

The Air Ministry, however, held that the south-about route reduced the chance of infringing neutral territory.

A.M.Signal  
X.313 of 11.10.39

On October 11th orders were given to resume nickel operations, but not to visit the Ruhr, nor to allow aircraft to operate west of a general line Saarbrücken - Frankfurt - Paderborn - Bremen. All aircraft were to be routed into and out of Germany from the south. On October 13th, as a result of the C.-in-C's. argument given above, the embargo on the northern route was lifted, but the western line still remained in force. Operations planned for the nights of October 12th and 14th were cancelled due to bad weather.

5. Operations, October 15th to 27th. - On October 14th six Whitleys of Nos.77 and 102 Squadrons flew from Driffield to Villeneuve for an operation which was

/cancelled



cancelled on account of bad weather. Two of them took off prior to another cancellation the next night; one was recalled by W/T but the other did not return and was claimed by the Germans as shot down near Frankfurt. Seven Whitleys were dispatched from Dishforth on this night. Only one located Berlin, the other six returning with full loads. As a subsidiary task they had been ordered to carry out a reconnaissance of railways and roads in N.W. Germany. On the night of October 18th, six aircraft were despatched to drop nickels on Hamburg, Bremen and Hanover. Three were successful, one of which forced landed in France. The other three brought their loads back, being unable to locate their target, as cloud was continuous up to 20,000 feet with severe icing.

On October 24th four aircraft of No.10 Squadron were given the task of dropping nickels on Berlin, Magdeburg and Hamburg. Three completed the task, the fourth returning owing to engine failure. A nickel raid on the same day by six aircraft of No.51 Squadron was cancelled through bad weather. The aircraft had already gone to Villeneuve to operate over Frankfurt-am-Main, Nurnberg, Munich and Stuttgart. Owing to the weather, it was not until October 27th that they were able to attempt the operation. Five aircraft left, but one returned owing to bad weather. The other four reached their objective.

A full account of this raid is given, in order that the arduous conditions under which these aircrews operated during the icy winter of the first year of the war may be fully appreciated. They flew in no well heated cabins or turrets, and had no electrically-heated clothing or special food to sustain them. Their fingers froze to the guns and they suffered agonies of asphyxia due to lack of oxygen. They had little radio assistance, and had to rely almost entirely upon dead reckoning, navigation. By their endurance and experiences they paved the way to improvement not only in high altitude flying and medical research therein, but also in the provision of aids to navigation and defence, and facilities for emergency landings and ditchings and escape from damaged aircraft.

6. Operation on the night of October 27th. - On the night of October 27th the raid for which No.51 Squadron had been standing by at Villeneuve was ordered. The task was "to drop nickels over Frankfurt-am-Main, Nurnberg, Munich and Stuttgart". All six aircraft were to take off before dark. The weather report at 1400 hours was far from satisfactory - "Rain, hail, and sleet showers, risk of thunder. Cloud seven to nine-tenths, low haze 1,000 feet, lowering to 500 feet in showers. Freezing level 1,500 feet. Heavy icing anticipated in shower clouds up to 12,000 feet". However, by the time the aircraft were to complete their tasks, the weather at base was expected to be more favourable, mainly scattered clouds three to seven tenths at 3,000 to 4,000 feet, and moonlight. Flying crews had had no food since midday, and were not supplied with any prior to take off, which was effected at ten minute intervals between 1740 and 1820 hours. Five aircraft took off, but one turned back owing to the weather. The reports of the other four follow.

No.1 aircraft ordered to drop nickels on Frankfurt flew above ten-tenths cloud all the way. The air temperature was -26°C, and great difficulty was experienced in lowering the "dustbin" turret for the ejection of nickels, due to the intense cold. Raising the turret caused further difficulty, and the

/navigator

navigator lost consciousness temporarily as a result of his efforts. On the return journey 17,000 feet was reached, the temperature at this height being  $-30^{\circ}\text{C}$ . Great discomfort and fatigue were felt by all members of the crew, some collapsing temporarily. The starboard engine caught fire through the loss of a stub-exhaust pipe, and had to be switched off. Immediately the aircraft lost height, sinking into the cloud. The vacuum instruments stalled, the A.S.I. froze up, and ice formed on the windscreen and leading edges. The wireless operator was ordered to get a bearing, and finding his transmitter frozen, switched on the valves to heat it. The aircraft went into a dive, probably due to the six inches of ice on the wings. Recovery was made at 7,000 feet, the full strength of both pilots being necessary to operate the controls. The rudder and elevators were shortly found to be immovable. The wireless operator tried to get a fix, but had no means of knowing if he was transmitting as the instrument glasses were thick with ice. The aircraft was losing height on an even keel at 2,000 feet per minute. The port engine had now stopped and four inches of ice were seen protruding from the engine cowling. The order was given to abandon aircraft, but as two members of the crew were unconscious, it was immediately cancelled. The aircraft assumed a shallow high-speed dive, and emerged from the clouds in heavy rain at about 200 feet from the ground. All that the crew could see was a black forest with a grey object in the middle, for which the aircraft was heading. It brushed through the tops of trees and dropped flatly into a field, travelled through a wire fence, skidded broadside, and came to rest against the trees on the further side of the clearing. The crew climbed out, and after some difficulty put out the fire in the starboard engine. They then returned to the fuselage and went to sleep. Fortunately they had landed in France. On the following morning there was still half an inch of ice on all surfaces of the aircraft.

No.2 aircraft was ordered to drop nickels on Munich. It experienced icing conditions at 1,000 feet, and ten-tenths cloud with sleet at 2,000 feet. Crystalline ice formed over the turrets, leading edges and cabin windows. At 10,000 feet the temperature was  $-22^{\circ}\text{C}$ , the front turret was frozen and the trimming tabs jammed by ice. The "Eustbin" turret would only go one third of the way down, where it jammed, and could not be used. 16,500 feet was found to be the aircraft's ceiling and it was forced to remain in the cloud. After  $2\frac{1}{2}$  hours in the air the oxygen ran out, as some bottles had not been charged. The nickels were dropped down the launching tube with considerable difficulty, owing to the temperature. The navigator and wireless operator had to lie down and rest every few minutes. The cockpit heating system was useless, and everyone was frozen with no means of alleviating their distress. Some members of the crew butted their heads on the floor and navigation table in an endeavour to feel some other form of pain as a relief from the awful feeling of frost-bite and lack of oxygen! Continuous movement of the controls was necessary to prevent them freezing up. The aircraft homed successfully on Villeneuve at 0040 hours. The crew reported that they felt incapable of cohesion of thought or action, and the rear gunner could not have resisted fighter attack. In any case his vision was totally obscured by ice on the turret.

No.3 aircraft, ordered to drop nickels over Stuttgart climbed to 17,000 feet in an endeavour to remain above cloud.

/The

The nickels were dropped on D.R. position by flying across wind on a 15 mile course. There was no opposition, though a fighter was reported on the return journey, during which the aircraft was unable to remain above cloud. Ice rapidly formed on all the control surfaces, building up to about 6 inches thickness; the A.S.I. was frozen. The temperature was  $-30^{\circ}\text{C}$  and the crew suffered from the intense cold, especially in their hands and feet. The wireless operator, although suffering from sickness in addition, obtained a series of Q.D.M's which brought the aircraft safely back to Villeneuve. The front gunner in his turret was completely covered in snow and ice.

No.4 aircraft was also ordered to drop nickels on Munich. It tried to remain above the cloud, but on reaching its ceiling of 15,000 feet was forced to remain in it. The air speed indicator had frozen up, and the temperature was now  $-30^{\circ}\text{C}$ . Snow made a layer on the floor of the front turret and ice covered the cabin windows. The effort of releasing nickels without oxygen exhausted the navigator and wireless operator. The centre turret then froze in the downward position, and remained immovable. Soon after leaving Munich engine trouble began. Eventually a cylinder blew off and the starboard engine failed. Height could not be maintained and at 2,500 feet with ice covering the instruments the port engine began to drop revolutions. Knowing the height of the hills to be 1,500 feet the captain gave the order to jump. After calling the tail gunner and receiving no answer the captain trimmed the aircraft to a gentle gliding angle and followed the rest. The tail gunner, whose inter-communication was unserviceable, was unaware that the rest of the crew had left and remained in the aircraft until it hit the ground. He escaped through the tail door as the aircraft blazed up with only a few cuts and slight burns. He was convinced his companions were in the fire, and after looking for them in the debris, walked to a village where he found three of them in a cafe!

A.M.Signal  
X.588 of  
28/10

7. Winter Policy - The need to avoid any possibility of infringing Dutch neutrality was again emphasised on October 28th. It was believed that Germany was looking out for the slightest pretext to invade Holland on the grounds that she had compromised her neutrality. It was, therefore, ordered that no nickel raids should be routed north-about without previous reference to Air Ministry.

S.46650/95A

A.H.B./  
1, H/30

In early November the policy for the winter was discussed in Air Ministry. By this time the Air Staff had secured representation on the Propaganda Planning Committee, which meant that they had a hand in the selection of matter for the nickels. Previously several had had to be pulped owing to Air Ministry objections to them.

S.2589

On November 13th Bomber Command were notified of the leaflet dropping policy for the winter. The aim was to drop each week:-

- (a) 500,000 copies of a two-leaf miniature newspaper.  
The most suitable areas for each edition would be indicated at the time of issue.
- (b) Up to 1,000,000 special leaflets drafted for particular areas.

This would entail a maximum of about eight aircraft sorties per week with loads of 250,000 leaflets or 125,000 news leaflets each. The northern route might be used, subject to special

/care

care being taken to select weather conditions which would obviate the risk of violation of neutral territory by the aircraft, or by the leaflets falling in neutral territory. The Ruhr area could also be visited subject to similar conditions. This policy continued to apply until March 1940.

8. Operations, November 10th 1939 to January 19th 1940. No nickel raids were undertaken between October 27th and November 10th, although an ineffective reconnaissance was carried out by two Whitleys on the night of October 31st. This pause was principally due to bad weather. On November 10th, five aircraft left Driffield to refuel in France. Their objectives were Munich, Frankfurt, Stuttgart, Nuremberg and Mannheim. One crashed south of Nancy on its return, killing the crew, three completing their task successfully.

The next operation was ordered on November 20th, and two Whitleys went to Villeneuve to refuel for their task over Frankfurt and Stuttgart. Two more operated direct from Dishforth over Hamburg and Bremen, dropping the two-page newspaper nickel for the first time. The two aircraft at Villeneuve had their operation cancelled that night owing to bad weather, but completed it the following night. On November 24th/25th, nickels were used as a cover for reconnaissance of German naval bases, and this was repeated on the night of November 27th, nothing being seen on this occasion owing to cloud.

On December 3rd, five Whitleys went to France in preparation for a nickel raid over Prague and Frankfurt. Continuous bad weather prevented this operation from being carried out, and the aircraft returned to England on December 9th. Two Whitleys from Dishforth had succeeded in visiting Hamburg and Bremen again on December 6th. These were first priority areas at the time.

After this the energies of No.4 Group were diverted mainly from nickels to anti-minelaying patrols (see Section 4). Visits to Hamburg and Bremen were continued intermittently combined with these security patrols. On December 27th five Whitleys were despatched to Villeneuve for another attempt on the Prague operation and on Vienna. They were held up by bad weather again, however, and returned to England, three on January 2nd, and the others later. The operation over Vienna and Prague was finally accomplished on January 12th/13th, and repeated on February 22nd and 23rd respectively, this being the furthest penetration yet made by British aircraft.

On January 6th, No.4 Group was relieved of the commitment of nickel operations involving the northern route, and was only to undertake those which involved a south-about route through France. Nos.3 and 5 Groups were to undertake the northern ones. On January 11th one Wellington and one Hampden dropped leaflets on Hamburg and Bremen, this being the first occasion that a Hampden had been so employed. On the same night two Whitleys combined nickel dropping over Dusseldorf and Frankfurt with a special reconnaissance over Hamm, Soest, Schwerte, and Osnabruck to observe the heights at which marshalling yards could be identified, and the best height at which to bomb them. Full reports were obtained, bombing up to 10 or 12 thousand feet being considered possible.

/Wellingtons

Wellingtons and Hampdens continued to visit the Bremen, Hamburg and Hanover areas until January 20th. After this fog, snow, drizzle and low cloud prevented further operations until February 17th.

S.47695

A.H.B.  
II/H/30

9. Leaflets incidental to reconnaissance - During January it was decided that aircraft of the Air Component could very well drop leaflets, when on reconnaissance over German territory, incidental to their normal tasks. This was only to be undertaken when it did not interfere with the work in hand. Leaflets might be dropped anywhere in Germany, the actual place being left to the crew of the aircraft, but the more thickly populated areas were advised. No operations were actually carried out by the Air Component until March.

The A.A.S.F. had also been authorised to drop leaflets, but did not undertake the task with its own aircraft until March 17th. It was then used as camouflage for reconnaissance of German inland waterways. The A.A.S.F. had already been controlling the Whitleys which operated from Villeneuve, and despatching leaflets by means of Balloons, as is described later.

As far as the bombers operating from the British Isles were concerned, their role of nickel-dropping had become more and more subsidiary to other objectives. It was used as a cover for reconnaissance and location of future targets in Germany, and for the patrol of enemy aerodromes and sea-plane bases. Much information was obtained concerning the visibility of rivers and canals, and the extent to which they could be identified on moonlight and non-moonlight nights, and mention has already been made of the study of railway targets and the results obtained.

With the growing expectation of the commencement of active bombing in February and March 1940, a greater number of crews were despatched to gain experience over Germany. In the majority of these operations reconnaissance was as important a factor as dropping nickels. On March 10th, in connection with the preparations for Plans WA15 (minelaying in estuaries, etc.) and WA16 (minelaying in inland waters), special reconnaissance areas were allotted to Nos. 3, 4 and 5 Groups and to the A.A.S.F. These were as follows:-

A.H.B./  
II/H/30

No. 3 Group: Dorum (53°43'N, 08°34'E) - Bergstedt (53°41'N, 10°08'E) - Wusterhausen (52°54'N, 12°28'E) - Wolfenbittel (52°10'N, 10°32'E) - Lemgo (52°02'N, 08°55'E) - Dorum.

No. 4 Group: Dorum - Aurich (53°28'N, 07°28'E) - Rheine (52°17'N, 07°25'E) - Geldern (51°31'N, 06°09'E) - Bonn (50°43'N, 07°05'E) - Detmold (51°55'N, 08°52'E) - Dorum.

No. 5 Group: Dorum - North of Sylt (55°05'N, 08°25'E) - Kappeln (54°40'N, 09°55'E) - Ribnitz (54°15'N, 12°26'E) - Cammin (53°58'N, 14°47'E) - Robel (53°23'N, 12°36'E) - Buxtehude (53°29'N, 09°43'E) - Dorum.

The A.A.S.F. was allotted the inland waters of the Rhine and its tributaries opposite to their section of the line, and divided this up amongst their wings so that each gained a thorough knowledge of its own section.

BC/S22552/Air

In view of the importance of the extended night reconnaissance work now undertaken, Bomber Command proposed not to drop

/nickels

nickels outside these areas except at the direct request of Air Ministry. They were to be dropped anywhere over populated districts within these reconnaissance areas. It was necessary that the attention of the enemy should not be directed to the sudden British interest in inland waterways, although the execution of this plan was eventually deferred in favour of more urgent operations.

10. Operations, February 17th to April 6th. - An operation planned on February 11th over Hamburg and Bremen had been cancelled, but on the night of February 17th it was successfully carried out by two Wellingtons of No.37 Squadron, with no opposition. In excellent visibility and full moonlight on February 22nd/23rd the second trip to Vienna was made by two Witleys from Villeneuve. Vienna was brightly lit and a good report was rendered on lighting and railway sidings at Munich and on the track of the reconnaissance. On the following night the second trip to Prague was carried out by another two Witleys, one of which dropped its load short and the other beyond Prague. It was hoped that the first would drift on to the city. There was full lighting throughout Prague and the rest of Czechoslovakia.

Wellingtons and Hampdens continued their operation in North Germany at intervals, whilst the Witleys covered the southern towns and Berlin. Most of these sorties were also given a reconnaissance task, to observe the extent of the blackout, and the location of searchlights, aerodromes and industrial targets. As there was intermittent heavy cloud and rain over Germany, nothing of importance was observed except searchlights which were turned on at Berlin when flares were dropped. On March 3rd another attempt to reach Vienna failed, both Witleys turning back with engine trouble. One released its load over Austrian territory, however.

On March 7th/8th two Witleys, operating north-about from Driffild dropped nickels on Kreuz, Czarkow, and Posen in Poland, landing at Villeneuve after being ten hours in the air. Every street in Posen was lit up, and Eastern Germany was not well blacked-out. The same night three Witleys carried out a reconnaissance of inland waterways, coking plants, and other projected targets in the Dusseldorf-Cologne and Rheine-Osnabruck-Sidefeld areas, dropping nickels en route. There was intense searchlight and anti-aircraft activity throughout the Ruhr, but observation was obscured by cloud and mist. Vienna and Prague were again visited on March 9th, the latter blacking-out on the approach of one of the Witleys. A Blenheim of the Air Component dropped nickels for the first time on the same night, in the course of a reconnaissance near Munchen-Gladbach. Another Blenheim of the Component dropped nickels over Eschweiler and Duren on March 11th.

From March 15th onwards each Group concentrated on reconnaissance of the area allotted to it, leaflets being a secondary task. This priority was officially confirmed on March 19th as applying for the future. The numbers of aircraft employed were increased. On March 15th/16th four Wellingtons and six Witleys covered their area, with little success as far as the reconnaissance was concerned, but the nickels were released. Two Witleys operated from France the same night over Warsaw. There was no blackout in Poland and visibility was good. On the return journey one

of them landed in Germany, being short of petrol, thinking he was in France. On learning his mistake from some peasants, the pilot took off again and landed safely in France. Two Whitleys for Villeneuve visited Czechoslovakia the following night.

On March 21st and 22nd icing was severe, and on the latter night a Hampden sustained some damage from the attack of an ME.110. Several instances had occurred of enemy aircraft shadowing British machines without attack, and it was suggested that the pilots of these aircraft were transmitting height, course, etc. to Flak gunners on the ground.

Twenty Wellingtons took part on March 23rd/24th, in a reconnaissance of the Group area. One crashed on take off, and another near St. Omer, both crews escaping. One of the rest did not return and was claimed as shot down by the Germans and of the other seventeen only one made any observations. The rest released their nickels, but were doubtful of their exact positions owing to the very bad weather conditions. Larger scale operations were planned each night from this time to enable more crews to get operational experience. On March 24th/25th four Hampdens were sent off, without any success as far as reconnaissance was concerned. The Wellingtons were cancelled. The next night seven Wellingtons, five Whitleys and three Hampdens actually took off before the operation was cancelled owing to fog. Most of them received the recall, but one Hampden was missing. Of twenty-eight aircraft standing by only four dropped nickels. The following night none got off owing to an adverse weather forecast, but on March 27th/29th twelve Wellingtons and six Whitleys set off, three Wellingtons turning back early, and two Whitleys being shot down - one by German flak, the other by Dutch fighters as it crossed Dutch territory just before daybreak. Very severe electrical, snow and rain storms were experienced making reconnaissance impossible in most cases, the secondary task of dropping nickels alone being carried out. For the next three nights operations were cancelled. On the last night of the month, however, eight Wellingtons operated. Although large quantities of nickels had been dropped, these efforts had yielded negligible results from the point of view of reconnaissance.

The only nickel raids carried out by Bomber Command in April were on April 1st and 6th. On the former, six Hampdens carried out their reconnaissance of the Group area, while on April 6th eight Wellingtons, six Whitleys and twelve Hampdens covered north-west Germany, releasing leaflets and observing intense activity on autobahns near Lubeck and in certain ports. After this, leaflet dropping was suspended for a time, as the bomber force was fully engaged in the reconnaissance and attack of shipping and aerodromes, following the German invasion of Norway.

11. A.A.S.F. Operations - From October 1st leaflets had been despatched by means of free balloons by No.1 "M" Balloon Unit, operating under the orders of A.A.S.F. This method depended on the wind being in the right direction, and its activities were therefore very spasmodic. Over a million and a half nickels were despatched, however, in November, which were estimated to achieve a penetration of up to 400 miles in some cases. And up to April 18th 1940, which was the last operation of this unit in France, a total of 4,436,000 leaflets was despatched by this method (see App.G4). The unit was located at Toul, and comprised four releasing sections, able to release three balloons each per hour. Each balloon carried 3,000 leaflets, which were dropped periodically in packages as the result of

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the burning of a fuse. They were released from dusk onwards so as to float in the air over Germany at night time. These were estimated to reach as far as Berlin, Magdeburg, Dresden, Munster, Nurnberg and Pilsen.

On March 16th, 1940 the first nickel operation by aircraft of the A.A.S.F. was ordered, but not carried out owing to W/T failure. On March 17th/18th the first operation was successfully carried out by two Battles over Mannheim and Mainz. After this, operations were carried out regularly when the weather was suitable (see App.G5). The object was to familiarise the crews with the stretches of the Rhine and its tributaries which they were allotted for the sowing of (Mark A) "W" Mines under Plan WA16. At first little success was achieved in this reconnaissance, as the Battle pilots were very inexperienced in night flying, and had great difficulty in identifying anything at night. But on April 20th twenty-nine sorties were carried out under perfect conditions of visibility, and thereafter the pilots became well acquainted with their areas. On this occasion they encountered negligible opposition, but one Battle failed to return. The following night, when 20 Battles operated, resistance increased in the form of "flak" and searchlights, but the next night again (April 22nd/23rd) it decreased, pilots reporting that searchlights were active before midnight, but closed down later in the night! After this, the weather precluded further operations in April, and up to the German attack which finally put a stop to them.

S.46650

Encl. 106A

C.O.S.40/270

WP(40)120

12. Assessment of Results - The question of whether "special" leaflet dropping should be continued, or whether "incidental" dropping alone would suffice, was discussed in March and April. The Chiefs of Staff considered on March 26th that "there are some grounds for the belief that our propaganda in Germany is having useful results and this should be continued and intensified". Apart from the effect of the leaflets themselves the effect on German morale was of considerable importance. Goering had boasted of the invulnerability of German skies, and yet British aircraft were constantly over all parts of the country, night after night, with comparative immunity. The losses on "special" raids were less than 3 per cent from enemy action. Losses on "incidental" dropping were heavier due to the primary task.

It was known that leaflets were being picked up and passed round in spite of the security measures and penalties imposed. The reaction of the German counter-propaganda organisation showed their dislike of them, and consequently proved that they must have some value. A reference to a Messerschmitt 109 as a "Flutterschmitt" brought forth twenty-five German broadcasts to their own people on the efficiency of Messerschmitt aircraft in one week. And a diagram showing the proportions of British and German ships sunk brought an instant contradiction from Goebbels himself. This action would not have been taken if leaflets were valueless.

The value of these operations from the training point of view had always been realised. The long night flights over enemy territory undoubtedly contributed greatly to the later efficiency of the Command. In view of these considerations the continuance of "special" dropping was advocated. Events, however, prevented it. Owing to the more urgent

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claims made by the Norwegian campaign, followed by the opening of the Western offensive, no more nickel operations were undertaken during the period. The task was continued later merely as a subsidiary to the bombing operations over Germany and other countries. And crews from operational training units were sent out on nickel sorties over France as a final exercise in their training programme. These operations are dealt with in later sections of this narrative.

SECTION IIIOPERATIONS AGAINST GERMAN NAVAL FORCES

AHB II/AI/11

Purpose and Plan of attack In view of the probability of Germany's attempting once more to blockade the British Isles from the commencement of war, it was of the utmost importance to contain the German navy, and to reduce its striking power by every means available; from the outset. This task was regarded primarily as one for the Royal Navy, with the assistance of Coastal Command. In view of the limited number of capital ships and the heavy commitments of the Navy throughout the world, both in the protection of merchant shipping and of British possessions, the risk of maintaining a standing patrol powerful enough to deal with any break-out of the German navy was not warranted. If such a patrol had been maintained close enough to enemy ports to seal them off, it would have been subject to attack by U-boats and aircraft, as well as danger from mine-fields.

The aircraft with which Coastal Command was equipped were not adequate in range or load to undertake either torpedo or bombing attacks against German naval units in or near enemy ports. It was, therefore, necessary to employ Bomber Command units on this duty. This course was also indicated by the considerations of policy already discussed, whereby the targets permitted to Bomber Command in the early phase were limited to those involving no risk to civilian life or property.

The Admiralty and Air Ministry had drawn up a joint plan, known as Plan "K" or "W.A.7(a)", by August 1939, for an attack on the German fleet at Wilhelmshaven. This was to be carried out at the outbreak of war, before the German defensive measures could be perfected, either as a combined operation or by the R.A.F. alone. Another plan, "W.A.12", had also been prepared to deal with units of the German fleet which should be located at sea. For this purpose it was planned to maintain frequent patrols by one or two aircraft for the location of enemy shipping, whose reports would bring into action a bombing force which would be held ready.

AHB/IIK/36/5  
Encl. 36Encl. 31B, 33  
S.2848

Three bomber squadrons were to be held available as coastal duty squadrons, upon which Coastal Command could call if a suitable target presented itself. This was later modified to 24 aircraft from various squadrons, and then, finding that this system caused delay, to two squadrons from a single Group. In December, owing to the delays and lack of co-ordination experienced in these operations, Air Marshal Sir Philip Joubert de La Ferté was appointed to the Air Staff for special duties. (Adviser on Combined Operations to C.A.S.). His task was to study the sea/air situation and to recommend courses of action. The new organisation controlled by him was to co-ordinate action by the Admiralty and Coastal and Bomber Commands in the area round the British Isles, in collaboration with Admiral Holland at the Admiralty. Owing to the employment of Bomber Squadrons primarily on coastal functions during this period, the question of their control was continually in dispute. On the one side the inefficiency of the system of dual control employed was emphasized. Whilst the other side looked further, to the true function of Bomber Command, and was unwilling to detach any part of the small force available, which might be required at any

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time for its primary function, the offensive against German resources in Germany herself.

2. Plan W.A.7(b) carried out In accordance with the plan made one Blenheim aircraft stood by from September 1st 1939 with a naval observer, to carry out a photographic reconnaissance of the naval ports of North-west Germany. And six Hampden squadrons stood by at one hour's notice on September 2nd. At 1915 hours Bomber Command were told that, if the War Telegram should go out about midnight, the planned attack on German ships at Wilhelmshaven was to be carried out at first light.

War was declared at 1115 hours on September 3rd and at 1203 hours the Blenheim aircraft of No. 139 Squadron took off from Wyton to carry out its reconnaissance of German ports. The naval observer carried out the reconnaissance at 24,000 feet, and saw three capital ships and four cruisers, with seven attendant destroyers, off the West coast of Denmark in the Schillig Roads. The report transmitted by Syko was mutilated, and it was not therefore received until the aircraft landed. Eighteen Hampdens and nine Wellingtons which had been standing by all day were despatched at 1815 hours. The Hampdens were from Nos. 49 and 83 Squadrons at Scampton and Nos. 44 and 50 Squadrons at Waddington; the Wellingtons from No. 149 Squadron at Mildenhall and No. 37 Squadron, Feltwell. The Wellingtons returned to base by 2240 hours, and the Hampdens by 0002 hours, all having failed to locate the enemy fleet, due to severe thunderstorms and darkness.

Meanwhile twenty-seven Blenheims from Nos. 107, 110, and 139 Squadrons had been instructed to stand by at one hour's notice from 0800 hours on September 4th to attack the enemy fleet. Eight G.R. observers from Coastal Command were to accompany them. At 0835 hours on September 4th one Blenheim of No. 139 Squadron took off on a reconnaissance of Wilhelmshaven and the Western approached to the Kiel canal area. Flying at 200/300 feet in heavy rain this aircraft reported two battleships at anchor at Brunsbittel, one battleship in the vicinity and four destroyers in the Schillig Roads, and one destroyer entering Wilhelmshaven. Photographs later showed that the one battleship was in fact the cruiser Leipzig.

Fifteen of the stand-by Blenheims were ordered to attack the cruiser in or outside Wilhelmshaven, with the destroyers as an alternative target. Fourteen Wellingtons of Nos. 149 and 9 Squadrons were also despatched between 1440 and 1610 hours to attack the two battleships off Brunsbittel. All were ordered to take the greatest care not to bomb civilian population or merchant shipping. Three of the five Blenheims of No. 110 Squadron located and attacked the Admiral Von Scheer in the Schillig Roads. The attack was made from below 500 feet, and four bombs hit the Scheer without exploding. Flying Officer Doran was awarded the first D.F.C. of the war for this attack. The other aircraft did not locate a target owing to bad weather. Five in all failed to return. One of these crashed on the "Emden's" focsle, killing 9 Germans and wounding several. Of the fourteen Wellingtons the majority turned back or failed to locate their objective due to bad weather. One formation of three which reached their objective at 5,000 feet did not attack owing to the intensity of the A.A. fire. A second section was attacked by fighters.

N.I.D. 24

Naval War Staff  
Report

/The

The leader bombed a warship at Brunsbittel but the other two were not seen again. One aircraft was suspected of bombing Esbjerg in Holland in mistake for Brunsbittel.

On September 5th and 6th reconnaissances were carried out by single Blenheims. The first was unsuccessful owing to low cloud, the second located two battleships, three cruisers and three destroyers five miles from Heligoland steaming south. The W/T message was not quite clear and by the time the aircraft returned it was calculated that the ships could not be attacked before they reached Wilhelmshaven. Since Plan W.A.7(a) had already been carried out, it was not proposed to repeat it, and no aircraft were despatched.

The tactical lessons learnt in these first operations were the necessity for close formation for effective fire control and avoiding action when attacked by fighters, and the need for improved intercommunication in the aircraft. The best form of attack on ships was considered to be by pairs of aircraft at two or three seconds interval, and along the fore-and-aft line of the ship, in order to avoid bombs bouncing overboard, and to give a better length of target. A German report remarks that the independent attacks adopted made easy targets of the aircraft for the A.A. gunners.

3. The Problem of the Time Factor The experience of these first operations brought out a problem which was to exercise the minds of all concerned throughout the period of this campaign against the German fleet. This was the time lag involved in getting a striking force to the scene of operations after a report had been received. This time lag was at present made up of the time taken,

- (a) for the report to be transmitted from the aircraft to Bomber Command. The W/T message being frequently distorted, this often meant waiting for the aircraft to land. This could be cut down by better W/T training and facilities.
- (b) for the message to be passed to Coastal Command, Air Ministry and the Admiralty, to check on our own and neutral shipping. And for the executive order to attack to be confirmed by all these.
- (c) for the aircraft on stand-by to take off. They were usually held at one hour's readiness. This could be improved upon if an occasion was foreseen to warrant it.
- (d) for the striking force to reach the target.

On September 19th the Director of Operations at Air Ministry pointed out that the majority of reconnaissances carried out had reported German warships at sea. It could be inferred, therefore, that they were at sea daily. To avoid the time lag between sighting and attack he suggested that reconnaissance in force should be carried out, by a squadron which should attack any suitable target encountered at sea. This was tried on September 26th when twelve Hampdens carried out a reconnaissance with orders to attack enemy warships. Only three submarines were sighted near Heligoland. These were not attacked as submarines had been expressly excluded from the general permission to attack enemy warships in this area.

B.C. Form 540  
App. A7

App. D5, D7

App. D28

AHB 11K/36/5  
Encls. 10, 13,  
15, 19

On September 28th these orders were revised, and attack on submarines permitted. In addition, as a result of the heavy sinkings inflicted on our merchant shipping by submarines, orders were given to Bomber Command to despatch sections of three aircraft at discretion, to attack submarines in the area laid down. Anti-submarine bombs were to be used. Another reconnaissance in force was carried out by twelve Hampdens on September 29th. One section of three aircraft attacked two destroyers near Heligoland without result. A second section did not attack because the destroyers had turned broadside on. One aircraft had turned back early, and the remaining five did not return. They were claimed as shot down by the Germans by fighter attack near the North Frisian Islands at the cost of 2 M.E. 109's. It was thought that bad timing, as a result of splitting the formation into two, had given early warning of the approach of the second formation.

4. Reports of Enemy Fleet Movements Following a report of units of the German fleet off south-west Norway twelve Wellingtons took off between 1530 and 1600 hours on October 8th. They found four to eight-tenths cloud over the sea, and only two small ships of doubtful type were sighted before dusk caused the formation to turn for home. Further small ships were glimpsed through cloud on the return journey. On October 30th eighteen Wellingtons carried out a search in co-operation with the 7th Destroyer flotilla, who were to sweep towards Terschelling and the Dogger Bank. Visibility was very poor, so the aircraft returned to base having observed nothing.

On November 8th the Admiralty had intelligence reports of the closure of the Kiel Canal for three days, indicating warship movements, and of the presence of the Gneisenau, Scharnhorst, Nuremberg and Emden at Heligoland, and other important units at Wilhelmshaven. They requested photographic confirmation of this, but three Blenheims which attempted the task on November 11th ran unexpectedly into bad visibility and cloud, and two were lost, no results being obtained. On November 10th and 15th sweeps were carried out by formations of Wellingtons without locating any targets. On November 17th a reconnaissance by four Blenheims confirmed the presence of 1 battleship and 4 cruisers in the Schillig Roads, and took some good photographs of Wilhelmshaven. There was no time before dusk to carry out an attack, and in any case the ships were within heavily defended areas, which put them outside the scope of Plan W.A.12, which aimed at conserving bomber forces by attacking ships at sea only. The C.-in-C. Coastal Command had authority to take action without A.M. sanction only against targets outside defended areas.

The Pocket Battleship Deutschland, which was believed to have sunk the Rawalpindi on October 30th, was reported on November 23rd, 60 miles south-east of Iceland. As a result, all mobilizable squadrons of Bomber Command were ordered to stand by. Twenty four Whitleys were sent to Kinloss, and twenty four Hampdens to Wick on the 24th, and placed under the orders of Coastal Command. On the same day a formation of Whitleys carried out a reconnaissance of Heligoland Bight, Brunsbittel, Cuxhaven, Wilhelmshaven and the Jade and Schillig Roads in case other units of the German fleet should be proceeding to the support of the Deutschland. In five-tenths cloud only one warship was seen near Brunsbittel. So four

/Blenheims

Blenheims were sent on the 25th on individual reconnaissances, which located only small warships, probably destroyers, at any of these ports. Several sweeps were carried out during the month without result.

5. Attempts to improve results On November 19th a conference was held at Bomber Command, including the C.-in-C. of Coastal Command and the Director-General of Operations from Air Ministry, to consider how German warships could be attacked near their bases. The following decisions were taken:-

- (a) No ships to be attacked in positions where civilian population might be bombed (this was a re-affirmation of the restricted bombing policy).
- (b) Ships could be attacked at sea or in roads and anchorages where there was no such risk.
- (c) The fact that merchant ships were in naval anchorages should not deter attack, but extreme care should be taken not to hit them.
- (d) 500 lb. S.A.P. bombs were to be used from high altitude by formations of six Wellington aircraft by means of stick-bombing.
- (e) A.O.C. No.3 Group to despatch a reconnaissance in force at his discretion, after receiving weather reports and information from Coastal Command.
- (f) When Hampdens were modified as to armament, and equipped with 2,000 lb. bombs, they might be used as well as Wellingtons.

S.2222/  
29A and 30B

On November 22nd the Chief of the Air Staff informed the Commanders-in-Chief at an Air Ministry conference that the War Cabinet required a more energetic policy against the enemy fleet. It was decided that this should now be considered a major operation. Not less than twenty-four aircraft should be employed, but only in weather suitable for a high-level attack. No preliminary day reconnaissance was to be carried out, as this had previously given the enemy warning, but night reconnaissance could be tried, with nickel-dropping as camouflage. Night attack by moonlight should follow the day attack.

Ibid  
Encl. 31A

Before the opportunity for the carrying-out of these proposals occurred another fiasco emphasised the need for improvement. A formation of Wellingtons on a sweep on December 1st, sighted seven vessels of destroyer or mine-sweeper class. As they were displaying the British deck marking of the day they were not attacked although no British ships were supposed to be in the locality. The C.-in-C. Coastal Command proposed to make it clear to pilots that any warships found in the free bombing area might be attacked. This was agreed to subject to adequate measures being taken by him to safeguard neutral shipping from attack.

6. Major Attacks on December 3rd and 18th The opportunity for the major attack decided upon occurred on December 3rd. A formation of twenty-four Wellingtons flew at 18,000 feet in clear weather to Heligoland, preferring this to the alternative of Wilhelmshaven for the sake of surprise. They

dropped sixty-three 500 lb.S.A.P. bombs on two cruisers and eight merchant ships, claiming approximately one direct hit on each type and three near misses. The rest of the bombs were not dropped owing to cloud gathering, which obscured the target and created a risk of hitting the land. A number of single and twin-engined fighters attacked but soon broke off without causing serious damage. The German report on this raid states that it was cleverly carried out from the sun and was accurate "in avoiding the residential area of the island." One minesweeper was sunk by a bomb which went right through it without exploding, leaving a large hole. One gun of an A.A. battery was damaged by three bombs, which also caused damage to an ammunition store. One German fighter was shot down.

A.H.B. 6

Further sweeps were carried out on a number of occasions up to December 13th without result, but on that day a submarine reported sighting two battle cruisers, two pocket-battleships, and two cruisers in the middle of the North Sea. Fifty-two Wellingtons bombed up with S.A.P. and "B" bombs and stood by for a night attack, whilst all available Hampdens stood by for next day. The position of the German warships was not determined, so no aircraft were sent off that night. At first light on December 14th, twenty-three Hampdens carried out a line search, but saw nothing in bad visibility and low cloud. At 1050 hours twelve Wellingtons carried out a further reconnaissance, sighting first a submarine which dived and was not attacked, and then one battleship and one cruiser steering south towards the mouth of the Elbe. The formation was flying too low below a cloud base of about 800 feet to carry out an attack. They were fired on by three destroyers and attacked six or seven times by M.E. 109's and M.E. 110's, of which one was shot down and six damaged, including one M.E. 110. Five of the Wellingtons did not return and one collapsed on landing. On December 15th No. 2 Group was included with Nos. 3 and 5 in stand-by duties for fleeting targets, and five Blenheims carried out a sweep, sighting four ships thought to be minesweepers. They were not attacked in case they should be trawlers.

A.H.B. 6

A second major attack was organised for December 18th. Twenty-four Wellingtons were despatched to patrol the Schillig and Jade Roads, and if nothing was found there to try Wilhelmshaven. The target area was clear, with good visibility, but nothing was seen until they reached Wilhelmshaven. Three large warships - the Tirpitz or a Scharnhorst class, a pocket-battleship and a cruiser - and four destroyers were observed here. They were not attacked, however, as they were all in dock or lying alongside. The formation was attacked for forty minutes by about twenty-five single and twin engined fighters, from the time they reached Heligoland to a point 70-80 miles from the coast on their return. The attack was broken off at Wilhelmshaven to make way for very heavy A.A. fire. At least twelve enemy fighters were claimed as shot down for the loss of twelve Wellingtons. The crew of one of the latter was picked up by a trawler. The German report of this action gives their losses as four destroyed and nine damaged, whilst claiming to have shot down thirty-six Wellingtons.

A.H.B. 6  
J.G.I. Report

The enemy had early warning of this raid through their "Y" intelligence service. Radio detection apparatus picked up the routine signals given by Wellingtons from their W/T

"GO"

"GO" onwards. All units of the German North-West coast defences had been warned to stand-by, as it was reported to be a large-scale raid of about fifty aircraft. The Wellington sections flew in line astern, and closed formation when attacked. The German fighters had altered their tactics since December 14th, having learnt the effectiveness of the rear turret. They attacked principally from abeam, and reported that the under turrets never succeeded in opposing them. The rigid retention of course and formation was of great assistance to the attackers. One section of Wellingtons was successful in weaving to avoid attack. Lieutenant Lent, later a well-known German fighter ace, received special mention for his part in this action.

As a result of this operation Air Ministry ordered the cessation of attacks on naval bases and reconnaissance in force until the petrol tanks should be armoured, pending the fitting of self-sealing tanks. Many aircraft had been observed to have petrol pouring out, and most of the losses during the month were attributed to the patrol tanks catching fire. This is confirmed by German reports, which note the extreme vulnerability of Wellingtons to fire in the wings.

U.S. Post  
Hostilities  
Investigation of  
German Air  
Defences. Vol.II.

7. The German Early-Warning System The German Aircraft Reporting Service was included within Luftgau Signals Regiments under the German Air Force. Lines of observer posts had been established throughout Germany 10 km or less apart, 50-70 Km between the lines. Reserve units manned these lines whilst mobile units were organized to advance into newly-occupied territory.

A.D.I. (K)  
390/1945  
Paras 2, 5, 6.

By October, 1939, eight radar stations had been established on the east and north Frisian Islands, using "FREYA", the first standard early-warning set employed by the German Air Force. They thus guarded the Heligoland Bight and the approach to the North Sea ports. The range of these early "Freyas" was about 80 Km and their accuracy to within a few degrees, but they had no height finding facilities. They were manned by special units of the mobile reporting companies. The radar chain set up along the western frontier of Germany was rapidly moved forward, and operated on the channel coast by June, 1940.

U.S. Investigation  
as above.

A standing patrol of watch-boats, known to the R.A.F. as Flak-ships, was maintained by the German navy off the north-eastern coast of Germany, and later in the English Channel. These ships, which were often converted trawlers or small merchant-vessels, in addition to giving early-warning of approaching aircraft, were often heavily armed with A.A. guns with which to attack them.

A.H.B. 6 V11/10

German records show that they were hampered by a shortage of anti-aircraft guns at the start. To avoid unnecessary dispersal, certain strong-points were established. These could put up an effective barrage, both of flak and aircraft, against incoming hostile formations.

A.D.I. (K).  
4 /1945

In addition to this observer system the German Signals Service developed a very complete reporting system. The Radio Listening Service monitored Allied radio activities, and was often able to predict that a raid was about to take place. The early warning of the Wilhelmshaven raid on December 18th, 1939, was due to this Service. The

/aircraft



aircraft signals were picked up, as mentioned above, and, contrary to orders, reported direct to the fighter authorities concerned. The success of this method led to pressure for the re-organization of the channels of communication. This resulted, eventually, in the integration of all sources of intelligence into one reporting service, which took place in 1944. The further development of the German reporting service will be found in the Air Historical Branch Signals Monograph.

8. A second search for the "Deutschland" On December 20th there was another report of the Deutschland, which caused almost as great alarm as that of late November. She was reported as steaming north, and was thought to be breaking out along the Norwegian coast on another raiding trip. Twenty-four Hampdens stood by for first light, with eighteen Wellingtons and twenty-four Whitleys at one hour's notice. The Hampdens proceeded to a point near Lip, on the S.W. coast of Norway, where the Deutschland had been expected to arrive about 1030 hours. From there they searched a line along the Norwegian coast, about ten miles out, to a latitude of 60°30' North. On the return to Scotland a navigational error brought the formation to the Firth of Forth area, where they were attacked by Spitfires, two being brought down.

The eighteen Wellingtons carried out a sweep on the same day without success, and two Whitleys on the night of the 23rd had the same result. On the 24th two Blenheims went to Wilhelmshaven to try to establish the locations of the Deutschland, and the Scharnhorst and Gneisenau, but saw nothing owing to low cloud. On the same day seventeen Wellingtons carried out another sweep in sections of three and two. One section only was successful in sighting four ships in two pairs about three miles apart. They circled one pair three times. On the first circuit the ships challenged with a 2-star white and red, and the aircraft with the British recognition signal. On the second and third circuits both ships opened fire with pom-poms. As a result the section leader thought an attack justified, and eight 500 lb. S.A.P. bombs were dropped, two of the aircraft also using their guns. Drifting clouds prevented results being observed, but German records show no hits were obtained. One ship fired two red lights after the attack. As a result of this attack the section leader was placed under arrest.

9. The Rules of Attack Revised In consequence of this incident on December 24th there was an investigation by Bomber Command resulting in the release of the section leader, followed by a joint conference between representatives of the Foreign Office, Admiralty and Air Ministry on December 30th to consider amending the instructions in force regarding attacks upon shipping. The existing instructions were drawn up before the outbreak of war, on August 27th 1939. They laid down that:-

- (a) Enemy warships, troopships and auxiliaries in direct attendance on the enemy fleet might be attacked without warning provided they had been identified beyond doubt.

/(b)

A.H.B./  
11K/36/5  
Encl. 30

A.M. Signal  
X/76/27/8/39

- (b) (i) Any ship which there were definite grounds for believing to be an enemy raider (see (b)(iii) below) should be ordered to steer course to a port where she could be examined, or to nearest of H.M. ships capable of dealing with her. Alternatively, she should be ordered to stop and await arrival of H.M. ship capable of performing visit and search.

If vessel failed to obey signals after it was clear she had understood them, bombs should be dropped or machine guns fired ahead of her as warning. If this was disregarded bridge should be machine gunned. If this failed, ship should be attacked in some non-vital part such as superstructure. Only small bombs should be used such as would be unlikely to sink ship if she were hit in a vital spot.

- (ii) If aircraft even temporarily lost control of a ship, the process described must be repeated to regain it.
- (iii) For the time being it is of great importance that neutral sympathies should not be alienated by use of force against innocent merchant shipping, which may not have understood signals from aircraft. Owing to probable existence of many genuine merchant ships with defensive armament and to difficulty of penetrating disguise from the air, there must be some reason for thinking that vessel is an armed raider before action at (b)(i) is taken.
- (c) On sighting any ship not covered by (a) or (b) aircraft should confine action to reporting vessel's position, course and if possible her nationality and identity, to H.M. Ship or shore base, in the meantime keeping in touch with her as far as practicable. Even if merchant ship should open fire with defensive armament aircraft should refrain from any form of retaliation and merely take avoiding action, whilst reporting facts.

10. It is self-evident that the above instructions were drawn up not by Air Force, but by Naval authorities, thinking in terms of aircraft and armament which were now long obsolete. For a modern bomber to be told to be careful to hit only the superstructure of a ship with "small bombs" was manifestly absurd. So the conference on 30th December issued a new set of rules:-

Vessels which may be attacked without challenge

- (a) Enemy warships may always be attacked at sight.
- (b) Vessels other than enemy warships may be attacked at sight if they
- (i) form part of an enemy fleet or are in direct attendance on enemy war vessels or submarines;
  - (ii) are minesweepers, petrol vessels or similar vessels engaged on military operations;

/ (iii)

(iii) are seen to be interfering with British, Allied or neutral shipping.

(c) Any vessel in a War Zone which opens fire on a British or Allied aircraft may be attacked by any means at the disposal of the aircraft. War Zones will be defined from time to time."

Although Para. 9 Sub-paras. (b) and (c) lay down a complicated set of instructions for dealing with vessels not covered by the above, which were only a slight improvement on the original rules, the important point was in paragraph 10(c). In future any vessel in a defined war zone which opened fire could be attacked. This covered attacks upon the F.L.A.K. ships which had been advocated for some time by the C.-in-C. Bomber Command. It was not until February 10th, however, that the decision was taken at an Air Ministry conference to attack them (see 13 below).

11. Large-scale Reconnaissance in the New Year, 1940 In January and early February no attacks were undertaken on German naval bases or home waters. Reconnaissances over the North Sea were continued on the increased scale adopted since the decision of December 18th not to attack close inshore until the petrol tanks were armoured. Most aircraft were fitted by the end of February and equipped with self-sealing tanks by the end of March.

BC/S20849/Eng.

On January 1st nine Blenheims carried out a sweep with no result. On the 2nd, seventeen Wellingtons in five sections with a sixth taking off later carried out another sweep. The five observed nothing, but the sixth, which was on an extended sweep, was attacked by Me.110's. Two aircraft were shot down, whilst the third returned at sea level on one engine, pursued for a time by five fighters. German records confirm the claim that two of these were shot down, one Me.109 and one Me.110. On the 5th, eighteen Wellingtons took off on a sweep, but observed nothing, and on the 10th four Witleys had no better success. On the same day two formations of Blenheims were sent out, twelve in the first, and nine in the second, 45 minutes later. The first formation had a running fight with five Me. 110's at sea level, losing one of their number for one enemy aircraft, which forced landed in Denmark and was destroyed. Neither formation sighted any target.

A.H.B. 6  
6th Abteilung  
Records

Eighteen Hampdens on January 12th, twenty-four Blenheims on the 13th, seventeen Wellingtons on the 20th and six on the 23rd observed no suitable targets. Eighteen Blenheims on the 25th had to return early on account of weather conditions without sighting anything, and nine Wellingtons on the 26th had no better success. The record of unsuccessful sweeps continues in February, with six Wellingtons on the 1st, eighteen on the 11th, and fifteen Blenheims on the 14th.

12. The Altmark reported On February 14th it was reported that the German armed tanker Altmark had been sighted in Norwegian waters. She had aboard 299 British prisoners transferred from the Admiral Graf Spee. At noon on the 15th she was seen off Bergen, and on the 17th seventy-two aircraft - thirty-six Wellingtons and thirty-six Hampdens - stood by to cover the withdrawal of the naval forces

/supporting

supporting H.M.S. Cossack, which had removed the British prisoners after the Altmark had been intercepted. There was no call for their assistance, however.

A.H.B. ITH/59

S. 2932 Encl. 6A

13. Attack on Flak-ships The decision to attack the Flak-ships which had long been a menace to our aircraft was at last taken at an Air Ministry conference on February 10th. The Flak-ships were disposed as far as could be ascertained in two lines - an outer ring with a radius of 65 miles centred on Heligoland, and an inner ring within 25 miles of the N.W. German coast stretching between the Schiermonnikoog Light (53°50'N, 06°10'E) and the Nodditrund Light (51°22'N, 08°40'E). In addition, isolated Flak ships had been reported along the west coast of Denmark and near the Dutch coast. It was considered that the outer ships only could be attacked without giving sufficient warning to fighters and other defences for losses to be incurred out of proportion to the results achieved. The factors for and against such an attack were considered. Among those in favour were that it would be a measure of retaliation for the German attack on British North Sea trade, and that it would provide training for the bomber force with only a limited risk. The adverse factors were the slight chances of hitting such a small target, the difficulty of identifying the ships, and their easy replacement. It was recommended that operations should be undertaken only under suitable cloud cover, and as a preliminary to, or in association with, a major plan.

A.M. Signal  
X.916

Orders to attack the Flak-ships were issued on February 11th under Para.2(d) of the revised Rules of Attack which had been issued on the 4th. This stated that "Aircraft may attack at sight and without challenge any vessel in a Special Zone which opens fire on a British or Allied aircraft. The attack should not be made if it involves risk to innocent ships in the vicinity." After a number of reconnaissances by Blenheims, and other reports which confirmed that there were now no Flak-ships more than about 15 miles out to sea, the plans for this operation were shelved for the time being in favour of attacking units of the German fleet which had been reported as stuck in the ice near Heligoland. This operation is dealt with below.

On February 24th the Bight was found to be clear of ice and so attention turned once more to the Flak-ships. No.2 Group were ordered to carry out offensive reconnaissances with a minimum of two Blenheims whenever conditions were suitable to use cloud cover. The primary object was to determine the exact position of Flak-ships. This was attempted by two Blenheims on February 26th but they had to turn back owing to cloudless conditions. On the 27th one of the Blenheims sent out failed to return, the other saw no shipping, flying in cloud most of the time. Over Juist at 500 feet 5 Me. 109's were seen, which caused the Blenheim to take refuge in cloud once more. Two Blenheims attempted to carry out a similar reconnaissance on Heligoland Bight on the 28th, but encountered ten-tenths cloud from sea level to 2,500 feet. On March 4th two Blenheims were sent on the same task. They sighted an enemy submarine and dropped a stick of four 250 lb S.A.P. bombs, reporting a direct hit between the conning-tower and the stern, which was believed to have sunk the submarine. German records do not confirm this claim, the U-boat concerned, "U-34", being undamaged.

A.M.C.O. 12/46

Two further Blenheims sent out on the 6th attacked two enemy fighters sighted. They then retired into cloud and abandoned the rest of their task owing to lack of further cloud cover. There were further reconnaissances by two Blenheims on March 7th, 9th, 11th, 12th and 13th. These all had special tasks in addition, including an attempt to discover whether salvage operations were in progress on British submarines 30 miles west and 40 miles north of Heligoland. On the first two days they had no success; one of those on the 11th bombed and sank a submarine in the Schillig Roads (U-boat No. 31, which was salvaged and re-sunk by H.M.S. Antelope in November (A.M.C.O. 12/1946)). The second Blenheim that day saw two groups of 6 vessels near the indicated positions. One of the aircraft on the 12th confirmed this, seeing three small vessels in a triangle in position 40 miles north of Heligoland; but the sorties on the 13th were fruitless owing to cloud down to the surface. Three Blenheims, six Hampdens and six Wellingtons were despatched on the 15th to look for a "mine-layer and patrol vessel" about whose position a message had been intercepted. Flying in sleet and snow, with eight-tenths cloud at 2,500 feet, none of them sighted anything.

N.I.D. 24  
Naval RecordsA.H.B. 6  
6th Abteilungs  
Records

At last on March 16th 1940 an attack on enemy flak-ships was organised. Twelve Blenheims were ordered to search for and bomb them in six areas in the Heligoland Bight, two aircraft to each area. Warships, if seen, were to be attacked in preference to flak-ships, and they were ordered to abandon the operation if cloud cover was inadequate. All the aircraft except one sighted enemy ships, but three of them did not attack - one because he was not fired at, two because the vessels sighted were not in their areas. In all, four cargo vessels, fourteen naval vessels, five flak-ships and two small ships were attacked with twenty 250 lb. S.A.P. Bombs. Sixteen of these missed their target, and the results of the other four were not observed, but the German report shows one near miss on a merchant vessel. Heavy A.A. fire was encountered over Heligoland and Borkum; one Blenheim evaded an Me.110 by entering cloud, whilst another, attacked by three Me.109's was hit, but escaped into cloud. One of the Me.109's was severely damaged.

On March 19th this operation was repeated by six Blenheims, one to each area. Only one attacked any vessels, scoring no hits. Owing to fog, the others saw little, but escaped the attacks of four Me.109's and one Me.110 by the use of the fog which stretched from sea level to 600 feet. Similar operations were continued whenever possible up to April 9th, when the Norwegian campaign opened. Ships were almost invariably sighted, but on very few occasions was any success achieved. On March 27th for example, seven Blenheims were despatched with the additional tasks of reporting on the salvage operations previously mentioned. Ten destroyers, three cruisers, six patrol-ships, three merchant-vessels, and two small vessels - probably flak-ships - were seen. Fourteen 250 lb. and three 40 lb. bombs were dropped without result. German reports show one near miss on a patrol boat. Nine Me.109's were encountered, and one Blenheim failed to return.

Acting upon W/T signals from these Blenheims which had reported the position of enemy warships, fourteen Blenheims were ordered to attack them on the same day. One failed to

/get

get away, and the other thirteen located nothing in spite of good visibility. Nine Blenheims which had been sent to attack enemy patrol vessels off the Danish coast on March 28th, saw a large amount of shipping, but made no attacks owing to bad weather and doubt as to their positions. Nine on the 30th were given the task of attacking German patrol ships waiting to intercept Danish shipping which might be forced out of its territorial waters at Horn's Reef. Eleven small vessels which did not open fire were sighted. They were therefore not attacked, but four bombs were dropped on a patrol boat which had opened fire. No hits were scored. On April 4th a Blenheim on patrol for submarines saw two enemy capital ships, believed to be the Scharnhorst and Gneisenau in Wilhelmshaven Road. Six Blenheims were ordered to attack, but only two made any attack, dropping bombs in the water which did not explode, and caused the Germans to suspect minelaying. On April 7th a strong enemy naval force was reported. Attacks were made by twelve Blenheims, but no hits were recorded. The force consisted of Scharnhorst and Gneisenau with a destroyer screen.

N.I.D. 24  
Naval Records.

14. Attack on ships caught in Ice The offensive against flak-ships was postponed for a time, as mentioned above, in favour of attacking a number of German warships which were reported on February 14th to be prevented by ice from reaching protected anchorages. They were thought at first to be only merchant ships, but when Blenheims on reconnaissance failed to return on the 16th and 17th, the suggestion that the German fleet was in the neighbourhood was confirmed. The weather had made night reconnaissance impossible, but on the 17th an improvement permitted the despatch of two Whitleys. One returned with engine trouble but the other carried out its reconnaissance at 200 feet under low cloud. It reported four enemy warships north-west of Heligoland and nine or ten south-west surrounded by ice. Although the weather was bad the next day it was expected to clear over Heligoland after dark. Seventy-two aircraft of Nos. 3 and 5 Groups were ordered to prepare for attack, and the A.O.C. in C. of Bomber Command flew to Grantham to confer with the three Group Commanders on the timing of the attack. Snow and low cloud were now expected throughout England from dusk onwards, so it was proposed to send only eighteen Hampdens on a dusk attack, as more could not land at Leuchars in Scotland, which was expected to be serviceable. No. 4 Group and No. 3 Group were to operate in turn ten aircraft per hour during the night, landing at Leuchars if necessary. The risks of this scheme were recognised but the target was considered important enough to warrant them. However, the A.O.C. of No. 5 Group cancelled the Hampden operations owing to snow, and the night operation was cancelled by the Chief of the Air Staff.

B.C. 540. - App.  
D212.

After another cancellation on the night of February 19th, during which the report was confirmed by another Whitley reconnaissance, the attack was eventually launched on the 20th. Twenty-one Wellingtons were despatched, but were recalled soon after, owing to fog developing. A few reached the target area, and one of these bombed a large warship with uncertain result. Another attempted an attack on three destroyers, but its bombs hung up. It was attacked by three enemy fighters, one of which was believed to have been forced down. German records do not confirm this claim. One aircraft was missing, another abandoned by

/parachute

parachute, and another made a forced landing with injuries to the naval observer only. All the rest except one landed at aerodromes outside the Group, as the area was covered by fog. Further attempts were prevented by bad weather on the succeeding nights, and on the 24th reconnaissance showed the area to be clear of ice.

15. Northern Bases A diversion, which had temporarily dispersed the effort of Bomber Command at intervals throughout this period, was the detachment of squadrons to North Scottish bases under the operational control of Coastal Command. This was done for a number of special purposes which arose. The first was the report of the Deutschland, which has been described, on November 23rd when twenty-four Whitleys were sent to Kinloss and twenty-four Hampdens to Wick. Twelve of the Whitleys were replaced by twelve Wellingtons at Lossiemouth on the 28th, which returned on December 4th. On the same day the Hampdens returned to their bases, whilst the twelve remaining Whitleys returned on the 6th.

On January 26th twenty-four Hampdens were once more despatched to Scotland, twelve to Kinloss and twelve to Lossiemouth. These were precautionary measures for the protection of a large Norwegian convoy. It was not attacked, however, so they returned to their bases on February 15th, 1940. On the 21st two Squadrons were sent North again, to Lossiemouth and Wick respectively, for possible attacks upon enemy surface vessels. These were to replace the twenty-four coastal duty aircraft which had been held available each day by Nos. 3, 4, or 5 Groups, as a routine task. On April 2nd two Wellington Squadrons took over this duty at Kinloss and Lossiemouth, to allow the Hampden Squadrons to train for the laying of "M" mines later in the month.

16. Conclusion The results achieved by this campaign at sea were not impressive judged by later standards. Up to the time when efforts of Bomber Command had to be diverted to the land campaign, 61 tons of bombs had been dropped on naval targets, in the course of 861 sorties, including reces and sweeps, but only seven direct hits had been claimed. (See appendix H1). One U-Boat and one minesweeper had been sunk, and the Scheer and Emden slightly damaged. Many lessons had been learned during the campaign, however. The Command had entered the war with no knowledge of its potentialities. Sufficient experience was gained during this campaign to build up a body of doctrine on planning, control and tactics which enabled the air staff to plan realistically for the later campaigns.

The most important lesson learnt was that the heavy bombers of the time could not economically be used by day. The fire-power of their turrets did not compensate for their slow speed, and they had numerous blind spots. Blenheim losses in this campaign were only 3 $\frac{1}{2}$ %, whilst Wellington and Hampden losses came to 6 $\frac{1}{2}$ %. The attempt to operate both these and the new heavy bombers by day was made on several later occasions, but the results always justified the conclusion drawn from this first campaign. The fact that this lesson was driven home before the land campaign opened probably had a decisive effect on the build-up of

See Part VI and  
Vol III Pt.II,9.

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Encl. 49c.

the British bomber force. If these aircraft had been used by day in the campaigns over the Low Countries and Germany their numbers would have been so reduced as severely to retard the conclusion of the air war. Fortunately, however, the lesson was learnt by March 1940, in time to develop plans for the night attack of army targets and of Germany.

The many difficulties and delays experienced in this campaign owing to the division of control between the Air Ministry and Bomber and Coastal Commands also taught a useful lesson. It emphasized once more the need for unified control by one responsible commander, regardless of the role which a bomber force might be called upon to undertake. This lesson also was not learnt all at once, but it eventually resulted in the strongly organised Command which operated under Air Marshal Harris in the later years of the war. It led to the maximum economy of effort, owing to the flexibility which allowed its efforts to be directed immediately to any objective which the situation of the moment might demand.





SECTION IVANTI-MINELAYING AND MINELAYINGA. OPERATIONS AGAINST SEA-PLANE BASES

Object and Methods. Towards the end of October 1939, the Germans began to lay magnetic mines from aircraft, operating by night off the coasts of the British Isles. This was supposed to be the "secret weapon" of which Hitler had spoken on September 19th, and it caused the loss of a serious quantity of merchant shipping. Counter-measures had to be taken, the first of which was the maintenance of air patrols as described below. These dealt only with a proportion of the sea-planes employed. Land planes and submarines were believed also to be used, but not to be so well-suited to the work. Other counter-measures were eventually employed - the de-gaussing, or de-magnetising belt fitted to shipping, and retaliation in kind. It took approximately five and a half months to produce a British magnetic mine, and to start to lay it by means of Hampden aircraft (April 13th, 1940), as described later. This was the more effective reply to the German operations, but meanwhile the best palliative available had to be applied.

A.M. Signal  
X 639  
12.12.39.

On December 12th the Air Ministry ordered a standing patrol of one aircraft over the islands of Borkum, Norderney and Sylt. One aircraft could cover the two former, and one the latter, including the three seaplane bases at List, Rantum and Hornum. The hours from dusk until midnight were to be covered. The task was allotted to No.4 Group, as the Whitley was still regarded as the most suitable aircraft for night work. The object was to prevent German minelaying seaplanes from operating, by enforcing blackout conditions at their bases, and to attack with bombs and guns any aircraft taking off or alighting on the water; in fact, the task which was called "Intruder" operations later in the war. The principal seaplane bases were on these islands, well clear of any civilian property. Others on the mainland could not be dealt with owing to the danger to civil population.

These operations could often be combined with other missions, such as reconnaissance for the German fleet, so that no clearly-defined limit can be set to them. Patrols frequently attacked shipping targets in the course of their period of duty. No.5 Group took over the task on February 26th 1940, in order to gain experience of the areas for their own minelaying campaign, which replaced these patrols after April 11th. Both groups took part, however, in the large-scale operation of March 19th. Day reconnaissances were occasionally carried out also by Blenheims of No.2 Group.

2. Security Patrols, December to April. The first operation took place on December 12th, when eight Whitleys in pairs patrolled the islands of Sylt, Borkum and Norderney. Ten bombs were dropped, mainly on lights seen on the water. The next day this was repeated by six Whitleys, only one of which observed any lights. Another bombed a submarine, which was later ascertained to be British, without success. On the 14th two Blenheims carried out a day reconnaissance, making use of cloud, to find out whether balloons were flown over the islands. None were observed. Four Whitleys continued the patrol that night.

HQ BC/  
Sig./X1263

On December 15th No.4 Group were told that security patrols might be combined with other tasks. They were advised to avoid

/monotony,

monotony, spasmodic visits being advocated to cover the hours during which the enemy must take off in order to lay his mines in darkness. Patrols were therefore continued on all suitable nights until February 5th 1940, when the Air Ministry asked for their suspension for two nights, in order to estimate their effectiveness in reducing German minelaying.

After this, minelaying by seaplanes was impracticable for some time on account of ice on the sea, but patrols were resumed on February 24th. On the 26th No.5 Group took over the duty from No.4 Group, being ordered to maintain a standing patrol of one aircraft at low altitude. The first aircraft was to arrive at its objective at dusk and operations were to continue until four hours before sunrise. No objectives on land were to be attacked, and every effort made to avoid infringing neutral territory or waters.

The Hampdens continued the nightly patrol until March 3rd when one night's interval was ordered to see whether minelaying would be carried out. Reports indicated that German aircraft were active off the Norfolk coast that night, and so patrols were resumed on March 4th, until the 19th when the major attack described below took place. The next day they were carried on again, until April 11th, when the Air Ministry ordered their suspension on account of the call for air assistance for the Norwegian campaign. The original date chosen had been March 3rd, but the enemy activity mentioned above had caused their continuance. After this date the Hampdens were employed in laying the British magnetic mine, although they were called upon on April 20th to combine security patrols with this duty, owing to a resumption of enemy activity.

There was a notable reduction in enemy mine-laying activities during the period these patrols were maintained. On only one night since December had enemy aircraft been detected off the east coast in any numbers, and on that night (February 22nd) there had been no security patrol. The success of these offensive patrols, at a time when no effective reply to the magnetic mine existed, was of great importance in allowing time for the development of the de-gaussing of ships. Its sequel later was "Intruder" operations over bomber aerodromes.

5. Major raid on Sylt, March 19th, 1940. As a result of the bombing of Scapa Flow by fifteen German bombers on March 15th, a large-scale reprisal raid was ordered. The most suitable objective of a similar nature was the seaplane base at Hornum on the island of Sylt, which was remote from any civilian property. A night bombing attack was ordered at the first opportunity, particular care to be taken to confine attacks to military objectives. The employment of thirty Whitleys and twenty Hampdens made this attack, carried out on March 19th, the largest yet undertaken by either side.

The Whitleys of No.4 Group were allotted the first four hours from 1945 on the 19th, and the Hampdens of No.5 Group the fifth and sixth hours. The attack was to be sustained during the period allotted to each Group. The primary target was the aircraft hangars. Forty aircraft located the target and attacked it. Of the remainder, one was shot down, two damaged but got back to base, and seven were unsuccessful owing to error or technical trouble. There was heavy anti-aircraft fire, but negligible air opposition, and good results were claimed. A total of fifty-nine 500 lb. and one hundred and thirty-two 250 lb. G.P. bombs and one thousand three hundred and sixty 4 lb. incendiaries was dropped, and many aircraft reported hangars and other structures

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AHB II/H/58  
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D.B.Ops.  
Directifs  
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Encl. 7A.

BC 540  
App. C13, 14

German Naval  
War Staff  
(Division I)  
Monthly report.

D.B.Ops. Folder  
"Employment of  
Air Striking  
Force" Encl.44.

on fire. Photographic reconnaissances despatched to confirm the results were unsuccessful until the 27th, when the survivor of two Blenheims brought back photographs revealing very little damage. German records report no serious damage except for a direct hit on a sick-bay, wounding 3, and a few aircraft damaged.

Having accomplished this raid in direct retaliation for that on Scapa Flow, the future policy regarding such replies was discussed. The Directorate of Plans pointed out on March 20th that the British bomber force was still vastly inferior numerically to the German, and that spasmodic retaliatory attacks would show a great disparity if persisted in. No material decrease in German war potential would result, and the British ship-building yards and factories were as vulnerable as those of Germany. Each spasmodic attack would bring nearer the unrestricted bombing of all land targets. The result would be that the oil and Rhur plans would have to be commenced before adequate reserves, or defences against retaliation, had been built up. Therefore the Air Striking Force ought not to be used as a mere political pawn, but conserved for use at the right time against the enemy's vital centres.

#### B. MINELAYING BY AIRCRAFT.

Object and Methods. Since the Germans had begun laying magnetic mines, in October, 1939, it had become of increased importance for the R.A.F. to do the same. The damage to British shipping required equalizing, and the increasing immunity enjoyed by enemy shipping necessitated new methods of attack.

S 1636/I  
Encl.32B

Magnetic mines, known as "M" mines, had been under development since some time before the war, but they were not ready for use until April 1940. They were dropped attached to a parachute and lay on the sea-floor until actuated by a disturbance in their magnetic field. The effect upon them of a ship's hull depended upon its size, but 30 feet was considered the best depth for them to lie, in order to be fixed by anything from a cruiser to a submarine. They were of 1500 lbs. weight, containing 750 lbs. of explosive, and had to be dropped at a speed not in excess of 200 m.p.h. from not more than 1,000 feet; preferably from about 500 feet.

Ibid.  
Encl.98B

The Hampden was chosen as the most suitable aircraft to carry out this work. Coastal Command was originally intended to undertake it, but the only suitable aircraft in that Command - the Beaufort - was not ready for operations until later in April. It then supplemented the Hampden effort. Fleet Air Arm Swordfish aircraft were also modified to carry mines, and started to lay them on April 23rd. The Hampden had not, until recently, been regarded as a night bomber, but prior to the commencement of these operations all squadrons of No.5 Group had carried out reconnaissance and training flights in the areas to be mined, many of these being combined with anti-seaplane patrols, as mentioned above. In order to disguise the task that was being carried out, leaflets and flares were dropped over neighbouring populous areas. For the same reason mine-laying was given the code-name "gardening", whilst the mine was called a "vegetable." The areas to be "planted" were given the names of vegetables and flowers alphabetically, as shown in Appendix J3.

2. Operations, April 13th to May 14th, 1940. After three nights devoted to reconnaissance, the first mine-laying operation took place on April 13th, the beginning of the moonlight period. Fifteen Hampdens took part, thirteen of which completed their task. One was missing and one turned back owing to engine trouble. On the 14th twenty-eight Hampdens took part in the second nights activities, with three casualties. This scale of effort was continued on all suitable nights, sometimes being combined with other missions. On the 17th a reconnaissance of Aalborg aerodrome was added, and on the 20th security patrols, owing to a recrudescence of enemy minelaying.

The first areas mined were the Great and Little Belts blocking the channels up the east coast of Denmark. The Elbe estuary was planted on April 20th, the southern channels of the Sound on the 22nd. The German invasion of Denmark and Norway on the 9th of this month had caused last minute additions to the planting areas, and had increased the urgency of the operations. A summary of operations can be found in Appendix J2, whilst the areas of planting are detailed in Appendix J3.

Owing to the long distances involved and the accuracy of laying required in these operations, the weather was a most important factor. On April 23rd only three out of twenty-eight aircraft despatched were able to complete their mission, and three failed to return. The accuracy of laying required accounted for the fact that approximately 40% of the sorties during this period were made without any lay taking place. The mines were brought back for subsequent use.

On May 1st five out of eleven aircraft completed their task in the Sound and the Elbe estuary, whilst one of the unsuccessful aircraft shot down an enemy seaplane. On the 2nd sixteen out of twenty-six were successful, principally in Oslo Fjord and Kiel Bay. Five aircraft each on the 3rd and 4th planted the same neighbourhood. On the 6th only three out of twelve were successful, but on the 9th twenty-three carried out their task, covering Kiel Bay, Lubeck Bay, the area off Warnemunde and the Sound, whilst one of their number planted the Elbe estuary. After another unsuccessful night on May 13th, when only one carried out its task, there was a larger effort again on the 14th, when twelve were successful.

3. Conclusion. After May 14th minelaying was suspended until June 5th owing to the situation on the Western Front. All available bomber aircraft were required to support the army in opposing the main German offensive which had begun on May 10th. Minelaying was resumed, however, by one squadron from June 5th at the urgent request of the Admiralty. Three squadrons were allocated, but there were sufficient mines for only one at approximately six sorties per night, as Coastal Command were now using the balance. The subsequent history of the minelaying campaign which continued throughout the war is dealt with in later sections of this narrative.

The value of these minelaying operations had been immediately proved by the numerous reports, received from various sources, of enemy ships sunk in the mined areas. During April the Danish press reported two train ferries blown up and two other ships sunk in the Great Belt, whilst the Swedish press reported five ships mined in three days in the Sound. Numerous other reports were received which gave a most satisfactory picture of the effects of the minelaying campaign. It was carried on, in these early days, largely in areas where no other type of offensive action could be taken against shipping. Since mines were also being laid by Coastal Command aircraft and naval vessels, including submarines, the damage done by one of these arms cannot be separately assessed. The list of ships sunk at Appendix X shows the results so far known from German sources. The Coastal Command narrative on minelaying contains further information on this subject.

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PART IIIOPERATIONS IN SUPPORT OF THE ARMYSECTION ITHE NORWEGIAN CAMPAIGN, APRIL 9TH TO JUNE 8TH, 1940N.I.D. 24/T85/  
45

General Description. The reasons which induced the Allies to undertake a land campaign in Norway and the course of it are fully discussed in the Narrative on that campaign. In dealing with the part played by Bomber Command in assisting it the following sketch should suffice. The possibility of interrupting the flow of iron ore to Germany from the Swedish mines had been examined for some time. The only possible means appeared to be the occupation of parts of Norway around Narvik, the port through which the ore was shipped, with a covering force to the south of this. With this in view an expeditionary force had been collected and was on the point of setting out when the Germans invaded Norway. Their reasons are given in the minutes of a meeting between Hitler and the Naval C.-in-C. on December 8th, 1939. It was important for them to re-direct the large volume of shipping outward bound from the Norwegian coast to Germany. Also to obtain the ore from North Sweden and to prevent the British from blockading the Northern exit from the North Sea. This could not be accomplished from Germany. They overran all the principal ports and aerodromes in the south between the night of April 8/9 and 10th. They also occupied Narvik and Trondhjem. It was decided to try to recover these two latter areas, as the Norwegian authorities considered the German hold precarious. Owing to the nature of the country it was difficult to find sites for aerodromes, so no air units could be sent until suitable sites had been found. It was only intended, in any case, to send fighter squadrons as the bomber force was too small to allow any diversion to an outlying theatre of war, in view of the imminent threat of an attack in the Low Countries. The long-range bomber units were therefore the only immediate support which could be given in Norway, and they had to operate at extreme range, and subject to an immediate diversion if a major offensive in the west should take place.

2. Military Summary - Trondhjem Operations. During the night of April 8/9 German warships entered and attacked the ports of Oslo, Bergen and Trondhjem, and in the early morning Narvik, Kristiansand and Egersund were occupied by German troops. From first light the Luftwaffe attacked Drieback, Feste, Akershus, Horton and Hameln in Oslo Fjord. Denmark was overrun by the Germans the same day. During April 9th and 10th the Germans extended and strengthened their hold on Norway, whilst the Norwegian army mobilised in the interior. As nearly all their stores and equipment had been captured by the Germans on the first day, however, there was little they could do. They rejected two ultimatums, and received immediate promises of assistance from the British and French Governments, whom they urged to concentrate on the recapture of Trondhjem, to enable the King and Government to establish themselves in the centre of the country.

The British and French force already embarked was therefore despatched to Namsos and Aandalsnaes, on either side of Trondhjem Fjord in order to operate from there against Trondhjem, and a small force to Harstad for the recapture of Narvik, with the aid of the local Norwegian forces. No air forces were sent with the army, so that they were defenceless against the heavy German bombing attacks to which they were immediately subjected. The landing at Namsos was made on the April 14th and at Aandalsnaes on the 17th, by which

/time



time the Germans had 3 squadrons of JU.87s, three of HE.111s, three of ME.110s and one of HE.115s at Vaernes aerodrome, near Trondhjem, three squadrons of fighters at Kristiansand and a number of other units within range. Up to April 15th the German air forces were attacking the Norwegian army. On that day they bombed Namsos, and continued to do so without opposition; culminating in all-day attacks on the 20th, which demolished the greater part of the town, including the railway station and rolling stock. The next day the heaviest attacks were on Stenkjaer, which was now the Allied centre of operations and on this and the next day the road and rail bridges over Beitstad Fjord were demolished by the German bombers. After this the Allied forces in this area could do no more than act on the defensive until they were finally withdrawn.

Meanwhile Aandalsnaes had also been bombed and naval units sunk in the Fjord. As with the more northerly forces, an advance had been made through the Gudbrandsdal and like them, after junctions with the Norwegian forces, engagements had been fought in which they were driven back and forced on to the defensive. On April 23rd and 24th, No.263 fighter squadron with its maintenance personnel arrived, the aircraft being flown off from H.M.S. Glorious to land at Lake Lesjeskogen, where a runway had been cleared on the ice. The full story of their operations can be found in the narrative of the Norwegian Campaign. It is sufficient to say here that on April 25th, forty operational flights were made, whilst the lake was bombed continuously by the Germans, thirteen of the Gladiators being destroyed or damaged. The remaining five were flown to Setnesmoen near Aandalsnaes and operated from there next day. By nightfall all but one were unserviceable. Meanwhile the 15th Brigade had been holding their positions at Kvam against continuous attack.

On April 27th permission was given to evacuate the Trondhjem area, and the withdrawal was carried out on the nights of April 30th and May 1st at Aandalsnaes and of May 2nd at Namsos.

3. Bomber Operations - General. Apart from the brief appearance of the Gladiator squadron in Norway, the long-range bombers and fighters of Bomber and Coastal Commands were the only means of assistance which the R.A.F. could give to the campaign for Trondhjem. The bombers were given two principal objectives - the German air forces which were attacking the Allied land forces, and the German shipping on the supply route to Norway. On April 9th the bomber and coastal squadrons were ordered to bomb aerodromes occupied by the Luftwaffe at once, and German communications where opportunity offered, by raiding convoys to Norway and mining the entrances to German bases.

The Norwegian campaign began for Bomber Command when twelve Wellingtons and twelve Hampdens attacked the German fleet at Bergen on April 9th shortly before dusk. On April 11th forty-two aircraft operated against shipping between Kiel and Oslo. After this the Command concentrated principally upon Stavanger, the main German air base. It was bombed by night and day twenty-one times during the campaign, as well as being shelled by H.M.S. Suffolk on April 17th and repeatedly attacked by Coastal Command and Fleet Air Arm aircraft. Several more projected bomber attacks upon it had to be abandoned owing to weather.

This problem of the weather was one of three major difficulties which were experienced in the Norwegian bomber operations. Owing to the German occupation, few weather reports were received from Scandinavia, and the Meteorological forecasts available were therefore often far from accurate. Secondly the distance of the

/targets

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Operation  
"Duck"

targets allowed the aircraft little margin of endurance to spend in searching for them. And thirdly the intelligence preparations for these operations had been almost non-existent, so that no detailed maps were available, and targets had frequently to be located with the aid of a town plan from Baedeker's guide. The result was that aircraft had frequently to find their way through zones of snow, sleet and fog, with variable temperatures and wind directions before making landfall and finding their target by the aid of inadequate charts. Radio and other aids to navigation were of course almost non-existent. Daylight sorties were ordered to return if cloud cover was inadequate for protection from enemy fighters, but the weather actually over Norway was frequently fine and clear, whilst when there was cloud, it was usually too low and accompanied by icing conditions. So that it is not surprising that a large number of sorties were abortive.

4. Bomber Operations - The First Phase. From April 9th to 12th Bomber Command concentrated upon attacks on German shipping in Norwegian waters in an effort to slow down the German attack. The greater part of the German fleet was first reported in those waters on April 7th. On April 8th the area was covered by a belt of low cloud, which held up reconnaissance or attacks. On April 9th twelve Wellingtons and twelve Hampdens attacked two German cruisers lying at Bergen with little result<sup>(1)</sup>. The Wellingtons were operating from Lossiemouth and Kinloss under the operational control of Coastal Command. After the abandonment of an attempt on the Gneisenau at Kristiansand by six Wellingtons on the 10th and by six Hampdens on the 11th, twenty-three Whitleys attacked shipping near Oslo that night, obtaining one direct hit, damaging the ship "Nordkap".

N.I.D. 24  
Naval Staff  
Report

On April 12th, following reports from Coastal Command that their reconnaissance aircraft had sighted and shadowed an enemy force of two battle cruisers and one light cruiser, a force of twenty-three Blenheims, thirty-six Wellingtons and twenty-four Hampdens, in addition to Coastal Command aircraft, was despatched to attack them. Three Wellingtons and six Hampdens were lost, but one formation of twelve Hampdens alone sighted a target, bombing two warships off Kristiansand without success. The remainder were defeated by bad weather.

The operations in this first phase were designed to maintain contact with the German battle fleet, and prevent it from returning to German ports until the British Home Fleet could come up to engage it. By April 12th German records show that all major units were back in port, and after this date Bomber Command turned to the attack of aerodromes.

5. The Attack on Aerodromes. The first attack on Stavanger aerodrome was on April 11th by six Wellingtons from Lossiemouth. The same squadron (No. 115) again attacked it on April 14th and after that Blenheims and Whitleys and the Wellingtons from East Anglia (the two squadrons from Scotland returned on that day) carried on with the task on an increased scale. Following the landing at Namsos on the night of April 14th eleven Blenheims attacked Stavanger on April 15th followed by twelve Whitleys the same night and six Blenheims the next day. On April 15th the German air force turned its attention from the Norwegian forces to the Allied landing at Namsos, which was continually attacked until April 20th. So on the night of April 16th, in addition to twelve

/Wellingtons

(1) The Cruisers Koln and Koenigsberg. There were a few casualties on the former by machine-gun fire. A direct hit on the Koenigsberg was claimed, but is not corroborated by the ship's log. She was sunk by Fleet Air Arm aircraft the next day (see Coastal Narrative).



Wellingtons on Stavanger, five Whitleys were detailed to attack Vaernes aerodrome, near Trondhjem, and three to attack Kjeller and Fornebu aerodromes, near Oslo. All these tasks were abandoned owing to bad weather. The next day, however, successful attacks were made by twelve Blenheims by day and twelve Wellingtons by night on Stavanger, whilst sorties against Vaernes and Fornebu by six and two Whitleys respectively were unsuccessful. The Blenheim group (No.2) had been ordered to maintain harassing attacks against Stavanger aerodrome and seaplane base, and despatched six aircraft on April 19th, three on April 20th and twelve on April 21st, without success owing to lack of cloud cover.

The Germans carried out their heaviest attacks on Namsos throughout April 20th and the night following. Bomber Command once more attempted to reduce the scale of their attack by the despatch of six Wellingtons to Kristiansand aerodrome and seaplane base, three Wellingtons and three Hampdens to Aalborg (in Denmark), twelve Wellingtons to Stavanger, and three Whitleys to Oslo aerodromes and seaplane base. After this a number of attacks were made on Aalborg, which took second place to Stavanger in importance, with Oslo (Fornebu) in third place. The Blenheims were ordered to attack by day in cloud cover only, whilst the heavy bombers only operated by night in order to minimise casualties. On April 23rd six Whitleys were ordered to attack Lake Jansvannet, near Trondhjem, which was being used as an enemy landing ground, but could not locate it, and the same night Westerland aerodrome in Sylt was successfully attacked. When the evacuation of the Namsos and Aandalsnaes forces was decided upon on April 27th, Bomber Command was directed to make light attacks on Stavanger, Aalborg and Fornebu until one day before the evacuation began, and then to attack them with full strength for the two nights following. In accordance with these instructions heavy attacks took place on the night of April 30/31, sixteen Wellingtons, twenty-four Whitleys and ten Hampdens taking part. On May 1st twelve Blenheims attacked Stavanger, and the attack on all three targets and on Rye aerodrome in Denmark was maintained that night and the following day and night, until the Allied forces were clear on May 3rd. During the evacuation very little air interference was experienced by the Allied land forces.

6. Attack on Shipping, April 18th to 25th. After the first phase, attacks on shipping gave way to those on aerodromes as has been seen. Minelaying operations were carried out on April 13th, 15th and 17th in the Great and Little Belts to cut the supply route from Kiel to Oslo. On the night of April 18th nine Whitleys and on April 20th twelve Whitleys took off to attack shipping in Trondhjem and Oslo Fjords, but all abandoned their task owing to bad weather. On the latter occasion three of them bombed their alternative target, Stavanger aerodrome. On the night of April 23rd and 25th shipping at Oslo was attacked by Whitleys, and during the latter day six Blenheims attacked transports in Hardanger and Gransvins Fjords. On April 22nd mines were laid successfully, by twenty-five out of a force of thirty-six Hampdens despatched, in the southern area of the Sound, to block the route from the German Baltic ports to Norway. And on April 24th twenty out of twenty six successfully laid on the same route, including the Little Belt, Kieler Fohrde, Warnemunde area and Eckenforde. On the night of April 25th/26th, only three aircraft successfully laid mines in the Kiel area out of twenty eight despatched, owing to bad weather. After this no more shipping attacks or minelaying were carried out in support of the Norwegian campaign. (See Appendix "K.1" for list of Operations).

7. The Narvik Operations. During the course of the more southerly campaign the British forces landed at Harstad on April 15th had been preparing for the attack on Narvik. They were strengthened by three battalions of French troops on April 27th,

/which

O.R.B/BC  
App. A

which made Ballangen their base of operations. Aerodromes were prepared for the air component at Bardufoss, Lakselv, Skaanland and Bodo. The Germans based the bulk of their air forces for the Northern theatre at Vaernes, near Trondhjem. This is 460 miles from the Shetlands, and over 750 from the bomber bases in Yorkshire, so it was impossible to attack it on the same scale as Stavanger, especially as it was a difficult place to locate. On this account and owing to the opening of the German attack on the Western Front, no bomber support could be given to this campaign apart from two further attacks on Stavanger aerodrome on the nights of May 7th and 9th, the latter of which was abandoned. Thereafter the whole effort of Bomber Command had to be devoted to the support of the land battle in the Low Countries and France. Narvik was captured on May 28th, the same day that the Belgian army surrendered to the Germans. It was destroyed at once, and the Allied forces then withdrew, completing the evacuation of Norway on June 8th.



SECTION IIBOMBING POLICY, MAY 10TH TO JUNE 20TH, 1940

General Review. During the six weeks of the German Campaign in the West there was little opportunity for the formulation of policy, and still less for putting it into effect. Whilst doing its best to begin following the plans which had long been drawn up, the bomber force was continually diverted to the immediate support of the French and British ground forces. Emergency calls were its principal commitment. This section on policy is therefore inserted mainly for continuity, and to fill up the small gap between the policy laid down before the German campaign, which has been dealt with, and that which it was attempted to carry out when that campaign was over. This is dealt with in the next Part of the narrative.

S.W.C.  
8th Meeting

The divergence of view between the French and British staffs on the function of a bomber force has been commented on. The position reached immediately prior to the opening of the campaign was this: the French had reluctantly agreed on April 23rd that in the event of the Germans invading the Low Countries, the heavy bombers should attack marshalling yards and oil refineries in the Ruhr. This was subject to two squadrons of Whitleys, as previously agreed, assisting the medium bombers in their direct support role, further behind the enemy forces. The War Cabinet, however, reserved to itself the authority for initiating the attack on Germany. On May 8th it decided that "the Royal Air Force should have authority to attack German marshalling yards without further reference to the War Cabinet". This did not cover oil or other targets in the Ruhr, and did not therefore empower the Air Staff to put into force the plan for a full-scale attack before the German defences should be fully organised.

The British General Staff had up to now endorsed this plan. At this last moment, however, they demanded that the bomber force should be used against advancing columns and road and rail bottlenecks west of the Rhine. They even went so far as to suggest that they relied upon the Air Force to be the principal means of stopping the German advance.

C.O.S.(40)  
333

A paper prepared by the Chief of the Air Staff for the Chiefs of Staff meeting on May 9th, after pointing out this reversal of attitude, made clear once more the Air Staff view. It had never been suggested that bombers, under the conditions envisaged, could do more than impose a certain delay upon the invading armies. In view of the great importance of the Allied Armies reaching the Antwerp-Namur line, the Air Staff accepted the probable loss of the greater part of the medium bomber force in support of this manoeuvre. The operations of medium bombers, without fighter cover, at a time and place chosen by the enemy, was bound to be costly. The Commander-in-Chief of the B.E.F. had insisted that the bulk of the fighters available should be retained for close protection of the army.

BC/S21939/  
C-in-C/DO

The Commander-in-Chief of Bomber Command had on May 8th made a strong protest upon the proposed employment of his medium bomber forces. In a letter to the Chief of the Air Staff he pointed out his reasons for anticipating a 50% wastage in their proposed operations, and his serious doubts as to whether the results would justify such losses. He claimed that the only sound policy was to conserve the force until it could be used with the initiative on its side, and where the enemy could not accurately foretell its arrival.

/The

C.O.S.(40)  
333

The C.A.S., in his paper to the Chiefs of Staff, pointed out that it was now proposed by the General Staff to throw away the heavy bombers in the same way. The Air Staff considered this "totally unsound and grossly uneconomical". If the limited bomber force could be used in operations which would "hit Germany in a vital spot then it might well be worth while to sacrifice it". If the Allied armies found themselves in a situation of really critical danger, then again the sacrifice would have to be accepted in an attempt to save them. "It would be quite definitely wrong to do so in order to impose a short delay on the initial advance of the German armies invading the Low Countries". Moreover, if a large proportion of the trained and experienced first-line crews were thrown away in this manner, the planned future expansion of the force would be mortgaged. The Air Staff conviction that the heavy bomber force should be employed against Germany's most vital spot, the Ruhr, was reaffirmed.

HCTD/S315  
in RECP/40

It had always been maintained that an attack on the Ruhr at the outset would be the best contribution which the heavy bombers could make to the land battle. It should cause dislocation to the German army's rear communications, and draw German fighters away from the theatre of operations, thus giving a better chance to the day bombers. To these arguments the C.-in-C. of Fighter Command added another on May 14th, that of inducing retaliatory attacks by German bombers on the British Isles, where they could most effectively be met by British fighters.

Thus the bombing of the Ruhr would serve these tactical aims, and at the same time begin the long-term strategical role of destroying German resources. The bombing of oil plants in the same way should cut down supplies to the forces and to industry. Throughout this period this dual role of bombing operations is seen.

2. The Opening of the Offensive. When the expected German offensive in the West began on May 10th, the British plan to seize the initiative in the air by immediate attack on Germany's most vital centres in the Ruhr had not received Cabinet sanction, as has been seen. Until May 15th, therefore, both heavy and light bombers were employed by night and day respectively against road communications, bridges and aerodromes in the battle area, at the request of the ground forces.

WM(40)  
117th-120th  
Concls.

The War Cabinet discussed the initiation of the major plan for attack on the Ruhr on May 10th and postponed decision until reports of German air action should have been considered. The decision was again deferred later on May 10th, and on the 12th, 13th and 14th. Finally on May 15th, authority was given and ninety-six aircraft were despatched that night, to inaugurate the strategic attack upon German oil and railway targets east of the Rhine. By that time Holland had capitulated, and the Germans had made sufficient progress into Belgium to provide themselves with a warning and defensive system for the Ruhr.

S2791/  
Enc. 5B

Throughout this campaign, as has been intimated, the major employment of the bomber force was tactical support. The tactical employment of bomber aircraft in support of an army had been described in a memorandum in November 1939. "The true function of bomber aircraft in support of an army is to isolate the battlefield from reinforcement and supply; to block or delay the movement of reserves; and generally to create disorganisation and confusion behind the enemy front by bombing his communications, headquarters, and supply services." This was the task which the bombers set out to accomplish.

/The

The Battle aircraft of the Advanced Air Striking Force had been intended for this role. They had been trained to carry out low bombing attacks from about 50 feet with delay-action bombs on army targets. They did some very useful work of this type in the first few days, but, as anticipated, suffered heavy casualties. As a result they had to turn to night bombing, for which they had only just begun to train, to avoid complete annihilation. The two Blenheim squadrons of the A.A.S.F. were used in the same way, but were slightly less vulnerable owing to the greater speed and firepower they possessed, and usually operated from a greater height.

The Blenheim aircraft of No. 2 Group were used, as had been envisaged, on close support targets, for the most part in the more northerly area, chosen by the army commanders concerned. The two Whitley squadrons allocated for a close support role by night, were employed, under the operational direction of B.A.F.F. in the same way as the Blenheims of No. 2 Group against German communications west of the Rhine.

RECP/7

The diversion of the heavy bombers from their proper role to that of direct support at the beginning of the campaign was such as to draw another protest from the A.O.C.-in-C. of Bomber Command. On May 17th he set out once more in a memorandum the disadvantages of their use for such a purpose, and the tactical arguments in favour of the Ruhr plan. He concluded "I therefore urge with all the force at my command that our bomber force should be employed immediately and almost wholly in the heaviest possible scale of attack against vital military objectives in Germany, and that only the absolute minimum should be employed in direct support of the land forces". Owing to the recurring crises in the land campaign, however, the heavy as well as the medium bombers continued to be called upon at short notice throughout this campaign, to make good the failure of a retiring army column to destroy bridges behind it, or in an attempt to hold up the advance of enemy armour, or for some similar unsuitable task.

S46368/I  
Encl.59A

3. The Moonlight Period, May 19th. In a new directive on May 19th an attempt was made to return the heavy bombers to their attack on oil targets and marshalling yards in the Ruhr. "The attack of the marshalling yards is the best contribution they could make towards harassing the German communications. This is the critical week, and it coincides with the period of most favourable moonlight. Bomber Command should, therefore, operate at maximum intensity while the moonlight lasts."

The heavy losses sustained by the medium bombers in the first week of the battle caused a recommendation for their use by night only. "It is useless to use weak elements of the medium squadrons for support of the army by day. The wastage rates are prohibitive." "Medium squadrons should be used for collaboration by night, during the present favourable moon conditions."

S4768  
Enc.4A

In spite of this directive the emphasis continued to be upon targets with an immediate effect upon the land battle during the moonlight period. At a conference held by the Chief of the Air Staff on May 28th it was pointed out that "owing to the urgency of the land battle, a great proportion of the effort of the heavy bombers has been devoted to attacking at night, targets such as bridges, columns and road junctions in the area of the battle."

S4768  
Enc.4A

4. The Moonless Period, May 28th. At the conference of May 28th mentioned above consideration was given to the moonless phase. As targets must be "self-illuminating" they would be limited to "marshalling yards, coke ovens, blast furnaces, and, on clear nights

/railways

railways and targets against water." The requirements for participation in the land battle were to be met by attacks on marshalling yards and railways where possible. Not more than one third of the effort should be directed against these, the rest being reserved for industrial objectives. The moonless period was to be used also for training and building up the bomber force for intensive operations during the next moon period. It was necessary to re-examine the value of oil objectives in the light of the altered situation, the German occupation of Scandinavia and the Low Countries. D.C.A.S. inclined to the view that a shorter-term policy was required for the next moon phase, such as the attack of aircraft factories.

S46368  
Enc. 66A

A new directive was issued on June 4th. In view of an appeal from the French for the greatest possible degree of air support, priority was to be given to operations in support of the French land forces once the next phase of the land battle began. Subject to this primary commitment oil resources were to be attacked, but on a shorter-term basis than before. The objectives were now to be stocks of oil in place of plants. Bomber and Fighter assembly plants were the alternative objectives. The Command was to be conserved as much as possible during the non-moon periods, in order that its contribution might be greater in the more favourable moonlight phase.

Ibid  
App.A

New Bombardment Instructions were laid down at this time. Bombardment was to be confined to military objectives and subject to four principles:-

- (a) Intentional bombardment of civilians was illegal.
- (b) It must be possible to identify the objective.
- (c) Reasonable care must be taken to avoid loss of civil life.
- (d) The provisions of Red Cross conventions must be observed.

Military objectives were to include armed forces of all types with their establishments and depots - this included civil as well as military aerodromes; shipyards and factories manufacturing military material; fuel and oil producing plants and stores; lines of communication; and other objectives of a military character subject to the principles set out above.

A.M. Signal  
X.970

A.M. Signal  
X.255

On June 7th the critical stage of the battle caused the Cabinet to issue orders for maximum possible support. All medium squadrons were to be at the disposal of the French, through B.A.F.F. On the 9th General Weygand requested that all the efforts of Bomber Command should be directed against Meuse bridges, and communications in the area of the new German thrust around Rethel. This was approved by the Chiefs of Staff and operations were adjusted accordingly. The Prime Minister went out to France on June 11th, and saw the situation for himself at General Weygand's headquarters. As a result, in a message of June 13th to the General and M. Reynaud he promised that "the R.A.F. will make a further increased effort to render assistance to your valiant hard-pressed forces June 13th and onwards". The Air Ministry notified Air Marshal Barratt on June 12th "In view of critical situation in France Prime Minister has promised fullest possible air support during the next few days." Targets selected for the day bombers should be those best calculated to have the immediate effect of delaying forward elements of enemy troops. Bomber Command was told to put out its maximum effort,

/and

and did so for two nights. The next two nights weather conditions precluded operations and after that the bomber effort was once more directed against German industry.

D.B.Ops.  
Folder  
"Directives"

5. Attack on Italy. In early June it became clear that Italy was about to come into the war. Plans for attack upon Italian industry, which had previously been considered, were now brought up to date. It was thought that Italian morale was more brittle than German, and an immediate attack might have a considerable effect upon it. A conference on June 6th presided over by D.C.A.S. discussed the operation of Wellington squadrons from the South of France, a scheme known as the "Haddock Plan". Servicing flights and an advance headquarters were to be established, the aerodromes selected being Salon and Vallon near Marseilles. Bombs and fuel should be available by June 10th.

A.M.Signal  
X.411

When Italy declared war on June 10th, a warning signal was sent to prepare for operations on the 11th. On that date thirty-six Whitleys were detailed to operate direct from England, flying over the Alps. Eleven of these completed their task. The "Haddock Plan" was also put into force, but the Wellingtons despatched to the Provencal aerodromes were unable to operate.<sup>(1)</sup> The local French, being afraid of reprisal attacks, drove lorries across the aerodrome and effectively prevented any aircraft taking off. This matter was adjusted by reference to the French authorities, and twelve further Wellingtons were sent to Salon June 15th. They operated that night and the following one on Genoa and Milan, and flew back on June 17th with a full load of ground crew, and the news of France's request for terms to hasten their departure.

A.M.Signal  
X.23  
14.6.40.

After this No. 4 Group continued to operate, when weather conditions allowed, direct from England, attacking targets at Milan, Turin and Genoa in North Italy. Aircraft from Malta attacked targets in Southern Italy.

(1) See A.H.B. Narrative "The Campaign in France and the Low Countries.





## SECTION III

CLOSE SUPPORT OPERATIONS, MAY 10th to JUNE 4th.

Opening of the Offensive. The evacuation of the Trondhjem area of Norway by May 3rd had released the bomber units supporting that operation, in readiness for the major attack. B.A.F.F. Command had been given operational control of the Blenheim squadrons of No. 2 Group and two Whitley squadrons for night support, in addition to its own units of the A.A.S.F. and Air Component in France. By May 10th B.A.F.F. had been authorised to order attacks by these forces on targets in the battle area, and on communications and troop concentrations behind the enemy lines, at the request of the army commanders. Plans had been made for reconnaissance as soon as the German army should move.

In the early morning hours of May 10th the German Army advanced into Holland, Belgium and Luxembourg. Airborne troops landed in force in the Hague-Rotterdam area, and to secure bridges on the Belgian frontier. At the same time air attacks were carried out on all the principal allied aerodromes. The advance of the French and British armies to their planned line of defence in Belgium, between Antwerp and Namur along the line of the Dyle river, was ordered by 0700 hours.

Reconnaissance and intelligence reports showed that the most critical points of the German attack were the Hague-Rotterdam area of Holland, and the Duchy of Luxembourg. Numerous airborne troops had landed and caused confusion in the former with the aid of Dutch collaborators, whilst the whole of the latter was overrun during the first day of the offensive.

Bombing attacks were ordered upon the aerodromes of Waalhaven and Ypenburg and the beaches north of the Hague - these were the principal landing-points of airborne troops - and upon troop concentrations in the Luxembourg-Dippach area. The attacks in Holland were carried out by Blenheims from England, and followed, after further requests from the Dutch, by night attacks by 36 Wellingtons. The operations in Luxembourg were carried out by aircraft of the A.A.S.F. from France, thirteen Battles out of thirty-two being lost. Little delay was caused to the Germans in either area.

A full account of this campaign is contained in the Air Historical Branch Narrative "The Campaign in France and the Low Countries". Only that part of it with a direct bearing upon the Bomber offensive will therefore be dealt with here.

2. The Advance of Both Armies, May 10th to 15th. Whilst the Germans were overrunning Holland and following up their breaches in the frontier defences of Belgium, the French and British armies were advancing through Belgium to meet them. The most serious threat on May 11th appeared to be the German break-in on the Belgian frontier, across the Meuse and the Albert Canal near Maastricht. At the request of the Belgians, French and British bomber forces, as well as Belgian, were put on to the attack of bridges over the Albert Canal and troop concentrations near Tongres. Two squadrons of Blenheims took part, losing two aircraft, with many others damaged by ground fire. Eight Battles were also despatched against enemy forces reported advancing from Prum to Echternach, to support the drive through Luxembourg. Only one of these returned, chased home by a ME. 109. The Hurricane cover for this operation did not make contact with the Battles. These losses, following on those of

the previous day, raised doubts as to the future of daylight operations by Battle Aircraft.

On the nights of May 11th and 12th attacks were put in against the lines of supply of the German forces advancing on the Belgian-Dutch border. Road and rail junctions in the Munchen-Gladbach area were attacked by Whitleys and Hampdens on the 11th and by Whitleys and Wellingtons on the 12th. The road bridge over the Rhine at Wesel was the only substantial result claimed by these attacks.

On May 12th Blenheims of the A.A.S.F. made further daylight attacks on columns on the Maastricht-Tongres road. This threat was still considered the most serious. Only two out of nine Blenheims returned. The Belgians had repeatedly been requesting an attack on two bridges over the Albert Canal, one on the Maastricht-Tongres road near Vroenhaven, the other on the Maastricht-Hasselt road near Weldweselt. This was known to be a heavily defended area, so volunteers were called for from No. 12 Battle squadron. Five aircraft were despatched, and only one returned. Both bridges were reported to be hit, and the pilot and navigator of the leading aircraft (F/O Garland and Sgt Gray) were awarded posthumous V.Cs. The area was reported to be swarming with Messerschmitts. Twenty four Blenheims had been despatched to the Maastricht area as a diversion, and lost ten of their number, with little result from their bombing. They brought back photographs, however, which showed that the two road bridges and the railway bridge were broken. A further eighteen Blenheims attacked this area at dusk. Thirteen reported success, one was lost, and four brought their bombs back, being unable to locate the target.

A.H.B. Air Marshal Barratt signalled Bomber Command on May 13th,  
 II M/4/Ic "Received special message from General Georges, Commander-in-Chief of  
 App. A.73 the North East Front, congratulating crews of British bomber forces who successfully held up German advance yesterday from Maastricht, which definitely relieved situation".

On the afternoon of May 12th Battles had also attacked a bridge and roads near Bouillon and Bertrix. Two were lost on this operation out of nine. The survivors reported such large enemy forces in the area that a further attack was ordered. Six Battles were despatched with fighter cover, but only two returned. As most of the losses appeared to be from rifle, machine-gun and pom-pom fire from the ground, it had been suggested to the A.A.S.F. that the Battles should attack from a greater height. They believed, however, that light flak was effective up to the greatest height from which bombing could be carried out accurately. The Battles continued to bomb from between 100 and 1000 feet, an ideal height for the ground machine-gunner. A section which had attacked the bridge near Bouillon from 20 feet had suffered no loss, but the lesson of this operation was apparently unheeded at the time.

The French showed an equal appreciation of these attacks as of those near Maastricht. The Chief of the Air Staff, however, that evening urged upon Air Marshal Barratt economy in the use of the medium bombers. "I am concerned" he said, "at the heavy losses incurred by the medium-bombers; I must impress upon you that we cannot continue indefinitely at this rate of intensity." Night operations on May 12th were limited to those mentioned above in the Munchen-Gladbach area. This was due to a signal from Air Ministry to Bomber Command ordering minimum effort in the hope of a full-scale effort against the Ruhr being authorised the following night.

Owing to these prohibitive losses, the only daylight operation on May 13th was in Holland. At the urgent request of the French seventh army, which was retreating from its advanced positions,

seven Battles searched for a German tank force reported to be advancing south from Breda towards Antwerp. They located no German troops, but blocked the road junction at Boeimeer by bringing down a factory across it. For this they were thanked North B.A.F.F. by the French, and congratulated by the C-in-C, B.A.F.F. and O.R.B. the C.A.S.

Attacks on the night of May 13th were also limited. Six Hampdens were despatched, two attacking Aachen and one Eindhoven, and out of six Whitleys, despatched to interfere with bridge repairs at Maastricht and disorganise movement at Maeseyck, only two found a target. One claimed a direct hit on a railway bridge over the Hollandschdiep at Moerdijk, north of Breda.

On May 14th six Blenheims of No. 2 Group attacked the road and railway outside Breda, and brought back information of the enemy columns which the Battles had failed to locate the previous day. Twelve Hampdens were despatched that night to carry an attack in this area.

The major German break-through in the Sedan area had been recognised as the real threat to the whole Allied position by the evening of May 13th. In consequence, daylight bombing operations were organised for the 14th on the biggest scale of any day throughout the campaign. The first attack was by six Battles on pontoon bridges near Sedan, a hit on one bridge being claimed, a mile north of Villers. No Battles were lost, but one made a forced landing. A further attack on these bridges was carried out by four more Battles, also without loss. After several further projected raids had been cancelled during the morning, a series of attacks was organised for the afternoon. A message to the C.A.S. at 1405 hours indicated a grave deterioration in the situation in the Sedan area. The enemy bridgehead across the Meuse had been considerably enlarged. General Gamelin had requested maximum air assistance, and attacks were planned by waves of French and British bombers at three hourly intervals. Seventy-seven bombers of the A.A.S.F. were ordered, against bridges and columns near Sedan, of which some seventy-one took off.

This was the second wave, the French having carried out the first. Some forty aircraft were lost in this operation, a casualty rate of 56%. (The figure of losses given in various records varies slightly). Hits were claimed on three bridges at least, but further results cannot be ascertained. These operations, like those of the morning, were provided with some fighter cover.

Repetition of these attacks by French and British bombers could not be carried out as had been planned. The losses had been too high. But an attack by Blenheims of Bomber Command, planned for the evening, was carried out at about 1800 hours. Twenty eight Blenheims, with fighter cover, attacked troops on the Bouillon-Sedan road, and woods and river crossings. Five aircraft were missing, and two forced landed in France. During the day, therefore, forty-five aircraft at least had been lost out of one hundred and nine despatched by the R.A.F. against the Sedan advance. The German advance appears to have been delayed to some extent, but the ground forces failed to exploit their opportunity with sufficient force.

On the night of May 14th, in addition to the operation in the Breda area mentioned above, attacks were carried out on communications in the Maastricht area, Aachen and Munchen-

/Gladbach.

Gladbach. The aim was to relieve the pressure in the north and centre of the front. Wellingtons carried out the Maastricht and Aachen sorties, and Whitleys those to Munchen-Gladbach, all without loss. Hits were claimed on many of the targets detailed, but results cannot be accurately assessed, owing to the lack of German records for this period.

During May 14th the Germans had heavily bombed Rotterdam, causing many thousands of civilian casualties in the defenceless city. The Dutch government having joined the Queen in England, the Commander-in-Chief could no longer delay the inevitable surrender, which came into effect on May 15th. The whole country had been overrun except the province of Zeeland, where resistance continued for some days in South Beveland and the island of Walcheren.

Two important decisions were made on May 15th from the bomber point of view. The first was not to employ Battles by day except in dire emergency, owing to the losses they suffered in such actions. The losses of the previous day had made this imperative. The second decision was that of the War Cabinet to authorise the bombing of German Oil and other targets east of the Rhine, so that the long-prepared Ruhr plan could be put into effect. The result of these decisions will be seen below.

3. Splitting of the Allied Forces, May 15th to 21st. During May 15th the Germans began to exploit their break-through in the Sedan area. Their mobile armoured forces began to race for the coast to cut the Allied armies in two, and progressed forty miles in places. As a result the Allied forces remaining unbroken had to retire from their positions in order to avoid being out-flanked. Plans had been in preparation since May 13th for the retirement of the A.A.S.F. towards the South, and the enemy advance of May 15th resulted in the order being given to the more northerly wings to move. They began their retirement in the early hours of May 16th.

These movements of units, together with the decisions already noted, to restrict A.A.S.F. squadrons to night operations, and to begin the attack on the Ruhr, restricted air activity in support of the army to very small proportions. Only the Blenheims of No. 2 Group were now available for day operations. Twelve aircraft attacked communications in Dinant on the morning of May 15th. Useful information was obtained regarding enemy movements in the area, for the loss of two Blenheims and a third which forced landed in Belgium. Later in the day Montherme was attacked by No. 2 Group Blenheims, followed by four Blenheims of the A.A.S.F. One of the latter was lost, and the rest damaged owing probably to their low bombing tactics. The intention of these operations was to hold up the German forces crossing the Meuse. In the daylight operations on this day more adequate fighter cover was provided for the small number of bombers engaged, and aircraft missing were reduced to 14%, as compared with 41% on the previous day.

On the night of May 15th almost the whole of the heavy bomber effort was directed against the Ruhr, as is reported later. Only fourteen aircraft were detailed for close support, on communications at Breda, Turnhout, Aachen and Dinant. Twenty Battles of the A.A.S.F. were also despatched on their first night bombing operations. Their objectives were troops and petrol dumps on roads and in woods in the Sedan area. These were difficult to identify, and results claimed, as with the heavies, were negligible. However, all aircraft returned safely, and the night training accomplished by the Battles in their nickel sorties now stood them in good stead.

At first light on May 16th four Blenheims of A.A.S.F. attempted another attack on Montherme, which was covered in haze. Maastricht, Aachen and Munchen-Gladbach were again the chosen targets for the nine Whitleys spared for collaboration tasks that night.

On May 17th twelve Blenheims of No. 2 Group were despatched to rendezvous with fighters and attempt to block the German advance through Gembloux. On the way, however, they were attacked by numbers of Messerschmitt 109's, and only one survived. It is possible that the Germans had received early warning of this operation by means of a tapped telephone line. The R.A.F. component reconnaissance squadrons had been standing by for a bombing raid since the previous evening. They were eventually despatched to attack columns on the Le Cateau-Cambrai and St. Quentin-Peronne roads, one of which at least, turned out to be French. The situation was very confused and the R.A.F. Component received varying and contradictory reports from the French.

W.M. (40)  
125th Concls. The Prime Minister visited France on May 16th, and agreed that the heavy bombers should be used against the Meuse crossings. This could not be put into effect that night, but on May 17th and 18th approximately half the effort of the heavy squadrons was on these targets, the rest continuing the Ruhr attacks. Fifty-three aircraft were despatched on the night of the 17th. During the day of the 18th, the R.A.F. Component and No. 2 Group Blenheims, after various conflicting information, attempted to attack enemy columns. The R.A.F. Component squadrons and one squadron of No. 2 Group made an attack near Landrecies and Le Cateau, but the rest of the squadrons of No. 2 Group were sent home again, as the aerodrome at Poix was being evacuated by the time they arrived at it. A smaller number, twenty four Wellingtons and Whitleys, operated against the Meuse crossings on the night of the 18th. They attacked bridges and communications at Namur, Dimant, Ivoir-Anhee and Givet, as well as Gembloux further north. These targets were the same as those for the previous night. Damage to several of the bridges detailed was claimed on the two nights.

During the period May 16th-19th the A.A.S.F. and R.A.F. component had been retiring in considerable disorder. On May 17th it was decided to consolidate the remnants of the eight Battle squadrons into six, based in the South Champagne area, and to send the personnel of the two Blenheim squadrons of the A.A.S.F. home to England to refit, after handing over their remaining aircraft to the R.A.F. component. This was accomplished on May 18th and 19th. The R.A.F. component, which was retiring towards the coast of Boulogne was taken under Air Ministry control on May 19th, owing to the break-down of communications with B.A.F.F. During the morning the Blenheims and three Lysander squadrons were ordered to return to England.

The A.O.C.-in-C. of Bomber Command had protested on May 17th, as has been mentioned in the "Policy" section, against the use of his heavy bombers for direct support. Although they had been thus used for two nights on the Prime Minister's ruling, the effort devoted to the task was reduced, with the approval of the Air Staff. Starting with 50% on May 17th, it became 40% on the 18th and about 35% on May 19th.

The actual number which attacked collaboration targets on May 19th differs according to various reports, but appears to be twenty-eight aircraft. Twelve were detailed to drop incendiaries on forests near Fumay and Bouillon in addition to bombing bridges over the Brussels-Charleroi canal. These were the targets for the rest, together with railways, roads and troops. Only one

operation had been carried out during the day by the reformed Battle squadrons, which lost five out of thirty-three aircraft, in spite of fighter cover by twenty-six Hurricanes. As a result it was once more decided not to use medium bombers by day.

The serious threat of encirclement to the B.E.F. on May 20th again suspended this ruling, however. Two Blenheim squadrons operated twice during the day against concentrations of enemy troops approaching Arras. In each case, the first squadron found a good target of closely-packed enemy vehicles, and the second could find no large concentrations.

Owing to the critical situation, the oil plan was suspended, and the heavy bomber effort was devoted that night to attack on communications close behind the enemy forces. Twenty Witleys and eighteen Hampdens were despatched against bridges over the Oise and Sambre, and thirty-two Wellingtons against troop movements in the Cambrai-St. Quentin area. In addition fifteen out of eighteen Blenheims despatched succeeded in attacking road and rail targets in front of the B.E.F. positions. Thirty-eight Battles of the A.A.S.F. attacked the Meuse crossings late in the night. A total of 130 sorties was achieved with a loss of only five aircraft.

On May 21st the Germans reached the Channel coast, and completed the splitting of the Allied forces. The Blenheims of No. 2 Group were used in four attacks during the day against enemy troops approaching Abbeville and Boulogne. Fifty-eight sorties in all were flown, all finding crowded roads, on which it was difficult to distinguish enemy targets from refugees. Owing to the adequate fighter-cover provided, only two Blenheims were lost. One was unfortunately shot down by a Spitfire patrol.

Night operations were confined to army support targets for the second successive night. The Meuse crossings were again attacked, by both Battles and Wellingtons, several hits being claimed. Wellingtons, Witleys and Hampdens, about 96 aircraft, carried out a large scale attack upon the German railway system in the area of Aachen, Duren, Munchen-Gladbach, Julich and Rheydt. A large number of these sorties claimed to have caused damage to railways, including hits on five trains. Six bomber Command aircraft were missing from all operations, 137 sorties in all, during the night.

4. Encirclement in the North, May 22nd to 26th. Now that the Germans had cut the Allied forces in two, they proceeded on May 22nd to press northwards in order to finish off the forces encircled on the Franco-Belgian frontier. For a day or so more some Allied quarters thought that a counter-attack might still enable a junction to be made between the two forces. General Weygand had a plan for this, the immediate execution of which was urged by the Prime Minister on May 23rd. The rapidity with which the Germans brought up reinforcements and opened new attacks on weak sectors of the Allied lines rendered this impossible, however.

The bomber force, which attempted to assist the Allied forces by day in these straits, was much hampered by lack of information, or delay in receiving it. About twelve Battles were despatched early on May 22nd to search for and attack tanks in the Amiens-Abbeville-Arras area. One tank was claimed as hit, whilst three aircraft forced landed and one was missing. In the afternoon and evening, in addition to some Lysander sorties, No. 2 Group carried out four operations. Fifty-eight Blenheims in all were engaged, losing three of their number. They were directed against various enemy mechanised forces reported between the two Allied fronts. In addition to a number of attacks, these sorties supplied much information regarding enemy movements. This resulted in attempts

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to alter the instructions to the second and third Blenheim formations despatched, after they were in the air. Some received the orders to alter their area of attack, and others did not. It made little difference, however, as it was largely a matter of luck whether they came upon a worth while concentration of enemy vehicles or not.

By night, the efforts of both the A.A.S.F. and Bomber Command were again devoted to an attack on the Meuse crossings and their lines of approach. The weather restricted the effort considerably, but some hits were claimed.

The day effort of May 23rd was once more of value from the reconnaissance point of view, and targets were detailed accordingly. Forces were seen approaching the Cailais-Boulogne area, and attempts made to bomb them. The final attempt by three Blenheims in the evening was frustrated by the fire of British destroyers off the coast. During the night a large scale of attack was carried out against the Meuse crossings and against the enemy lines of communication on both sides of the Meuse. Battles went as far as Libramont and Bingen. Forty-nine Wellingtons attacked the main communication centres west of the Upper Meuse, such as Philippeville and Charleroi. Twenty-four Whitleys attacked similar communications, and fifty-one Hampdens were despatched against railways along the Rhine and in Eastern Holland. Four aircraft out of about 161 were lost.

Nine Blenheims on offensive reconnaissance early on May 24th found some armoured forces near St. Inglevort. As a result, three more attacks, by twelve Blenheims each time, were put in against this area during the morning and afternoon. The first found a large concentration, the second none, and the third a well dispersed force of A.F.V's. In the afternoon enemy columns were found to have by-passed Calais, and three Lysanders, followed later by twenty-four Blenheims of No. 2 Group, were despatched to attack them. Two Blenheims were lost during the day.

The night programme, arranged, like that of the previous night, in response to French requests, was directed once more at communications. Forty-one Battles of the A.A.S.F., as well as Bomber Command aircraft, attacked Meuse crossings and centres of communication to east and west of them. No aircraft were lost from the A.A.S.F. or the fifty-nine Bomber Command sorties.

On May 25th further efforts were made to delay the enemy forces approaching the Dunkirk area. Two bridges were attacked by Blenheims, and other pontoon bridges later in response to a Belgian request, in the Menin-Courtrai areas. By night the operations were designed on similar lines to the two previous nights, on communications over a wide area, including railways near the Rhine. Bad weather restricted these operations, as well as an attempt to recommence the attack of oil targets in the Ruhr.

As no large enemy concentrations could be located on May 26th, day bombing was confined to an operation to assist the Belgian forces near Courtrai, and an attack on aerodromes in the St. Pol area. As there was no activity on these, the aircraft attacked vehicles and troops instead. Eighteen Blenheims were employed on each of these operations without loss. On that night the attack on enemy communications continued, as well as ten sorties against aerodromes reported to be in use by the enemy.

5. Evacuation from Dunkirk, May 27th to June 4th. Calais was cut off, and Dunkirk was the only way of escape open to the encircled Allied forces by May 26th. "Operation Dynamo", the evacuation from that port, began during the night of May 26th/27th. During the



27th the Belgian line collapsed under continuous air and ground attack. It was learned late in the day that King Leopold had requested an armistice as from midnight. Water and ammunition supplies were dropped early on the 27th to the besieged garrison of Calais, before it was learned that they had been compelled to surrender the previous evening.

The day bombing on May 27th was directed to slowing down the German advance from the North-east, where the Belgian line had been, and from the South-west, towards the encircled Allied positions. Twelve Blenheims attacked roads near Courtrai, and four operations were carried out in the St. Omer area, by thirty-six Blenheims in all, under cloud cover. Plenty of targets were found, A.F.V.'s, batteries and a troop train. Two Blenheims were lost.

Operations by night were again carried out in concert with the French. Thirty-six Battles attacked aerodromes, dumps and communications in the Ardennes, supported by ten Hampdens. Only three of these, however, claimed to have located an objective. Twenty-six Wellingtons attacked roads leading to the Courtrai sector, and nine those to the St. Omer sector. Movements could not be seen, however; so the effect is doubtful. Railways leading from the Rhine to the battle area were attacked by thirteen Hampdens, whilst Whitleys were sent to the Ruhr marshalling yards. Oil targets were also chosen once more for this night.

The two areas of daylight attack during May 28th were again Courtrai and St. Omer. The latter was now considered the more important, and four formations of Blenheims were despatched during the day, thirty-nine aircraft in all, to attack A.F.V.'s and columns in this area. Useful information of enemy progress was obtained. Movement was seen in the Courtrai area early, but when nine Blenheims were despatched, they could find no targets, so bombed roads instead.

On the night of May 28th Meuse crossings and Belgian railway yards on the German reinforcement route were the objectives of thirteen Battles and fourteen Whitleys. Thirty-four Wellingtons were detailed to the immediate support of the Dunkirk area by interfering with enemy movements at St. Omer, Aire, Roulers and Menin. Bad weather conditions interfered with all these operations, but no aircraft were lost.

The B.E.F., as well as many of the surviving French units, were within the Dunkirk defensive perimeter by May 29th, and the pace of the evacuation was considerably speeded up. Lysanders did useful reconnaissance work on both flanks, and offensive reconnaissances were carried out at first light by two formations of nine Blenheims each. One covered the eastern approaches, but low cloud interfered with observation. The other attacked railways and roads to the south-west of the Dunkirk positions. Three more operations by nine Blenheims were carried out against the easterly area, and one over the south-westerly area by six Blenheims. The former all found good targets, and vehicles were seen by the third formation still blazing from a previous attack. Those in the other area were less successful. No Blenheims were lost from any of these operations.

The weather, as well as the moon, was unfavourable for bombing on the night of the 29th. About eight Battles attacked communications at Charleville, and fifteen Wellingtons the same area as the previous night, St. Omer and other places close to the Dunkirk perimeter. Three out of fifteen Wellingtons were missing, and one crashed on landing.

On May 30th weather conditions continued to preclude bombing until the evening. An unsuccessful attempt was made during the morning to hold up the German advance from the east, which was thought to threaten the beaches. Forty-eight Blenheims were despatched to this area in the late afternoon, and many of them found mechanised targets to bomb east of Nieuport. Nine Blenheims were later despatched to attack a movement to the north reported near Soex, but very little was found.

Weather again impeded A.A.S.F. operations, which had been projected on similar targets to the previous night, and seriously interfered with the operations of twenty-eight Wellingtons against road objectives in the enemy's forward area. The Hampdens were employed against oil refineries at Hamburg.

During May 31st, a critical day when the Germans had brought guns to bear on the beaches from which the evacuation was being effected, and were heavily attacking the perimeter, very successful sorties were carried out by the Blenheims, assisted by Albacores and Skuas of the Fleet Air Arm. Eight operations were carried out during the day by sixty-five Blenheims, ten Albacores and nine Skuas. All of these found profitable targets on the eastern or southern perimeters of the Dunkirk defences. For once there is a report of their effect from an Army Commander as they were now operating very close to the British troops. This states that after the third heavy enemy attack within twelve hours had with difficulty been held, and heavy enemy reinforcements could be seen coming up, some R.A.F. bombers appeared. The effect of their bombing "was instantaneous and decisive - all movement of enemy reserves stopped; many of the forward German troops turned and fled, suffering severely from the fire of our machine-guns."

Report by O.C.  
12th Infantry  
Brigade  
31.5.40

On the night of May 31st only thirty-three Battles and thirty Wellingtons operated, and weather hampered even the effort of these. The Battles were directed against communications on the Rhine and Meuse and in the Ardennes. The Wellingtons attacked objectives around Soex and Nieuport, the points of greatest enemy pressure upon the Dunkirk positions from South and East respectively.

The evacuation continued fast on June 1st, in the face of artillery fire and heavy air attack. These factors resulted in a decision to evacuate by night only from henceforth. The Blenheims effort was again devoted entirely to hampering German attacks upon Dunkirk. Enemy M.T. on the roads leading to Bergues and Furnes were attacked at 0600, 0700, 0800 and in the afternoon by a total of thirty-six aircraft. And in the evening, following a report of an enemy concentration preparing to attack from there, the village of Hondshoote was bombed by eighteen Blenheims.

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The Blenheims of No.2 Group had been operating for some time at an intensity which could not be indefinitely maintained. On May 30th Air Ministry ordered a restriction in their effort; (1) and a return by the heavy bombers to their strategic role. This instruction resulted in a small effort

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(1) See A.H.B. Narrative on "Campaign in France and the Low Countries."

in support of the Dunkirk operation on the night of June 1st, most of the bomber force being employed against oil targets and marshalling yards in Germany. Sixteen Wellingtons only continued their harassing attacks upon enemy positions around Dunkirk, at Rexpoede, Soex and Furnes.

In consequence of the decision to evacuate only by night, there was little activity on June 2nd. The reduced Dunkirk perimeter defences successfully resisted enemy pressure. Twenty-four Blenheims were employed to keep the batteries - which now covered the seaward approaches - occupied during the dawn hours of activity. At 2330 hours the S.N.O. Dunkirk was able to signal Vice Admiral, Dover, "B.E.F. evacuated".

Sixteen Wellingtons were again employed in attacking the guns and roads around Dunkirk that night, being ordered to stay in the area and bomb the gun flashes, whilst seventeen Battles attacked aerodromes in use by the enemy. The rest of the bomber effort was again used against targets in Germany.

The evacuation of the remaining French troops continued during the nights of June 2nd and 3rd. Eighteen Blenheims again kept the German batteries occupied during the early morning of June 3rd, whilst twelve Wellingtons attacked the batteries and enemy positions during the following night. The rest of the effort was directed against Germany.

On June 4th "Operation Dynamo" was officially ended, as only a few French troops remained, without ammunition or possibility of further resistance. During the whole operation from May 27th to June 4th 316,663 Allied troops had been transported to England. 186,587 were British and 123,095 French, apart from the 6,891 wounded.

The contribution of Bomber Command cannot be assessed accurately in this period. Various army and naval commanders severely criticised the R.A.F. for the apparent smallness of its contribution, especially on the fighter side. These officers cannot be blamed, owing to the disparity between the R.A.F. and the Luftwaffe at that time, for considering the effort small. They did not see or understand the wider sphere in which the R.A.F. was operating, behind the enemy lines and on all sides of the evacuation area. There are several reports, however, of the value of the bomber support supplied, which have a very different tenor. One of the chief critics, the Vice Admiral in charge of the operation, testifies to the value of the attacks on enemy batteries. In spite of much disorganisation and wasted effort resulting from incomplete intelligence information, the bomber co-operation in this period achieved some results which were of vital use in themselves, and taught many lessons useful to the future Tactical Air Force.

Report on  
operation  
Dynamo -  
V.A., Dover

6. The Southern Sector, May 22nd to June 4th. Whilst the Germans were occupied in attempting to reduce the Allied forces encircled in the Dunkirk area, they left the southern sector alone. The Allies, after hoping for a time to counter-attack and reunite with the forces cut off, eventually found this impossible and merely endeavoured to construct a defensive line along the Somme-Aisne rivers. A few weak German penetrations were driven back, but the Germans brought up infantry reinforcements and held bridgeheads south of the rivers throughout the period of the Dunkirk operations.

The maximum efforts of the bomber forces during this period were devoted to relieving the pressure upon the forces encircled,

and none could be spared for the southern front. The A.A.S.F. units which were now with the Southern forces south of the Marne did their best to assist both sectors by attacks upon the enemy supply lines across the Meuse and in the Ardennes. As the enemy drive was towards the north, these operations were calculated to assist the northern forces rather than the southern and have been already dealt with. The same is true of Bomber Commands' operations against the same and more distant targets on the German supply routes.

As far as the bomber forces are concerned, therefore, the Allied forces defending the Somme-Aisne line from May 22nd to June 4th were given no direct and negligible indirect assistance. It is only after the completion of the Dunkirk evacuation that attention swung to the south, with the resumption of German attacks in that direction.



## SECTION IV

CLOSE SUPPORT OPERATIONS, JUNE 5th to 18th

German attack to the South, June 5th to 12th. The new German offensive against the Franco-British forces on the Somme-Aisne line began on June 5th. On the first day the Allied line was pierced at a number of points by heavy armoured forces, which penetrated to a depth of ten to fifteen miles in some sectors.

Eleven Battles of the A.A.S.F. were the first to operate against this new drive at about 1930 hours that evening. They bombed the Peronne-Roye and Amiens-Montdidier roads. Twenty-four Blenheims from England operated soon after against enemy transport in the area behind Peronne, from which a force of four hundred panzers were said to be operating. A further eleven Battles operated that night against roads and an aerodrome at Givet, Hirson and Guise. Twenty-six Wellingtons attacked communications at Cambrai and Le Cateau and twenty-two Whitleys at Bapaume and Doullens, in an attempt to delay German reinforcements to the Somme and Aisne. Further heavy bombers operated against communications and oil in Germany.

The British bombing effort to relieve pressure on the Allied forces continued by day and night on June 6th. Nine Battles in the Peronne sector, and twelve Blenheims in the morning, followed by twenty-four in the evening, in the area of Abbeville and St. Valery, took part. The latter were attempting to assist the hard-pressed 51st Division, which was forced back to the line of the Bresle river during the day. Five Blenheims were lost on the morning attack. Seventeen Battles, twenty-four Wellingtons and four Whitleys were engaged that night in attacking convoys, railways and aerodromes immediately behind the enemy lines.

On June 7th the Germans made deep penetrations towards Rouen and Beauvais. All the R.A.F. bombing operations of the day, by fifty-four Blenheims and twenty-two Battles, were devoted to attacking the German forces engaged on this drive. Large numbers of German tanks, as well as quantities of M.T. and troop concentrations were found and attacked in the area of the German advance between Amiens and Abbeville, as far south as Blangy, Hornoy and Poix. This German drive was now threatening to cut off the 51st division, which was isolated between it and the sea.

Twenty-four Wellingtons and twelve Battles attacked the Somme crossings from St. Valery to Amiens that night, claiming several bridges. Eight Battles and six Wellingtons were engaged further east in attacking Laon, and woods in which German armoured forces were reported to be sheltering. The aim was to set fire to the woods.

On June 8th the Germans continued to deepen their penetrations. The 51st Division was now in serious danger of being cut off, as it was retiring in the direction of Le Havre peninsula. It was estimated that Le Havre could not be reached before June 13th, and meanwhile German armoured forces were threatening the open right flank. So that the division was in danger of being pinned in the Dieppe-Fecamp area, from which evacuation was not practicable. The rest of the remaining British forces, like the French, crossed the Seine by June 9th, and tried to hold a line along it.

The restriction imposed on May 30th on the full use of the Blenheims was now cancelled. All the day bomber operations on June

8th and 9th were directed against the German break-through between Abbeville and Amiens. Fifty-nine Blenheims and twenty-three Battles were despatched on the 8th, all finding large numbers of enemy tanks, M.T. and troops to attack in the area assigned. Five Blenheims and four Battles were lost during the day. As a result no Battles operated the next day, but forty-eight Blenheims, for the loss of three, carried on the attack in the same area. Enemy troops were now less numerous, as they had moved further to the south-west.

During the night of June 8th the bomber effort was devoted to close support. Attacks upon the same German penetration, designed principally to block the Somme crossings, were made by some fifty Battles, Wellingtons and Hampdens, hits on several bridges being claimed. The rest of the effort was directed against the German penetration across the Aisne in the Soissons area. Nineteen Battles, Whitleys and Wellingtons attacked communications and concentrations, mainly by setting fire to woods in the Laon, Hirson and Chimay areas. And about fifty aircraft attacked railway targets in this area and back into Germany as far as Aachen, Duren and Euskirchen.

The same three types of targets were attacked on the night of June 9th. Ten Battles and about twenty-one Whitleys again attacked the Somme crossings, claiming hits on bridges at St. Valery, Abbeville and Piequigny. Nine Battles, thirty Wellingtons and twenty-one Whitleys operated against communications and woods behind the German thrust at Soissons, causing many explosions and fires. And thirty-six Hampdens were directed against German railways just west of the Rhine. The weather impeded operations in this area.

On June 10th the Germans cut in behind the 51st Division, which, with the French IXth Corps, were now between Dieppe and St. Valery-en-Caux, and secured the bridges on the river Durdent, on their road to Le Havre. Preparations were made to evacuate them from St. Valery, since Dieppe was blocked. It was an unpromising piece of coast line, but a few wounded were taken off there the following night. Further south German forces crossed the Seine, although the bridges were supposed all to be destroyed. The French government left Paris and retreated to Tours, as the German advances continued east of the city at many points as well. The same day Italy declared war on the Allies.

All the daylight bombing operations of the A.A.S.F. and Bomber Command were again directed against the German thrust near Rouen. Targets had now moved nearer to the Seine, and in the afternoon to the Seine itself. Twelve Blenheims and twelve Battles in the morning, and thirty-three Blenheims and twelve Battles in the afternoon found numerous suitable objectives to bomb in this area. Columns, concentrations, and surviving bridges were attacked for the loss of two Battles, and another seriously damaged by a Hurricane.

At night, fifteen Battles attacked communications on the Seine, and eighteen Whitleys attempted the same a little further back, but many were hindered by bad visibility. Haze also interfered with an operation by eighteen Wellingtons against similar targets in the Laon-Soissons area, and by twenty-three Hampdens and seven Battles on the Meuse, in the Ardennes and further back in Germany.

By June 11th the Germans were pressing hard upon the perimeter of St. Valery-en-Caux. The order was given at 2000 hours for the 51st Division to destroy their large equipment and fall back into the town, to be evacuated from there during

the night. Fog prevented the ships lying outside from entering, however, and so at 1039 hours the following morning General Fortune surrendered, and the bulk of the 51st (Highland) Division (some 12,000 men) went into captivity for the rest of the war. A few had reached Le Havre and still fewer were taken off from beaches near St. Valery under murderous fire.

Meanwhile on the Seine below Paris the Germans merely enlarged their bridgeheads. To the east of Paris, however, two thrusts towards Paris were pushing the French forces back, one between the rivers Oise and Ourcq and the other across the Marne from Chateau Thierry to Dormans. Further East again a strong German armoured attack was driving towards Chalons-sur-Marne, after overrunning Rheims. The remaining British forces, including the R.A.F. units, were retiring in the direction of Le Mans, where the 52nd Division was beginning to concentrate.

Bombing sorties on June 11th were again directed at the German forces in the lower Seine area. The first operation, by twelve Battles, was hampered by Haze. Six Battles and thirty-three Blenheims were despatched in the afternoon, followed by sixteen further Battles. Woods and troop movements were attacked, and three Blenheims failed to return. In the evening nine Blenheims attacked a wood near Les Andelys, but ran into enemy fighters and lost three of their number, with four more damaged. Six Battles and later nine Blenheims patrolled roads leading to Le Havre, but found little activity there. The German forces were still concentrating upon the St. Valery area.

An attempt to maintain the attack on the Seine area by night was seriously curtailed by bad weather. Only four Battles succeeded in bombing. Ten Whitleys attacked communications further back between the Seine and Somme. Eighteen Wellingtons and twenty-eight Hampdens were despatched to impede and harass the German thrust towards the Marne.

2. The Fall of France, June 12th to 18th. June 12th saw the Germans 20 miles only from Paris to the northward, and threatening it with encirclement by thrusts towards the south, fifty miles to east and west of the city. Across the Seine they had penetrated as far as Evreux, and across the Marne to the south of Chateau Thierry. The allied troops in Le Havre were evacuated to Cherbourg during the day and the night following.

Most of the bombing by day was again in the Lower Seine area. Roads and woods were attacked in the morning by nine Battles and eighteen Blenheims, of which one was lost; bridges and a convoy, as well as woods, in the afternoon by twenty-four Battles and fifteen Blenheims. Some of the Battles were frustrated by poor visibility. In response to a French request, an attack was made in the morning by twelve Battles upon three bridges over the Oise, which was reported as completely successful. One Battle was missing, and another forced landed. In the afternoon, the surrender of the 51st Division at 1030 not being yet known, twelve Blenheims were despatched to bomb a German battery which covered the beaches of St. Valery-en-Caux. Two aircraft were missing from this operation.

The Seine area was again the target at night for fifteen Battles, whilst eight Whitleys were directed against communications leading to it. Thirty Hampdens were ordered to attack communications around the Ardennes.

165th Concls. W.M. (40) During June 13th the Germans closed in upon Paris from the West, North and East. They were little more than ten miles away to the North by the evening. The Prime Minister, who had flown to France



during the day to confer with the French premier, told the Cabinet that M. Reynaud had asked for France to be released from her obligation not to treat for peace separately. General Weygand was in favour of an immediate cessation of hostilities.

Air Marshal Barratt, C-in-C of the B.A.F.F. was instructed during the evening to prepare to retire in the direction of Nantes or Bordeaux in the event of a decisive break-through. The French decision during the day to withdraw to the south of Paris, and to fold back the left wing from Rouen to Argentan to protect the coast-line, left the R.A.F. units in a dangerous position. They were therefore authorised on June 14th, like the B.E.F., to withdraw upon the ports of Cherbourg, Brest, St. Nazaire and St. Malo.

In an attempt to boost French morale the Prime Minister promised maximum effort in the air on June 13th. The assistance of 60 Blenheims and 6 Battle squadrons during the day and 182 heavy bombers at night was mentioned. In fact all squadrons operated at full intensity, and produced sorties very little short of those promised. There were 48 Blenheim and 54 Battle sorties by day, and 164 heavy bomber sorties by night, all directed at targets close to the Battle front, and of immediate assistance to the ground forces.

Operations in the morning were in the area between Evreux and Louviers and the river Seine. Sixteen Battles and fifteen Blenheims were sent to attack German movements reported there, four Battles being lost. In another attack by eighteen Blenheims upon this area in the afternoon, one Blenheim was shot down by an Me.109, and poor visibility prevented others from bombing.

In the afternoon and evening the principal operations were concentrated upon the Forêt de Gault, near Montmirail to the east of Paris. Reports said that 500 to 1,000 tanks were sheltering in it, and twelve Battles found it in fact crowded with M.T. Numerous enemy aircraft were seen, and one Battle was lost. All available Battles, numbering twenty-six, and fifteen Blenheims were then sent to this target, most of which found good objectives. Six Battles and four Blenheims were missing from this attack, and one further Blenheim had to be forced land in France.

The major effort put out that night by the heavy bombers to assist the land forces was in the Seine and Marne areas of German penetration, and on communications north of Paris and as far east as the Ardennes. Thirty-four Wellingtons and ten Hampdens were directed against the lower Seine battle area and its communications from Vernon to Gournay and Forges-les-Eaux. A wide area to the north and east of Paris was covered by the rest of the sorties. These included eight Whitleys and eight Hampdens against Rheims, six Whitleys and eight Hampdens against Laon, and others against such targets as Beauvais, Soissons, Château-Thierry and Dormans, and a number of forests west of the Ardennes.

By the morning of June 14th General Weygand told General Sir Alan Brooke, the British C-in-C., that organised resistance by the French had come to an end. During the day the Germans occupied Paris and opened a frontal assault upon the Maginot line. This was for the moment repulsed as was the Italian pressure in the south-east of France. The B.E.F. and B.A.F.F. were authorised to retire on the ports, as stated above, and to act independently of the French. Air Marshal Barratt decided to evacuate the bomber squadrons to England immediately,

so that they could operate from there, and relieve the congestion on the remaining aerodromes. As a result the Battle squadrons flew to England on June 15th.

Before their departure the Battles carried out four operations on June 14th and one on the morning of the 15th, all against the Evreux area, in an effort to delay the German drive in the direction of the British forces. Bad weather interfered with the first operation by ten Battles, as well as one by eighteen Blenheims soon after. In the afternoon two Battles found German fighters on an aerodrome near Evreux, and attacked them. Later nine Battles and eighteen Blenheims were over the area again. Several were lost, and though some targets were found, bad weather seriously hampered the operation. Twelve Battles, of which two were lost, attacked the area again in the evening, and twenty-four Blenheims made a successful attack against Merville aerodrome, which had been reported by fighters as covered with enemy aircraft.

On the night of June 14th bad weather restricted operations in the battle area. Only five Whitleys made attacks on the Seine and Marne communications, the majority of those detailed being cancelled or recalled. Five more attacked French railway yards on the Oise, three at Fagniers and two at Hirson. In view of the German concentrations in the Black Forest area facing the Maginot Line, a special operation was carried out in order to set fire to the forest. Twenty-four Wellingtons took part and caused fires and explosions, whose result cannot be assessed.

The single operation carried out by the Battles on June 15th before their departure for England, was again in the Evreux area. Twelve Battles attacked M.T. and trains, losing two of their number, in the face of heavy A.A. fire. Twelve Blenheims were despatched during the morning and afternoon to the same area, with orders to use cloud cover for protection. As cloud was insufficient they turned back. Bad weather caused all night operations to be cancelled, except those against Italy from the south of France.

During June 15th to 18th the evacuation of the remaining British forces proceeded from Cherbourg, St. Malo, Brest, St. Nazaire and Nantes. M. Reynaud resigned on the evening of June 16th to make way for Marshal Pétain, who had for some time urged an armistice. On June 17th the Marshal asked the Germans for terms, and the Cabinet ordered complete evacuation of all remaining British forces in France.

No bombing was carried out on June 16th by day or night except that by the "Haddock" force against Italy. The Battles had already left France, and bad weather precluded operations from England. The same applies to day bombing operations on June 17th. The night bombers on June 17th reverted to the attack upon oil targets and communications in Germany.

June 18th saw the last British troops leave France, from St. Nazaire, Nantes and Cherbourg. They were unmolested by the enemy at the two former places, although there were many alarms and much confusion. The Germans penetrated the Cherbourg peninsula, however, by the morning of June 18th. Consequently bomber assistance was called for to hold them up. Six Blenheims were despatched in the afternoon, five of which attacked light German transport approaching Cherbourg, and caused some damage and confusion. The evacuation was completed without serious hindrance by 1600 hours.



SECTION VSTRATEGICAL BOMBING, MAY 15th to JUNE 18th, 1940

See Sec.  
II/(2)

General. During the course of the swift German advance through the Netherlands and France the strategical bombing effort was completely over-shadowed by the urgent requirements of the land campaign. Whenever an attempt was made to use the bombing force for the former purpose, the necessities of the land forces recalled it to a tactical role. The decision to start the strategical bombing campaign was taken on May 15th by the Cabinet. After five days, however, it was suspended, apart from small harassing operations, until June 1st. The campaign was then carried on for a week, and again suspended until the end of the struggle on land, on June 17th/18th.

The plans adopted for strategical bombing, which have been dealt with in the "Policy" section, provided for the attack of oil plants, and marshalling yards, principally in the Ruhr. Since this area was immediately behind the land battle, and contained the most important lines of communication to it, this was considered to be the most effective and economical use for the night bomber force. It would contribute to the dislocation of the German war potential at the same time as hindering the advance of the German forces.

In addition to Plan W.A. 4(c), (attack of Marshalling Yards) and Plan W.A. 6 (attack upon Oil Plants), the attack upon Italian industry was initiated during this period. This section is therefore divided into these three sub-sections, and a fourth to cover the attacks made upon other types of target, specified as alternatives to the main objectives.

The small scope of operations of this type is shown by the following figures of the numbers engaged on those nights when the largest effort was expended upon them:-

May 15th	96 Sorties
" 17th	78 "
" 19th	48 "
June 1st	53 "
" 3rd	130 "
" 4th	57 "
" 5th	34 "
" 11th	36 Sorties against Italy
" 17th	119 "

The only means of judging the results of the strategic bombing at this period from German records consist of an assessment by Luftgaus XII/XIII of the bombing in their area, WIESBADEN-NUREMBURG, which comprised most of south-west Germany. For May this shows a total of 276 H.E. bombs and 454 incendiaries reported. One person was killed and seven wounded. 60% of these bombs dropped in open country, 25% on communication objectives, 5% each on military objectives and residential areas, 3% on aerodromes and 2% on industrial objectives. Penetrations of this area by 78 aircraft in daylight and by 57 at night were reported during the month.

The figures for June were 6 day penetrations and 221 by night. 1284 H.E. and 1199 incendiaries were notified, 26 people being killed and 48 wounded. Of these 70% were in open country,

18% in residential areas, 3.5% on industrial objectives, 3% on communications, 2% on harbours and waterways, 1% on aerodromes, and .5% on military objectives (see Appendix W).

2. Operations against Oil Targets. The first strategical bombing operation of the war against German objectives on May 15th/16th included seventy-eight sorties directed against oil objectives. Of these, five claimed to have hit Duisburg and five Gelsenkirchen, four each Kamen, Wanne-Eickel and Dortmund, and fifteen other oil objectives. Most of the others which found a target bombed railway objectives. Results reported against the oil targets were quite satisfactory. The Fischer-Tropsch plant at Homberg was said to have blown up violently, the plants at Wanne-Eickel, Dortmund and Castrop-Rauxel to have caught fire or exploded. It is unfortunately impossible, however, to confirm or otherwise the claims made, as German records for this period are for the most part unobtainable. Where they exist, they usually lack the necessary precision and detail to compare with British reports.

On May 16th/17th a mere harassing scale of attack was despatched against oil targets. Six Wellingtons were detailed for the plants at Bottrop and Gelsenkirchen, and six Hampdens for those at Wanne-Eickel and Castrop Rauxel. Only three of each claimed to have found their objectives, and one Hampden crashed in France.

The next night, May 17th, was more successful as far as oil targets were concerned. Forty-eight Hampdens and twenty-four Whitleys were sent to attack refineries at Hamburg and Bremen respectively. All but four or five in each case claimed to have located their targets and a number of oil tank explosions and fires were reported. According to a report from intelligence sources oil refineries were fired, two barracks, one of them full of engineers, and two merchant ships, were destroyed, and a ship-building firm connected with Blohm and Voss was damaged. The report stated that the bombing of Hamburg terrified the population, who had been told that the British could not reach the town. It also mentioned considerable damage to the harbour and nearby houses. Six Wellingtons which were directed to harass the marshalling yards at Koln, Wedau and Vohwinkel could not find their primary targets. Five of them claimed to have attacked their secondary oil targets in the Ruhr.

On May 18th/19th, twenty-four Whitleys were sent to attack the oil refinery at Hanover-Misburg. Fires and explosions were again reported, but two aircraft were missing. One of these was shot down by an Me.110 over the sea on the outward journey, and the Me.110 was claimed as destroyed in its turn.

In view of the good moonlight conditions (full moon was on the 21st), a bigger effort was put on to oil targets on the night of May 19th. Twelve Whitleys were sent to the synthetic oil plant at Gelsenkirchen. Few found it, however, although one claimed to have hit the plant at Duisburg, which was a secondary objective. Thirty-six Hampdens were detailed for the refinery at Salzbergen. Twenty-seven of these claimed successful attacks. The difference between the success of these two operations was due to the industrial haze of the Ruhr obscuring Gelsenkirchen whilst Salzbergen was clear of it. This haze usually made Ruhr targets more difficult to identify than those outside it. The heavy defences in the Ruhr were also an adverse factor, being continuous over a wide area. This was illustrated on this night by the loss of two Whitleys, whilst all the Hampdens returned safely.

B.C. 540  
App. D.725

Operations against German oil plants were suspended from May 20th to 25th in favour of targets of more immediate value to the armies. On May 22nd, however, the C-in-C detailed thirty-six Hampdens to attack the synthetic oil plant at Leuna, apparently without Air Ministry authority. The operation was cancelled due to the weather report, but one aircraft had taken off, and claimed to have hit the power station at the plant, and destroyed a chimney.

On May 25th/26th eleven Whitleys were sent to attack the refineries at Emmerich, Monheim and Reisholz. The weather was very bad and only five claimed to have found their primary objectives, although some spent a long time searching with the aid of flares.

The next attack on German oil objectives was on the night of May 27th, twenty-four Hampdens were despatched to attack refineries at Hamburg and Bremen, six of which claimed success, including direct hits and fires. On May 30th another refinery at Hamburg was detailed, but only six out of the eighteen Hampdens despatched could locate their target once again, owing to cloud. These six bombed on E.T.A. and the concentration of searchlights, which gave the position of the city.

On June 1st the major effort of the night bombers was intended to be against oil and communication targets in Germany, including plants and refineries at Homberg, Frankfurt, Hamburg and Ostermoor. Owing to adverse weather conditions, however, the majority of those despatched returned with their bombs. Ostermoor was the only oil target actually attacked by one Hampden, twenty-five of which, in addition to fourteen Whitleys, took off against these objectives.

The attack upon oil was continued on June 2nd/3rd, twelve Whitleys being directed against the synthetic plant at Homberg. Seven claimed success against their primary target.

On June 3rd/4th the biggest effort yet to be detailed was directed against oil, with considerable success. One hundred and thirty sorties were despatched against refineries and synthetic plants in the Ruhr, and oil stocks at Frankfurt. Many direct hits were claimed, resulting in fires and explosions. Two-thirds of the aircraft claimed to have found their primary objectives whilst others bombed alternative railway targets. A report received through the air attaché Belgrade said that at Dusseldorf one oil, one chemical and two margarine factories had been burnt out, as well as the oil factory at Emmerich.

Signal T.38  
of 26/6/40

The heavy-scale attack on oil was continued on the night of June 4th by fifty-seven aircraft. There were again many claims to have secured hits, eleven on Monheim, ten on Frankfurt, and others on Gelsenkirchen, Homberg and Reisholz. On the following night thirty-four aircraft were directed against the oil refineries at Schula and Ostermoor. Twenty-six claimed to have attacked the former, and two the latter.

Only eighteen Hampdens carried on the oil campaign on June 6th/7th against targets at Hamburg and Ostermoor. Haze prevented clear observation, and results claimed were not impressive. The above report, however, mentions refineries burnt out at Rheydt. If this was true, it must have been accomplished by one of the aircraft directed against the marshalling yard at that place. The scale of the attack on oil was still reduced the following night, June 7th, fourteen out of twenty-four aircraft reporting attacks on their primary target, the refinery at Hanover-Misburg.

From June 8th until the 17th the oil campaign was once more

/suspended

suspended in favour of short term operations. With the end of the French campaign on that day it could be resumed, and a large scale of effort was detailed for the night of June 17th. Out of one hundred and two aircraft despatched against these targets, twenty-three claimed hits at Gelsenkirchen, seventeen at Homberg, fourteen each at Wanne Eickel and Dollbergen and eight at Hamburg. Numerous explosions and fires were reported. One of the Gelsenkirchen plants was left ablaze, whilst the fires at Homberg were reported as uniting into one which blazed fiercely for twenty minutes, then turned to a thick column of smoke 2,000 feet high.

Reports such as these, which even now cannot be checked, led to a belief that more serious damage was being done to German Oil production than later proved to be the case. Until daylight photographic reconnaissance was provided an accurate assessment of damage could not be made.

To sum up the progress of the oil campaign in this period, from May 15th to June 18th, the following table shows the number of attacks reported upon oil targets:-

Synthetic Plants at:-

Gelsenkirchen	43
Homberg	43
Wanne-Eickel	17
Kamen	12
Duisburg	7
Dortmund	4
Castrop Rauxel	4
Sterkrade Holten	3
Bottrop	2
Leuna	1
Dusseldorf	1

Refineries at:-

Hamburg	70
Dusseldorf (& Reisholz)	33
Hanover	30
Salzbergen	27
Schulau	26
Monheim	24
Bremen	22
Dollbergen	14
Emmerich	13
Ostermoor	6

Storage Tanks at:-

Frankfurt	23
Mannheim	5

Total Attacks 430

Total Tonnage (H.E.) 535

3. Operations against German Railways. The railway targets in Germany attacked during this period were chosen for tactical reasons, rather than strategical, in order to interrupt the flow of supplies to the German forces. Those targets in the Ruhr and east of the Rhine generally, however, were in line with the strategical plans made under W.A. 4(c), for the disruption of German industry. They are therefore detailed here, whilst



a bare mention is made of those targets to the west of the Rhine, in order to complete the picture. These latter are dealt with above under "Close Support Operations".

On the night of May 15th railway targets in Germany were allotted to nine sorties only, but all aircraft were given marshalling yards as a last resort target. As a result thirty-four reported attacks upon such targets. The marshalling yards at Koln-Eifeltor, Wedau and Vohwinkel were chosen by the army commanders as being the most important in the existing military situation. The next night no railway targets east of the Rhine were given first priority, but three aircraft attacked them as alternatives. Nine aircraft were despatched against German railways west of the Rhine.

On May 17th/18th the same three marshalling yards were allotted to six aircraft. None of these found their targets. During the attack upon oil targets at Bremen, however, hits were claimed upon railway sidings there. Eleven out of twelve Wellingtons on the night of May 18th claimed success against the three marshalling yards. The following night railways were subsidiary targets once more, but were attacked by a number of aircraft. Hits were claimed at Salzbergen, Wanne-Eickel and Sterkrade.

From May 20th onwards the attack of railway targets east of the Rhine was suspended, apart from an occasional harassing attack by two or three aircraft. It was not resumed until May 27th. During this period a large proportion of the bomber effort was devoted to railway targets of a purely tactical nature in France, Belgium, and Germany. On May 20th/21st ninety-six aircraft were detailed to attack railways west of the Rhine, and to derail trains, the majority of which claimed some success. On the 23rd/24th a number of hits were reported from Emmerich in the north to the Saar in the south, and the two nights following aircraft again ranged over a wide area to attack communications. On these two nights two Whitleys were sent to each of three Marshalling yards east of the Rhine; Duisburg, Essen and Dortmund on the 24th, Cologne, Wedau and Vohwinkel on the 25th. Only one found its target on the latter night. The only objectives in Germany detailed on the night of May 26th were railways west of the Rhine. Four out of twelve Hampdens found a target.

ORB/B.C.  
App. B.615  
& D.685

The night of May 27th saw a return to large-scale operations in Germany. In addition to sixteen Hampdens on the usual areas west of the Rhine, eight of which found targets, thirty-eight Whitleys were directed against marshalling yards beyond the river. Neuss, Dusseldorf, Cologne, Duisburg, Essen and Dortmund were detailed, and all except Duisburg were reported as hit. Hits were also claimed on Homberg and Krefeld marshalling yards, any such targets in the Ruhr being alternatives. A number of Hampdens despatched against oil targets also attacked railways.

June 1st was the next night on which German railways were attacked. The majority of the sorties were abortive due to bad weather. Hamm and Osnabruck were reported as attacked by one Whitley each, out of fourteen despatched. And two Hampdens claimed to have attacked Coblenz, one Duren and one Euskirchen, out of twelve aircraft detailed.

On June 2nd/3rd twelve Whitleys were directed against Hamm, Soest and Osnabruck, five claiming to have bombed their targets, while others found alternative rail objectives. Six Hampdens were sent to the yards west of the Rhine. After this no sorties were given German railways east of the river as primary objectives for some days. The attack on oil had priority. Many attacks were made on railways, however, by aircraft which could not



find their primary objective, and on most nights a few were detailed to harass the railways west of the Rhine.

From June 8th the oil plan was again suspended for a time, owing to the renewed German offensive, and the heavy bombers were used in more immediate support of the land forces. A small number of them was usually sent against rail targets on both sides of the Rhine. The largest number was fifteen sorties on the night of June 14th.

By the evening of June 17th the campaign in France was virtually over, and Bomber Command was free to turn its attention to strategic bombing once more. Twenty-five aircraft were despatched against railway targets on this night, the major effort being against oil. Nineteen claimed to have hit their primary target, and a number of other sorties, detailed for both tasks, bombed railway targets.

The principal railway targets chosen for attack in this period were the marshalling yards at Hamm, Soest, Osnabruck, Cologne, Wedau, Vchwinkel, Essen, Neuss, Rheydt, Dusseldorf and Aachen. In addition sorties were detailed to derail trains and block lines in the area west of the Rhine and numerous alternative and last resort attacks were made upon a variety of rail targets. The total tonnage dropped during the period of the campaign upon this type of target was 351.5 tons.

4. Operations against Italy. When Italy declared war on June 10th, 1940, the operations planned against her were immediately initiated. Thirty-six Whitleys operated from England on the night of June 11th, refuelling in the Channel Islands. Their target was the Fiat works at Turin. Seven claimed to have hit the target, two others reported hits on marshalling yards at Turin, and one each on the Ansaldo works and docks at Genoa. The rest were unable to reach Italy due to severe storms and icing conditions over the Alps, or to locate a suitable objective.

In addition twelve Wellingtons were despatched to Salon-en-Provence on June 11th. Owing to disputes between the British and French authorities operations could not take place that night. After innumerable orders and counter-orders over the telephone, the French went so far as to drive numbers of military lorries on to the aerodrome to prevent the British aircraft taking off. As a result the Wellingtons returned to England.

After much recrimination the French agreed to allow the "Haddock" force in the south of France to operate against Italy. A further twelve aircraft flew out to Salon on June 15th, and eight operated that night against Genoa. The weather was very bad, and only one aircraft located and attacked the Ansaldo works. A further operation was carried out the following night by nine of the Wellingtons, three of which reported attacks on Sesto San Giovanni at Milan, one claimed to have hit the Caproni works, and one to have bombed the aerodrome at Sestri Levante near Genoa. Low cloud and darkness prevented the other four from locating a target.

After this the fall of France prevented any further operations against Italy by Wellingtons. The twelve aircraft at Salon returned to England on June 17th. The Whitley Group, No. 4 continued the attack upon Italy from English bases in Mid-August.

5. Other Operations. In addition to the operations against oil and railway targets, and Italian industry, a few strategical operations of other types were undertaken during this period.

The most important were the minelaying operations which were resumed by No. 5 Group on June 5th. These are dealt with in a later part of the narrative.

No other strategical targets were detailed as primaries during this period except a chemical factory at Leverkusen, Cologne on May 24th. This was attacked by three out of six sorties detailed. A number of targets were used as secondary and last resort objectives, however. The most usual, in addition to railways, were those later referred to as "Simor and Adieu", self-illuminating military objectives in the Ruhr and aerodromes in enemy use. Many attacks were made on targets of both types. "Simor" consisted principally of blast furnaces and coke ovens, which received their greatest weight of attack on May 27th/28th, June 3rd/4th and 9th/10th. "Adieu" consisted of aerodromes both in Germany such as those attacked at Cologne and Dusseldorf on May 27th/28th, and in occupied territory. Of the latter, Flushing received the most frequent attacks, being in a convenient position on the route, whilst the seaplane bases on the Frisian islands provided an alternative suitable for the northern route. The sorties directed against these alternative targets, together with the weight of bombs dropped, is shown in Appendix U.



PART IVANTI-INVASION PHASESECTION IPOLICY AND PLANS, JUNE 19th to OCTOBER 30th.

(i) Review of Policy - The strategic bombing of Germany, in accordance with the long-term plans drawn up, was begun on May 15th/16th. Throughout the period of the campaign in France, however, only a portion of the bomber effort could be devoted to it. There were frequent urgent calls for more direct and immediate assistance to the land battle. The Battle of France was over, in effect, when France asked for terms on June 17th. After this the British Air Staff had not for some years to concern itself with commitments to France or the Army.

A new and greater threat now appeared: that of a German attack upon the British Isles themselves. The English Channel, as in the time of Napoleon, barred the way to the continental armies. Now, however, the threat from the air was even greater. Bomber Command was still not free to devote itself to the role for which it had been designed. During the period of the threat of invasion its major efforts were still diverted from the long-term strategic objectives. As will be seen, however, the policy laid down paid due regard to these. And, whenever possible, the efforts of the Command were directed against Germany herself. The prime objectives of wearing down both her material resources and the morale of her people were constantly borne in mind.

For the implementation of the successive directives issued, the following sections on the various types of operation must be consulted. It will be found that there was seldom a clear-out division between the periods. The difference lies in the weight of attack directed against the primary targets. Throughout this period the means of finding a target were inadequate, and resulted in a very different effect being obtained from that decided upon by the Air Staff

(ii) Reduction of Air Attack on Great Britain, June 19th. - On June 19th an Air Staff Conference was held, at which it was made clear that the primary aim of Bomber Command would now be, to reduce the scale of air attack on Great Britain. A new directive to this effect was issued on June 20th, in which the objectives in order of priority were:-

S.4768  
Enc.5 to 6A.

S.46368/I  
Encl.69A  
BC/S23746  
Encl.4A

- (a) Aircraft Industry - aluminium plants and airframe assembly factories, as set out in Appendix N. Supplementary attacks on equipment depots.
- (b) Communications - railway marshalling yards, especially Hamm; and the canal system. The destruction of the Dortmund-Ems canal aqueducts and the shaft lock and aqueduct at Minden should sufficiently dislocate the system. Failing this, "W" mines might have to be employed.
- (c) Minelaying - one squadron of Hampdens was to continue to lay mines off the enemy coasts.

/ (d)

- (d) Oil Targets - oil plants and stocks in accordance with Plan W.A.6. The priority is shown in Appendix M. Oil stocks in occupied countries were to be included.
- (e) Crops and Forests - the harvest prospects were 25% below normal, and as a result of the devastation in the recent battle areas, the shortage of food might be serious. The new pellet incendiaries were almost ready, for use against crops and also against coniferous forests containing military stores and objectives.

The medium bombers were to be employed in co-ordination with these heavy bomber operations. In addition, as opportunity offered, they were to attack enemy occupied aerodromes in north-west France and the Low Countries. These should be continuously reconnoitred and harassed, in order both to destroy enemy aircraft, and to force them to withdraw to aerodromes further in their rear, which would reduce their effect against Great Britain.

At the same time, the Command had to be prepared to divert all its strength, at short notice, to the attack of an enemy invading force, at its points of departure, at sea, and at its landing-points.

On June 25th the C.-in-C. stated that he had taken steps to implement this policy. He had not ordered reconnaissance prior to the attack of air store parks as had been recommended, however. Three of them were situated 190 miles inside the Dutch frontier, which seriously prejudiced the chance of a Blenheim making so successful a reconnaissance as to justify the risk involved. On July 2nd information received indicated that German bomber units were refitting at Eschwege, and that M.E. 109's were using Paderborn, so the air staff agreed to attack without prior reconnaissance.

On June 29th, as a result of discussions between the C.-in-C. and the Deputy Chief of the Air Staff, the priority of medium bomber tasks was defined as:-

- (a) Attack of enemy occupied aerodromes.
- (b) Photographic reconnaissance to disclose coastal works and preparations for invasion in the areas Calais-Boulogne and Abbeville-St.Valery.
- (c) Attack of concentrations of barges reported on June 21st between Massluie and Rotterdam.
- (d) Attack of shipping and aerodromes in Norway.
- (e) Operations, co-ordinated with the heavy bombers, against German industry.

(iii) Anti-Invasion Targets, July 4th. - In view of the increasing threat of invasion, enemy ports and shipping became the primary concern of Bomber Command on July 4th. The new directive issued on that date gave the first priority to attacks on Kiel, especially the Scharnhorst and Deutschland which were there. Other ports included the docks at Hamburg, Bremen, Rotterdam, Wilhelmshaven and Brunsbittel. The effort of three squadrons was now to be employed on minelaying, whilst the offensive against the aircraft industry and aerodromes was to be continued.

/ Subject

A.M. Signal  
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BC/S22573/Air

S.46368  
Encl.77A

S.46368  
Encl.76A

S.46368  
Enc.78A

Subject to these primary tasks, the attack on oil could be carried on. Operations against railways, canal communications and forests were to be discontinued. Arrangements for the attack of crops with the new incendiary "pellets" were, however, to go forward.

The first priority of the medium bombers was to be the attack of barges and small craft on the canals and in the ports of Holland and Belgium. Attacks on concentrations of shipping reported in Norwegian harbours were to be made as opportunity offered. The mediums were also to continue their co-ordination with heavy bomber operations on the German aircraft industry and oil plants, and their attacks on aerodromes in north-west France and Belgium. Photographic reconnaissance was to be discontinued, as Coastal Command were now undertaking this duty.

BC/S.23746.  
Encl.22A.

A.M.Signal  
X962.

S5367  
Encl.28A  
S4941

Encls.24A,  
27A.

After discussion between the A.O.C.-in-C. and the D.C.A.S. on July 5th, it was agreed that a limited effort should continue to be directed against communication objectives in Germany. The use of "razzle", the incendiary pellets dropped on German crops, was deferred by the Cabinet on July 12th, until August 12th.

On July 7th the Directorate of Plans pointed out that economy was the most important consideration in the employment of the bomber force. A target selected should therefore be examined in the light of the following stipulations:-

- (a) Was it vulnerable by its size and construction?
- (b) Did it form a bottleneck in the enemy war machine?
- (c) Was it near other objectives, so that bombs which missed it would not be wasted?

S46368  
Encl.81A

(iv) An attempt to concentrate bombing, July 13th - The Air Staff came to the conclusion on July 13th, that operations up to this time had been too dispersed. It was decided to concentrate during the approaching moonlight period upon a limited number of targets, in an effort to achieve total destruction. The new directive issued included only fifteen primary targets, ten of which had the first priority. The aim was to reduce the scale of air attack on the British Isles.

The first priority targets were five airframe assembly factories and five aircraft equipment depots designated in Appendix M. It was estimated that 140 bombs of 500 lb calibre should be aimed at each to complete its destruction. Five oil plants completed the list of fifteen primary objectives. They were considered more economical than the equally important aluminium targets owing to their self-destructive qualities. Communications were added as last resort targets, apart from the one aqueduct near Munster not yet damaged. The importance of this warranted a special effort. Minelaying was to be continued by three squadrons.

The medium bombers were to continue to regard anti-invasion operations as their primary function. They were to attack any large concentration of barges or shipping, and any advanced aerodrome where enemy aircraft might be concentrated. Any effort left over might be employed on the three oil stores in France (see Appendix M4), and in co-ordination with the heavy bomber operations.

The dispersion of effort deplored by the Air Staff had been due for the most part, not to the orders issued, but to operational factors such as weather distribution and difficulties of navigation.

/ When

When the A.O.C.-in-C. of Bomber Command received this directive, therefore, he pointed out the difficulties of applying it in a detailed criticism. An outline of this, with the remarks of the Air Staff, is given below:-

BC/S22573/2  
C.-in-C.  
S46368/I  
Encl.84A.

- (a) Of the ten first priority targets only three could be found with any certainty in moonlight by the average crew. Most of the targets were so far east as to allow little time for finding them and returning by day-break, or for searching for an alternative target. Consequently there would be a high percentage of wasted effort. The Air Staff replied that they were under the impression, from Bomber Command reports, that any large objective could easily be picked out in bright moonlight.

- (b) Almost all these targets were isolated, so that all bombs which missed the actual target would do no damage and cause the minimum disturbance. The reply to this was that the whole aim was to achieve material damage, contributing directly to the aim in view. Incidental effect had been disregarded.

- (c) The extra bombs necessary to destroy a factory which had ceased to work might with more advantage be used to stop other plants from working.

The Air Staff replied that the object was not to stop work for a matter of hours or days, but for months; to destroy the factories to such an extent that they would have to be rebuilt. This could only be accomplished in moonlight, whilst effort was bound to be more dispersed at other periods.

- (d) Some dispersal of effort would be unavoidable for tactical reasons such as the distribution of bad weather and the limited period of darkness.

The reply was that the maximum concentration should be attempted during the short period of moonlight.

- (e) Communications were considered most unsuitable as a last resort target. Such a target should be easy to find and on the bomber's route home. It would be useless to detail Hamm, Soest or Osnabruch marshalling yards as last resort targets for aircraft operating against the fifteen primary targets laid down. The C.-in-C. added his opinion that vital railway objectives warranted a higher priority. Their disorganisation must affect all aspects of military and industrial activity, and was likely to have a cumulative effect.

The Air Staff replied that the C.-in-C. was at liberty to choose any communication target, which might be tactically suitable, not only the three specified.

- (f) The elimination of all targets south of latitude 51°N. prevented the allocation of suitable geographical alternatives. When the weather was bad in the north, the bomber force would have to remain on the ground.

The Air Staff admitted that this aspect had not been considered.

/ (g)

- (g) The oil targets in France allocated to the medium bombers would be more suitable to the heavies. They involved a penetration of over 150 miles into an area where fighter opposition was to be expected. The C.-in-C. considered that the allocation of the bomber force to specific tasks should be left to the Command. The reply was that 150 miles penetration did not seem too great under cloud conditions, in view of recent sorties by Blenheims as far as Hanover.

CFAP/DO/3.

In a personal letter to the D.C.A.S. on July 17th the C.-in-C. went further in the denunciation of this directive. He claimed that "in the Bomber Command we have the one directly offensive weapon in the whole of our armoury, the one means by which we can undermine the morale of a large part of the enemy people, shake their faith in the Nazi regime, and at the same time and with the very same bombs, dislocate the major part of their heavy industry, much of their chemical industry and a good part of their oil production." His conclusion was that it was entirely wrong to use the Bomber Command for the purpose of bolstering up the Fighter Command, the A.A. defence and the A.R.P. before these have been really tried and found wanting".

S46368/II  
Encl. 2A.

(v) A more realistic policy, July 24th. - This strong attack by Air Marshal Portal on the defensive bombing policy did not bear fruit until the Battle of Britain was over in October. It led, however, to a conference at Air Ministry on July 22nd, resulting in a new directive on July 24th. This made little difference in the priority of targets, which still aimed at the reduction of air attack on the British Isles. It widened the scope of operations, however, going back approximately to the directive of June 20th. First priority remained with the aircraft targets, to which the aluminium factories were again added (see App.M1). The second priority was now oil plants and stocks in Germany and occupied territory, priority of attack remaining as in Plan W.A.6. (see Appendix L2). A long list of stocks of oil known to exist in occupied territories was now added (see Appendix N.2). These were to be attacked as opportunity offered. A moderate scale of effort was to continue against communications, and three squadrons should remain on minelaying. Attack on forest areas was to be resumed when weather conditions should be suitable, and the possibility was being considered of utilising the stocks of incendiary pellets (razzles) on bombing operations for their nuisance value.

S46368/II  
Encl. 8A.

S46368/II  
Encl. 7A, B, C.

On July 30th a further list of alternative objectives was forwarded by Air Ministry. These consisted of power targets, and large targets west of the line Hamburg - Stuttgart, including armament, explosive and chemical plants (see App.0). On the same day memoranda were supplied on rail and water communications between Germany and the western occupied countries. Operations against barge concentrations in these canals were to be continued.

On August 4th the resumption of operations against Italy was authorised as soon as the lengthening hours of darkness should permit. The list of targets formulated on June 7th still remained the best from the material and psychological stand-point (see Appendix P). In view of proposed naval operations in the Central Mediterranean on or about August 24th, it was requested that attacks on North Italy should begin by August 10th, in order to divert Italian defences from the south.

S1636

The reduction of the minelaying effort to one squadron was also authorised on August 4th, so long as the stocks of mines

/ should



A.M.Signal.  
X 904 6/8/40.

should be insufficient to allow a full effort by additional squadrons. Authority for the use of "razzle" in conjunction with normal bombing operations was at last given on August 6th.

A.M.Signal.  
X 383 17/8/40.

The increasing scale of German air attack on the British Isles caused a request, on August 17th, for a high rate of Blenheim attack upon German aerodromes in occupied territories. On the 31st this was modified to a light scale of attack at the discretion of Bomber Command. The medium bombers were to be employed at night against the closer German objectives in order to maintain or increase the weight of attack upon Germany. By the same signal orders were given for a Whitley squadron (No.102) to be temporarily attached to Coastal Command for extended sea reconnaissance, convoy escort and anti-submarine duties.

X 256  
31/8/40.

A.M.Signal.  
X 39 6/9/40.

On September 6th the C.-in-C. was once more instructed to aid in the reduction of the scale of attack on Great Britain. The medium bombers should continue operations against enemy aerodromes, whilst the heavies were to be directed against communications maintaining the German Air Force in France and the Low Countries.

During the period of this directive the O.T.U. groups began the task of leaflet dropping in France. This was carried out as a final operational exercise in the training course, and was valuable both for this purpose, and as a means of distributing propaganda without diverting any of the bomber effort to the task. The operations were carried out at as great a height as possible, and resulted in negligible casualties. They were continued by the O.T.U.s as a normal exercise in their training from this time onwards.

W40. 352  
3/9/40.

(vi) Political Intervention, September. On the anniversary of the outbreak of war the Prime Minister, Mr. Winston Churchill, submitted a memo to the War Cabinet on the munitions situation as he saw it. The following extracts illustrate his view of the use and potentialities of the bomber force:-

"The Navy can lose us the war, but only the Air Force can win it. Therefore our supreme effort must be to gain overwhelming mastery in the Air. The Fighters are our salvation, but the Bombers alone provide the means of victory. We must therefore develop the power to carry an ever increasing volume of explosives to Germany, so as to pulverise the entire industry and scientific structure on which the war effort and economic life of the enemy depends, while holding him at arm's length in our Island. In no other way at present visible can we hope to overcome the immense military power of Germany, and to nullify the further German victories which may be apprehended as the weight of their force is brought to bear upon African or Oriental theatres. The Air Force and its action on the largest scale must therefore, subject to what is said later, claim the first place over the Navy or the Army".

D.B.Ops.Folder  
on "Bombing  
Policy" Encl.2A.

BC/S23746  
Encl.81B.

The Prime Minister suggested to the C.-in-C. Bomber Command at the beginning of September, that the bombing offensive should be spread as widely as possible over the cities and small towns in Germany within reach. The Vice Chief of the Air Staff pointed out that such a plan had been conceived for use in the winter months when adverse conditions might prevent the attack of more precise targets. He claimed that British bombing was more effective than German precisely because it was aimed at specific

/ objectives

objectives - the German aircraft industry, oil resources and communications. Sporadic attack was held to be ineffective both materially and morally.

War Cabinet  
254th conclusion 19.9.40.

S.4768  
Encl. 8A.

Political pressure in favour of indiscriminate bombing in retaliation for the German raids on London and other towns continued. On September 19th the War Cabinet agreed that mines should be dropped on Berlin. The Air Staff resisted this demand also. The Directorate of Plans, in a "Note on the lessons to be learned from German mistakes in the conduct of their bombing operations against the United Kingdom", pointed out the futility of indiscriminate attack. From the beginning of the war until September 12th, 1940, the Germans had dropped 11,000 tons of bombs on Gt. Britain. The Prime Minister had stated in the House of Commons on September 17th that "the injury to our war-making capacity" as a result of these attacks was "surprisingly small". This was because the German intention had been to terrorise the civil population. Four direct hits had put Fulham Power Station out of action for two or three months. If the other four main power stations had been hit the demoralisation of London, deprived of electric railways, light and heat would have been serious. The leaders of the German Air Force did not appear to realise the importance of concentrating their attacks on objectives of vital importance in the same category. The coming attacks on Berlin, therefore, should be concentrated on power stations and gas works. Near misses on these targets would sufficiently injure the civil population. The land mine, being a completely inaccurate weapon, would be uneconomical for this task.

This argument against complying with the popular demand for retaliation to German indiscriminate bombing was reinforced by defensive considerations. To reach Berlin British aircraft had five times as far to travel as German aircraft had to reach London. It was unwise, therefore, to start competitive bombing until the Royal Air Force should be much stronger. The Germans at present had a striking force four times as large as that of Bomber Command. It was recommended that German industrial centres should not be bombed until Britain could afford to release the bombers from their anti-invasion role. In deference to the demand for a reply to the bombing of London, however, an attack on Berlin on the largest scale possible was ordered, and carried out by one hundred and nineteen aircraft on September 23rd/24th.

A.M. Signal  
X 241  
17/9/40.

S46368/II  
Encl. 25A  
BC/S23746  
Encl. 87A

(vii) Increased anti-invasion operations, September 21st. - In the light of the future strategical situation, and of the latest information available regarding the effect of the air offensive against Germany, bombing policy was reviewed and a new directive issued on September 21st. Whilst the imminent threat of invasion remained, the greater part of the bomber effort must continue to be employed on anti-invasion tasks. The specific targets would be given daily by telephone or signal as had been done recently (see (5)). The primary aim would be to destroy the major concentrations of barges, small craft and merchant vessels at enemy ports, and to dislocate communications.

It was anticipated that the imminent threat of invasion would recede with the unfavourable weather which was being experienced and the approach of winter, so a revised directive for the attack of Germany was included on September 21st. These targets were for the present to be attacked only by the Whitley group, until the situation justified the transfer of additional squadrons to them.

/ The

The targets now considered of most value were the aluminium plants which had already been affected by the attacks on them. To these were added key aircraft component factories (see App.P) the destruction of which would have a delayed but more lasting effect on German aircraft output. Minelaying operations were to be abandoned for the time being, and the effort of three Hampden squadrons directed instead to the attack of enemy submarine building yards (see App.P3). This was due to the increased seriousness of the enemy submarine campaign in the north western approaches. Later the Admiralty requested that some mine-laying should be continued.

A.M.Signal  
X 950  
29/9/40.

Evidence collected indicated that the sustained attack on railway and canal communications was having a useful effect in dislocating supplies, both industrial and strategic. It was considered that this was one of the most useful contributions which bombing could make to Germany's economic disruption. The list of marshalling yards had been revised (Appendix P4), and were to be attacked not only as occasional primary targets, but as last resort targets in preference to aerodromes.

The attack on oil was to continue, and operations against Berlin and its environs were to be continued from time to time. It was considered that attacks on the sources of power were the quickest and most effective means of achieving the desired aim. This was the maximum disturbance to industrial activities and to the civil population.

A.M.Signal  
X 984  
30/9/40.

Authority was given on September 30th, in view of the reduced likelihood of invasion owing to continued adverse weather conditions, to transfer an increased effort on to objectives in Germany. If conditions should become suitable, invasion ports such as Havre, Antwerp, Lorient and Rotterdam were still to be attacked by the heavy bombers.

S46368  
S46368/II  
Encl. 33A.  
Encl. 35A.

Increased daylight operations into Germany were requested on October 5th as it was considered there was now sufficient cloudy weather to provide cover. It was suggested on the 8th that Wellingtons should be employed by day in cloud-cover, in order to obtain deeper penetration into Germany. The C.-in-C., however, pointed out that this would decrease the night effort whilst adding little to that in daylight. The Wellington was a most unsuitable aircraft for the purpose owing to its slow speed and poor manoeuvrability. Winter, moreover, would not improve cloud conditions. There would be more cloud, admittedly, but conditions below it would be less favourable for bombing, and icing would be a graver threat.

A.M.Signal  
X 828  
6/10/40.

S6534

On October 6th, renewed attacks on Italy were ordered, as certain political objections which had arisen had now been overcome. On the 9th a long-projected attack on the Skoda works was ordered as a matter of urgency. Its object was political rather than destructive, to boost the morale of the Czech people. It was originally intended, in order to enhance its propaganda value, that the attack should be made by the Czech squadron. As this squadron was not expected to be operationally fit for such a long distance raid for some time to come, this idea had been dropped.

A.M.Signal  
X 715  
12/10/40

Owing to the serious potential threat offered by the German heavy ships, Tirpitz, Bismarck, Scharnhorst and Gneisenau, a special effort against them was ordered on October 12th. The full effort of the Wellington and Hampden groups was to be employed on three nights during the moon phase.

/ During

(viii) Banquet Plan. - During the period of this invasion threat a "second-line" bomber force was organised under the "Banquet Plan". This was designed to bring into action all available aircraft which could carry any type of bomb in the event of a full-scale invasion attempt. The aircraft on the strength of O.T.U's were equipped for employment as follows:-

S4768  
Encl.9A Whitley, Hampden, and Wellington - fit to fly by day and by night; to fire their guns, aim and drop bombs. W/T and navigation equipment essential.

Blenheim and Battle - fit to fly by day and by night; to fire their guns and drop bombs. Bomb sight not essential.

Anson - fit to fly by day and by night; to fire their guns, aim and drop their bombs. Signal and navigation equipment essential.

All aircraft were manned by crews capable of carrying out the duties specified - for the most part ex-operational O.T.U. instructors.

S4768  
Encl.11A The number of Banquet aircraft of Nos.6 and 7 Groups at November 20th was as follows:-

Whitleys	97	Hampdens	61
Wellingtons	136	Herefords	19
Battles	78	Ansons	<u>167</u>
Blenhains	106	Total	<u>664</u>

S4768  
Encl.10A At this date the Prime Minister made a suggestion that a second-line bomber force should be utilized to "discharge bombs from a considerable and safe height upon the nearest large built up areas of Germany which contain military targets in abundance". The Banquet aircraft were the obvious choice for this purpose, but the C.-in-C. Bomber Command was very averse to it. The interference with training would be considerable, and losses could be ill-afforded, especially of instructors who were "resting" from operations. It would be preferable to shorten the course and pass the crews more quickly into operational squadrons. This, however, would only result in heavy casualties and was almost equally undesirable. For these reasons the suggestion of operating a second-line force was not adopted.

(ix) Conclusions. - The preoccupation with the threat of invasion and with the defence of the British Isles against air attack diminished during October. It had resulted in a period of bombing which can be called defensive, as it was aimed at reducing the risk and the scale of the German offensive preparations. The targets selected had been too varied and numerous for the small force available. And there had frequently been diversions, due to urgent calls from Coastal Command or Admiralty, or due to political apprehensions or propaganda motives. No effective concentration of attack had been possible under these conditions, especially with the lack of radio and navigational aids at this time.

The effect produced by the bombing effort could not yet be adequately assessed. The photographic reconnaissance unit was principally employed on behalf of Coastal Command, in recording invasion preparations. Very few cameras were available for use on night bomber raids. Even when they were carried, results were rare, as the development of night photography was only just beginning. Little means of judging results existed, therefore, and there was a tendency to over-estimate the effect obtained. The result was over-ambitious plans emanating from the Air Staff. Bomber Command were beginning to take a more pessimistic, but more realistic, view of the

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results obtained. The accession of A.C.M. Portal as Chief of the Air Staff in October, coming directly from the Command of the bomber force, brought a more realistic outlook to the Air Staff. In the next phase it will be seen that due allowance was made for inaccuracy of bombing, by ensuring that targets selected were not isolated, but if possible in large centres of population or industry. This was the reason for the initiation of area bombing, and the selection of "industrial centres" instead of factories.

A rough idea of the effect of the bombing at this period can be obtained from the statistics compiled by the German south-western area, L.G.K. XII/XIII. These show the distribution of bombs in the area by type of objective, and can be found in Appendix W.

## SECTION II

OPERATIONS AGAINST FRINGE TARGETS

Introduction. Following the fall of the Netherlands and France, Bomber Command was freed from its commitments to France and to the Army. The targets in Germany covered by the major bombing plans, however, were distant and difficult to locate with the existing facilities. Daylight penetration of any depth had been proved to be too costly for the heavy bombers. Even Blenheims could undertake it only with cloud cover. The twin threats of air attack and of seaborne invasion were in the forefront of all strategical considerations.

Under the circumstances targets on the fringe of enemy occupied territory received much attention. The day bombers could attack such targets as enemy occupied aerodromes used against the British Isles, and ports in which invasion craft assembled, without too deep penetration. Whilst these targets were also given to the night bombers as secondary and last resort objectives, being on their route to Germany. With the lack of facilities for night navigation, and the frequent bad weather conditions encountered this meant that a considerable weight of bombs was diverted from German targets to these short-range ones. This can be seen by comparing the targets detailed with those attacked in the Diary of Operations at Appendix U.

At the beginning of this period the fringe targets chosen were principally aerodromes in France and the Netherlands. This was an attempt to drive the attacking German bombers to more distant bases, thus reducing the weight of their attack on Great Britain. Later, with the growing fear of invasion, ports and canal mouths where shipping and barges were being concentrated took the primary place. In September the heavy air attacks on this country increased the importance of intruder operations against occupied aerodromes by night. For this purpose Blenheims were ordered "to remain in the vicinity of their target in order to interfere with aircraft attempting to land or take off, and in order to destroy them by bombs or by machine-gun fire".

BC/S23746  
Part I  
84A.

2. Aerodromes. During the early part of the Anti-Invasion Phase, fear of air assault was the primary consideration. It caused bombing to be concentrated on the German Air Force. Various objectives in Germany were chosen with this aim, as will be seen later. The most immediate means of reducing air attack on Great Britain, however, was to attack the aerodromes in use by the enemy in western occupied countries. Immediately on the fall of France, on June 18th, regular attacks began on these aerodromes. The major effort of the Blenheim squadrons was devoted to this task by day, whilst the heavy bombers were given it as an alternative or last resort at night, when they failed to reach their primary objectives. The results achieved by night were too problematical to justify their allocation as primaries except on rare occasions. In spite of this, attacks upon such targets were frequent, owing to the difficulties of locating the primary objectives chosen.

Before the end of June Schipol was attacked on five days and five nights, Waalhaven on three days and four nights, Merville on two days and one night, and Mulheim and Norderney on three nights. Many other aerodromes, such as Handorf, Sylt, Rouen-Boos, Munster, Ostheim, Delmenhorst and Evreux had also been attacked. Throughout July frequent attacks on aerodromes as alternative night targets continued, Schipol and Waalhaven receiving the most frequent attention as they were conveniently close to the return route from the Ruhr. By day, Blenheims continued their attacks against aerodromes in

/ Norway

Norway, Holland, Belgium and France. A hangar at Evere (Brussels) was reported hit on July 3rd, on the 6th Ypenburg, Knocke and Evreux were attacked, and on the 8th twelve out of thirty-six Blenheims despatched attacked Ledeghem, Soissons, Roye-Ami and Douai. Daily sorties continued for the next fortnight, but over 90% of those detailed abandoned their tasks owing to insufficient cloud cover or bad weather. Those which persisted suffered heavy casualties, seven aircraft out of twelve being lost on July 9th in an attack on Stavanger aerodrome.

S46368  
Encl. 17A

As a result, night attacks began to supersede those by day as the Blenheim crews became qualified to undertake them. The first was on July 17th, and on July 21st Battle aircraft of No. 1 Group joined No. 2 Group in these short range attacks. They operated only by night, and on the 22nd No. 2 Group also commenced regular night operations, including aerodromes in Germany in their range of targets. Day attacks continued on a smaller scale than before.

In August operations against aerodromes continued on an increasing scale. The Blenheims reverted to day operations until the next moon period, and then concentrated upon night attacks from August 12th onwards. The wisdom of this decision was emphasized by the loss of eleven out of twelve aircraft operating against Aalborg by day on the 13th.

It is impossible to assess the results of this offensive against the German air striking force, owing to the paucity of photographic or other reliable reports. A report on Schipol from a Dutch source on August 7th stated that the aerodrome was much damaged, and work on the wooden runways and sheltered hangars had been stopped. Some inconvenience and reduction of the German air attacks on Great Britain, had undoubtedly been caused, but probably on no scale comparable to the effort dissipated by the small Bomber Command striking force. It had always been maintained by the planning staff that aerodromes were not economical targets for air attack. Only the threat to Great Britain had compelled attacks upon them, in order to give some immediate relief.

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"Fringe Targets"  
Encl. 1.

A signal on August 17th again stressed the urgency of this campaign - "It is important that during the present phase in the air battle strong harassing attacks should be carried out at night against the German aerodromes in occupied territory from which the attack on England is being launched". In accordance with this signal the attack continued in strength. On the night of the 18th, for example, thirty-six Blenheims were detailed and twenty-nine attacked aerodromes at Waalhaven, Lille, St. Inglevert, Caen, Lisieux, Hingene, Le Bourg, Beauvais, Flushing, De Kooy, Brest, Schipol, Abbeville, Dinard Angers, Tours, Amiens, Orleans, Bourges, Rouen-Boos and Vannes. Attacks on this scale continued until the end of the month.

A.M. Signal  
X383

An Air Staff note on August 28th once more pointed out the uneconomical nature of these attacks upon aerodromes:- "In view of the vast number of aerodromes (some 400) in Northern France, Holland and Belgium from which attacks are being launched, the extraordinarily efficient German dispersal and protective schemes, and the fact that we never know in time which of the aerodromes are actually in operation, an effective offensive with the aim of destroying aircraft on the ground and their facilities would require the whole effort of a bomber force at least comparable in strength to that of

S46368  
Encl. 17A

/ Germany,

A.M.Signal  
X256

Germany, with adequate cover for day attacks. Our own experience of the effect of German attacks on our aerodromes bears this out." Bomber Command were instructed on August 31st to employ the Blenheims at night against closer objectives in Germany, maintaining only a light scale of attack against aerodromes in the Low Countries and France.

Owing to the increased invasion threat in the second week of September the Blenheims were employed principally in attacks on invasion preparations along the enemy-occupied coast. The heavy bombers continued to attack aerodromes as subsidiary targets, as they had been doing throughout this period. Later in the month, however, even these attacks became rare, as the heavy bombers also were used against harbours and shipping on the enemy coasts. The seriousness of the invasion threat caused their transfer from strategic bombing in Germany to this task. During October attacks upon aerodromes were rare, as the primary targets were strategic objectives in Germany and invasion ports. These latter served as alternatives to the former, when they could not be located.

The weight of attack devoted to aerodromes can be conveniently shown by the following figures for the period:-

#### OPERATIONS AGAINST AERODROMES IN OCCUPIED EUROPE

PERIOD	SORTIES. DESPATCHED	TONNAGE OF H.E. BOMBS DROPPED	CASUALTIES
June 18 - 30	102	72.5	4
July	383	155	27 (26 day)
August	714	312.9	34 (20 day)
September	314	146.9	8
October	129	145.6	-
TOTAL	1642	830.9	73

3. Shipping and Barge Concentrations. The threat of seaborne invasion was continually in view during this phase of bombing operations. The attack upon enemy preparations for invasion was begun by the medium bombers in July, and in September the threat grew to such proportions that the major effort of the heavy bombers was also devoted to the task. After that the danger diminished until the next spring, and a reduced attack was maintained by the Blenheim and Battle squadrons only.

The principal objectives were barges and small shipping in the North Sea and Channel ports, whilst long-range guns at Cap Gris-Nez and supply routes also came into the category of anti-invasion targets. The participation of the heavy bombers until September was principally against ports in Germany, and is dealt with in a later section.

Sec.III(4)

On July 3rd twelve Blenheims were ordered to attack barges in the river Lek. One did so, and two Witleys out of eight despatched that night attacked barges at Rotterdam. For the following six nights German ports were attacked by the heavy bombers, about thirty sorties a night being despatched. Meanwhile the Blenheims of No.2 Group were directed against barges in the closer ports in Holland and Belgium and ships at Aalborg in Denmark. Only one or two sorties per day found such targets up to July 8th, when thirty-seven aircraft were directed against them, seventeen reporting success.

/ A



N.I.D. 24  
T/85/45

A supplement to the minutes of a meeting between Hitler and Admiral Raeder on July 6th, 1940, gives an interesting summary of the shipping available for the invasion of England at that date.<sup>(1)</sup> Shipping of less than 1500 tons in Holland, Belgium and France as far as Boulogne could transport 40,000 men. About 1200 vessels could be taken from German civil shipping, and 600 from the German navy, which could load a total of 200,000 men. Rhine passenger ships and barges could load another 120,000 men. Since lighters and barges alone could run close inshore to unload vehicles, it was planned to use these types for the first wave of invading forces. Their importance is therefore obvious.

The attack was resumed on July 13th when three Blenheims found targets on the Bruges-Ostend canal. For the rest of July and August No. 2 Group interspersed rare attacks upon barges with its offensive against aerodromes, whilst the heavy bombers occasionally attacked dockyards in Germany. The majority of the Blenheim day sorties were abortive due to lack of cloud cover. In order to avoid heavy losses, they had strict orders to return if there was not more than about 7/10th cloud. The only operations of any size were on July 18th, when eighteen Blenheims bombed shipping and docks at Boulogne; and August 30th and 31st, when thirty aircraft were sent during the two nights to attack Emden, and six to bomb the guns at Cap Gris Nez.

Night attacks were continued on these two latter targets on September 1st and 2nd respectively, and from September 5th the major effort of the Blenheims was turned against invasion targets. On the night of September 7th twenty-six Hampdens and eleven Battles joined them in their attack upon barges and shipping at Ostend and Calais, and as the month progressed most of the effort of the heavy bombers was devoted to such operations. Sixty per cent of the bomber effort during the month was directed against anti-invasion targets, on which more than one thousand tons of bombs were expended.

September 13th/14th was the first night on which the whole bomber force, consisting of ninety-one aircraft, was directed against barges and shipping in France and Belgium. 80 barges were destroyed during this day's attacks. The serious nature of the threat of invasion is shown by a report from the German Admiral, France, on the state of preparedness on September 13th, 1940:-

Vessels under way - Barges 590, Tugs 233, Flotilla Leaders 34, Motor-boats 56, Fishing Trawlers 457, Auxiliary Sailing Coasters 95, Troop Transport 32.

Already arrived - Boulogne: 70 Barges, 22 Tugs, 100 Motor-boats 119 Fishing Trawlers.  
Calais: 181 Barges, 20 Tugs, 88 Motor-boats.  
Ostend: 69 Barges, 13 Troop Transports.  
Dunkirk: 129 Barges, 14 Motor-boats.  
Le Havre: 59 Barges, 20 Tugs, 19 Troop Transports.  
Nieuport: 25 Barges.  
Gravelines: 40 Barges, 4 Tugs.

On the night following the heavy bombers continued to be employed almost exclusively, like the mediums, on anti-invasion objectives. Their operations were extended to the attack of gun

/ emplacements

(1) See also Adm. Assnan's report on "Operation Sealion" (Supplt. to M.I.R. for March, 1947).

e.g. B.C.I.  
No.958  
19.9.40.

emplacements on the channel coast and German communications to the channel ports, as well as shipping at the ports of north-west Germany. In nearly all the attacks upon channel ports the results reported included numerous explosions in the target areas. These, being on the sea, were easy to locate. But definite results could seldom be ascertained. Photographic and visual reconnaissances showed numbers of shipping present, and damage to docks, but were seldom able to ascertain the results of attacks upon the smaller craft.

The scale of attack on September 14th was 176 aircraft detailed for the above mentioned types of anti-invasion target, including the headquarters of the German Air Force reported near Brussels. This was difficult to locate, and could not be definitely identified. The number of sorties detailed rose to 192 on September 17th and 180 on the 18th. After another large effort on September 20th, when 171 were detailed, the scale of attack was reduced as attention was once more paid to German industrial targets. On September 23rd, for example, 64 aircraft were detailed for anti-invasion targets whilst 119 were sent to Berlin. Attacks upon the former were continued at approximately this scale of effort until the beginning of October. After this a growing proportion of the force was detailed for operations against the heavy German warships, Scharnhorst, Gneisenau, Bismarck and Tirpitz, instead of the nearer invasion ports. The above figures include sorties devoted to minelaying. This task was an important contribution to the anti-invasion campaign, but being of a special nature, is dealt with separately under that heading. (1)

N.I.D.24  
March 1947.

The account written by the German historian, Admiral Assman, of the preparations and plans for "Operation Sealion" now throws much light on this invasion project. On July 16th, 1940 the Fuhrer decided "To prepare and carry out a landing in England in the form of a surprise crossing on a broad front, approximately from Ramsgate to a point west of the Isle of Wight." Complete mastery of the air was the first pre-requisite. The final decision would be reached after the Luftwaffe had made an intensified eight-day attack on Southern England. This was to begin on August 13th, but the weather precluded full-scale operations until August 24th.

Meanwhile the naval preparations were proceeding, but lagged behind schedule owing to bad weather and the effect of British air activity. The 10-day blocking of the Dortmund-Ems canal by bombing in mid-August resulted in an additional serious hold-up in the assembly of motor-boats coming from the Rhineland. As a result, D-Day had to be postponed from September 15th to 21st.

/ On

(1) The weight of attack contemplated and carried out upon barges and shipping in occupied western countries is shown in the following table:-

PERIOD	SORTIES DESPATCHED	TONNAGE OF H.E. BOMBS DROPPED (see note)	CASUALTIES
July	81	23.3	2
August	68	42.9	Nil
September	1619	1090.1	18
October	489	283.4	8
TOTAL	2257	1439.7	28

(Note:- Tonnage excludes bombs under 250 lbs.)

On September 1st extensive movements of shipping began from the German northern ports to embarkation ports. The German air defence could not prevent increased British attacks on the Channel Ports and considerable losses were sustained. The naval measures, minesweeping and assembly of the transport fleets were repeatedly interrupted by the R.A.F. As a result D-Day was postponed first to September 24th, then to September 27th.

On the night of September 15th British bomber attacks on the coast from Boulogne to Antwerp caused considerable casualties to shipping, whilst the German bomber force suffered heavy casualties in attacking London, Southampton and Portland. The following night attacks on the whole area between Le Havre and Antwerp again caused shipping losses. In these circumstances the Fuhrer decided on September 17th to postpone Sealion indefinitely. The shipping was to be dispersed inconspicuously to deceive the British.

Of the total number of vessels assembled for the operation, the following had been either lost or damaged through enemy action by September 21st:-

21 out of 168 transports	- (12.5 per cent)
214 out of 1697 barges	- (12.6 per cent)
5 out of 360 tugs	- (1.4 per cent)

## SECTION III

OPERATIONS AGAINST GERMAN TARGETS

1. Aircraft Industry. In the bombing directives in force from the fall of France until September 21st, 1940, the German aircraft industry figured as the first priority target for heavy bombers. The objectives chosen were aluminium plants, aircraft assembly depots and airframe factories, whilst an occasional operation against a chemical or armament plant connected with the industry was undertaken. A number of attacks were made on these targets, but many of them were found to be very difficult to locate at night. As a result alternative targets had very often to be attached, and the successful sorties against the aircraft industry were by no means proportionate to the priority given to it. The alternatives attacked were frequently aerodromes in Germany or occupied territories, in support of the same campaign against the German Air Force.

Owing to the lack of accurate statistics at this time it is impossible to give actual figures of the attacks carried out on specific targets. The effort expended on this type of objective (including aerodromes in Germany) and the tonnage of bomb dropped can be seen from the table below. (1) The targets chosen for attack are given in appendices L, M and N.

It will be observed that a fair scale of attack was maintained during June, July and August; a force of thirty to forty aircraft being frequently employed. The heaviest concentrations on these targets were on July 18th/19th, when in addition to forty-four sorties against aircraft plants at Paderborn, Eschwege, Diepholz and Rotenburg, fourteen aircraft were despatched against Krupps works at Essen; and on the 19th and 21st, on which nights fifty-seven and sixty-five sorties respectively were directed against these targets. The objectives on July 19th included the Focke-Wolf works at Bremen, the Dornier factory at Wismar, the Fieseler works at Kassel, and the Hamburg airframe works at Wenzendorf besides the Paderborn air store park. On July 21st the store depots at Rotenburg and Gottingen were chosen, in addition to the same factories at Wismar and Kassel.

The largest concentrations in August on these targets were on the nights of the 13th and 16th. Forty-eight aircraft were employed on August 13th against the Junker airframe works at Dessau

/and

(1)	PERIOD	SORTIES DESPATCHED	TONNAGE OF H.F. BOMBS DROPPED	CASUALTIES
	June 18 - 30	319	200.3	2
	July	481	320.7	10
	August	435	249	5
	September	104	259.3	4
	October	241	187.8	13
	TOTAL	1580	1217.1	34

and Bemburg, base metal works at Frankfurt, and Aluminium works at Lunen; and sixty-two on the 16th against the same plants at Bernburg and Frankfurt, as well as a factory at Augsburg, a store depot at Kolleda and the Zeiss works at Jena.

After the end of August other objectives occupied the majority of the bomber effort, anti-invasion targets in September and oil and naval targets in October. The campaign against the German aircraft industry was continued, but on a much smaller scale. Only fragmentary information can be discovered from German records as to the effect of these attacks during the period under review, and there was little photographic information available at the time. Numerous unreliable reports were received, one of which, on August 3rd, reported that the aircraft factory at Kassel was hit and ceased production for ten days. No aircraft had found this target on July 19th, but on the 21st fifteen had claimed success, including large explosions and fires. These contemporary reports, however, were too unreliable to be worth quoting here.

A.H.B.6.  
Translation  
Reports to  
Minister of  
Propaganda.

Few German records can now be found showing the effect of this campaign. The following examples of police reports can be given, however. On July 1st/2nd the Weser aircraft works at Deichshausen were severely damaged, some unfinished aircraft rendered useless and the production programme put back by one week. The ten Wellingtons which attacked this target reported one stick straddling the factory area another across buildings at the northern end of the target area. Two large flashes were observed, and incendiaries caused fires. The same target was attacked by one Blenheim on the afternoon of July 5th, who reported that results were obscured by smoke and debris. The German record shows five bombs on the factory at 1720 hours.

O.R.S. Report  
S.235.

On September 18th/19th two bombs, one delayed action, fell on the factory on the Lang Motorenfabrik firm at Mannheim and heavily damaged the foundry. This was reported by the aircraft concerned as a direct hit on the railway marshalling yard. On September 25th/26th another attack on a marshalling yard, at Osnabruck, where a chimney was seen to fall across the yard, caused incidental damage. The German record reports one unexploded bomb in the Klockner armament works. As a result two important sections had to close down temporarily. Also considerable damage was caused by incendiaries to the Karman motor-car factory. On October 20/21, the department of Krupps works at Essen manufacturing small gear wheels was burned out. This was the result of a secondary attack, by an aircraft whose primary target was Gelzenkirchen oil refineries.

2. Oil. German oil resources lost their position as the primary strategical bombing objective on the fall of France. The stocks of oil secured by Germany in the territories overrun meant that attacks on these resources could have no immediate effect, such as was required by the threat of German air attack and invasion. Oil continued to figure prominently in the bombing directives, however, until September 21st, 1940, taking second or third place for the heavy bombers. On September 21st it dropped to fifth in priority, regaining its position as primary objective in the winter directive of October 30th, 1940.

In spite of this varying priority the campaign against oil continued on a fairly steady scale throughout this period. The targets were well distributed, and therefore suitable for weather alternatives, and the importance of oil had for long

been impressed upon all concerned. The table below shows the steady offensive maintained against oil objectives,<sup>(1)</sup> lists of which are given in Appendices L and M. The reduction in these attacks in September was due to the big effort against anti-invasion targets, whilst the increase in October resulted from the passing of the threat of invasion with the approach of winter weather.

On the close of the French campaign, as has been seen in an earlier section, the heavy bomber effort was turned once more against strategic targets on June 17th/18th. This was followed up by the despatch of thirty-five aircraft against oil objectives on the night of June 18th. A number of small operations were carried out after this in June and July, the only one of which the result is recorded by German records being on July 4th, near Hamburg. One shed of the German-American Petroleum Company's plant was heavily damaged, and a tank at the Rhenania-Ossag refinery adjoining it damaged. The Wellington concerned, whose primary target was the Hamburg aircraft works at Wenzendorf, reported a hit on gas or oil containers, with a terrific explosion lighting up the countryside for fifteen miles around, followed by fires which were seen forty miles away.

The largest-scale operations against oil during July were at the end of the month. On the night of the 25th fifty-seven aircraft were despatched, on the 28th and 29th forty-seven and fifty-four respectively. On the first occasion, on which the targets were synthetic plants at Dortmund, Bottrop, Sterkrade, Wanne-Eickel and Castrop-Rauxel, fires were reported at all objectives. Those at Castrop-Rauxel were the most spectacular, one aircraft reporting that a gutted building could be seen by their light, which was visible twenty miles away.

In August the heaviest attacks upon these targets took place on the nights of the 1st - 39 sorties, 2nd - 46, 11th - 55, 15th - 41, 16th - 82 and 29th - 55. Fires were reported on all the targets on these occasions. On August 1st a refinery at Reisholz, and synthetic plants at Kamen and Gelsenkirchen were the targets. Kamen was left a "mass of flames". On the following night the best results were at a refinery at Hamburg. The other targets were also refineries at Salzbergen and Hanover. On August 11th four synthetic plants were attacked, at Castrop-Rauxel, Wanne-Eickel, Dortmund and Gelsenkirchen. One crew reported hearing an explosion at Dortmund at ten thousand feet above the noise of the engines. This was probably an anti-aircraft shell bursting near, however. On the 15th two synthetic plants at Gelsenkirchen and a refinery at Reisholz were attacked.

/The

(1)

PERIOD	SORTIES DESPATCHED	TONNAGE OF H.E. BOMBS DROPPED	CASUALTIES
June 18-30	156	90.6	3
July	468	290.8	5
August	662	267.1	17
September	231	88.9	10
October	720	297.4	13
TOTAL	2237	1034.8	48

The attack of August 16th was by far the biggest yet attempted against one plant. Sixty-three Hampdens were directed against the Leuna synthetic oil plant, near Merseburg, the largest of its kind in Germany. The majority of the crews reported large fires, some saying the whole plant was ablaze by the time they left. One saw a large chimney fall. At the same time nineteen Whitleys were despatched against the synthetic plant at Bohlen Rotha, but only one was able to attack it.

On August 29th an oil plant at St. Nazaire was attacked by twelve Wellingtons, all of which reported accurate hits, as well as oil targets in Germany. Those consisted of synthetic plants at Cologne, Bottrop and Gelsenkirchen, and oil stocks at Ludwigshaven. No definite or spectacular results were reported on this occasion.

In September the scale of attack was much reduced owing to the invasion threat. The only operations of any size against fuel targets were on September 4th/5th, and during the big attack on Berlin on the night of the 23rd. On the former occasion thirty aircraft were despatched against Stettin and Magdeburg. Twenty attacked Stettin and reported direct hits on buildings, resulting in the collapse of two out of six chimneys. The German record shows that the hydrogenation plant was hit and production interrupted. On Sept. 23rd/24th out of the one hundred and nineteen aircraft detailed to attack Berlin, thirty were given fuel targets - two of the city's gas works. The German record shows that a gasometer fire was caused in one of them. Another attack on the Leuna synthetic oil plant was made on the night of September 30th by six out of twelve Wellingtons detailed.

A.H.B.6  
Translation

In October the reduced risk of invasion enabled a larger effort to be directed against oil targets again. Forty-eight aircraft were detailed against three synthetic plants on October 1st/2nd, at Gelsenkirchen, Cologne and Sterkrade Holten. On the 2nd two synthetic plants, at Bottrop and Stettin, and a refinery at Hamburg were detailed to forty-two sorties. Attacks against single oil targets were put in on October 5th, 8th and 9th, and another large-scale attack on the 10th. On this occasion sixty-seven sorties were despatched against refineries and synthetic plants at Hamburg, Hanover-Misburg and Reisholz, and Gelsenkirchen, Cologne and Leuna respectively.

After smaller attacks on October 11th and 13th, forty-two sorties were despatched on the 14th against synthetic plants at Stettin, Bohlen and Magdeburg. From German records it is now found that a hydrogenation plant at Stettin was heavily damaged by H.E's and incendiaries, production being stopped for some weeks. No results are available from German records of another large raid on the night following, when fifty-six aircraft were employed. The primary targets were synthetic plants at Leuna, Gelsenkirchen and Magdeburg, and an oil store at the latter, but more than half the sorties attacked subsidiary targets, including a refinery at Salzbergen.

Leuna was attacked again on October 16th, Gelsenkirchen on the 20th, Magdeburg and Hanover on the 23rd. On October 24th operations were mainly in the Hamburg-Hanover area. Twenty-two sorties were detailed for the refinery at Hanover-Misburg, of which nine attacked. The following night a few sorties were again despatched to Hamburg, others to Magdeburg synthetic plant. On October 26th thirty-five aircraft were detailed for oil targets, at Stettin, Leuna and Cologne. At Stettin German records show the hydrogenation plant to have been damaged, as well as three gasometers, whilst production was interrupted at the Saxony

A.H.B.6  
Translation

works at Bohlen, near Leuna.

Further attacks on oil targets were carried out on October 27th, 28th and 29th on a smaller scale. Of the results of these, as of most of the operations in this period, no records can be found. Thus no real assessment can be attempted.

3. Communications. Transportation targets took second or third place alternately with oil in the bombing directives of this period up to September 21st. After this they dropped to fourth place. Throughout the period they received quite a large share of the attacks made upon objectives in Germany, as they were frequently given as alternatives and they were comparatively popular targets. Marshalling yards being as a rule close to other industrial targets and in populous areas, it was felt that any bombs failing to hit such a target would yet achieve some effect, if it was only against morale. Also marshalling yards were large objectives and numerous, whilst canal targets were more easily located than most.

The table below shows the scale of attack detailed and carried out upon transportation targets in Germany. <sup>(1)</sup> The reduction in effort for August was due partly to a reduction in the total night bombing effort and partly to the choice of aerodromes rather than communications as targets in Germany during this month.

The campaign against communications was persistent, rather than spectacular. There were few occasions when a major effort was put out against such targets. There were, however, certain special operations such as those against the aqueducts of the Dortmund-Ems canal near Munster. And the feature of this period was the number of attacks directed against the marshalling yard at Hamm, considered to be the most important link in the German railway network for the Ruhr and West Germany.

Although some sorties were detailed almost every night in June after the end of the French campaign, the number employed exceeded twenty on only three occasions. On June 20th/21st twenty-eight aircraft were despatched against communications; on the 27th/28th thirty-five; and on the 28th/29th twenty-six. On this night attacks on the Dortmund-Ems canal were included. This target had already been allocated to twenty sorties on June 19th/20th and to nineteen on June 24th/25th, and a photographic reconnaissance on July 2nd showed that the new aqueduct had been breached and was empty of water, with several craters in it.

/In

(1)

PERIOD	SORTIES DESPATCHED	TONNAGE OF H.E. BOMBS DROPPED	CASUALTIES
June	453	456	9
July	310	210.5	16
August	187	116.2	2
September	267	225	9
October	235	143.7	3
TOTAL	1452	1151.4	39



In July small-scale attacks on these targets were continued mainly by No. 3 Group. There were three larger-scale operations during the month, by twenty-eight aircraft on July 1st/2nd, by twenty-two the following night, and by thirty on the 25th/26th. German records report fifty H.E. and incendiary bombs on July 2nd between the railway goods yard and harbour of Munster. The total damage was high. One bomb on the railway at the goods station destroyed several lines. The operation on the night of July 25th included another attack upon the Dortmund-Ems canal by eighteen aircraft. Photographic reconnaissance on July 29th however, showed that the old aqueduct was still in use, with many barges passing south.

As a result of this information a special operation was under-taken on August 12th against this aqueduct. Its breach would completely block the canal and increase the burden borne by rail transport. So five aircraft carrying one "M" bomb each made low level attacks, aiming to drop their bomb in the water to undermine the bank of the aqueduct. Two aircraft were shot down, but Flight Lieutenant Learoyd succeeded in dropping his bomb just to the north-east of the aqueduct in the face of very heavy anti-aircraft fire concentrated at this spot. For this he was awarded the Victoria Cross. Six other Hampdens carried out a high-level diversionary raid during this operation. The canal was completely blocked for ten days.

No. 3 Group continued a harassing scale of attack upon the principal marshalling yards. The only other operation of any importance during the month against communications took place on the night of August 21st. An attempt was made by twenty-four Hampdens to destroy two lifting locks on the Mittelland canal, at Rothensee and Hohenwarthe. One "M" and twenty 500 lb bombs were dropped, and hits reported, but the effect could not be verified.

In September attacks upon communications became more frequent and on a slightly larger scale. This was aimed at delaying the German preparations for invasion in the west. On September 11th/12th twenty-nine sorties were directed against these targets. Wellingtons attacked the marshalling yards at Hamm, Ehrang, Mannheim, Coblenz and Cologne, whilst Whitleys attacked those at Bremen and Berlin. The German records of the Bremen raid report thirty H.E. and a hundred and twenty incendiaries causing fires in the main and Lloyd railway stations, as well as numerous store-sheds and small factories destroyed or damaged.

On the nights of September 14th and 20th twenty-four aircraft were employed against these objectives. On the latter occasion the Dortmund-Ems aqueducts were again attacked. The rail targets attacked on both occasions included Hamm, Ehrang, Krefeld, Osnabruck and Mannheim. The rest of the month from six to twelve sorties were employed against these objectives on most nights.

In October the scale of operations against communications fell once more, as a more direct contribution to German industrial disruption was sought by concentrating upon oil and aircraft objectives. No attacks upon communications were carried out by more than twenty aircraft during the month. German records, however, report damage to railway lines at Duisburg on both October 8th/9th and 10th/11th.

The attack upon the important marshalling yard at Hamm was maintained, as mentioned earlier, throughout the period.

/As

A.H.B.6  
Translation

N.I.D. 24  
Adm: Assman's  
Report on  
"Sealion"

A.H.B.6.  
Translation

A.H.B.6.  
Translation

As an example of the continuous attack upon these targets, hits were claimed at Hamm on ten nights and one day in June, on sixteen nights and two days in July, on twelve nights in August, eleven in September and six in October. The German police records for the Hamm area contain profuse mention of bomb incidents, including numerous casualties in dealing with delayed-action bombs. Very few details of precise damage are given, however. The following examples are the most interesting.

War Diary  
of the Police  
Director  
of Hamm.

On the night of June 24th three or four aircraft dropped four H.E. bombs in the harbour area. Two railway lines of the harbour railway were damaged and about 50 metres of it destroyed. On June 13th/14th two or three aircraft dropped H.E. bombs and incendiaries on the town. 7 H.E.'s hit railway tracks, two heavy engines were badly damaged. Owing to an unexploded bomb having dropped on the railway line, all traffic was stopped for over an hour. Two Wellington aircraft which attacked Hamm on this night reported explosions and a large green fire. There are no reports of specific damage to the railway in August.

In September damage was caused on a number of nights. On the 1st one aircraft dropped eight H.E.s and sixty incendiaries, with slight damage to a railway line. On September 7th one aircraft circled the town dropping incendiary leaves, which did no harm. The next night eight H.E.'s and twenty-five incendiaries were reported. Heavy damage was caused to the Liebfrauenkirche and seventeen incendiaries fell on the parade hall of the Anti-Tank Defence Barracks. On September 15th six H.E. bombs, two of them delay-action, were dropped on the railway line, dislocating traffic between Hamm and Soest. The following night army billets were damaged, about 150 people having to be evacuated. This very incomplete picture of the effect of the raids upon Hamm gives some idea of the small and scattered effect of bombing at this time.

The communication targets chosen for attack during the period are shown in Appendix Q4.

A.H.B.6.  
Translation

4. Shipping and Docks. Anti-invasion operations directed against targets in Germany consisted mainly of attacks upon naval and other shipping and shipyards at the north-west German ports. These operations began on July 1st/2nd with an attack on the Scharnhorst at Kiel by five Witleys and eleven Hampdens. The German report describes this as a heavy raid and mentions large fires in the naval dockyard. The N.S.D.A.P. regional headquarters was destroyed, the dockyard and ammunition depot suffered several hits "and are still burning". The tanker Bromberg was hit.

The attack was resumed on the night of July 4th with an attack on Wilhelmshaven, Hamburg, Kiel and other ports by twelve Witleys and sixteen Hampdens, supported by a few Wellingtons which had been allotted these targets as alternatives. The German report of this night's raids mentions fifteen incendiaries and four H.E. bombs on the naval dockyard at Wilhelmshaven, causing slight damage and small fires. Attacks from all sides lasting two hours are mentioned at Hamburg - some of these were aimed at oil and other objectives. The damage to shipping targets was a hit on a Blohm and Voss shipyard, a naval ammunition depot and one steamship damaged. Approximately thirty-four H.E. and twenty incendiaries are reported in the harbour area.

After this, attacks upon the German ports were continued on most nights by between twenty-five and forty aircraft until

July 10th. German records mention two air raid warnings at Kiel on the 6th, with one H.E. bomb on the "Deutsche-Werke", Kiel-Friedrichsort, where the drill jig for torpedo production was damaged. Also several raids on Wilhelmshaven on the 7th, causing small fires. On the 8th a bomb hit the floodgates of a dock at Kiel, and another the deck of the Lutzow, causing slight damage. 500 lb. S.A.P. were being used where possible for these attacks, the load being completed with 250 lb S.A.P. and an occasional "M" bomb for special tasks, to be dropped in the water.

After a pause due to bad weather and attention to other targets the attack upon German ports was resumed intermittently from the night of July 13th for the rest of July and August. The principal attacks in July were against Wilhelmshaven by eight Hampdens on the 19th and seventeen on the 20th. On the latter occasion four special "M" bombs were dropped from a height of 30 to 100 feet. In August attacks were made upon the Gneisenau at Kiel on the 3rd and 5th, and on the latter date also upon the Bismarck at Hamburg and the Tirpitz at Wilhelmshaven. Kiel was attacked again on the 7th, Hamburg and Wilhelmshaven on the 8th and 10th. After this attention was turned principally to operations against the German air forces for the rest of August. But on the 19th twenty-four Wellingtons were sent to attack the dockyards at Kiel and Wilhelmshaven, and on the 27th twelve to the same targets.

On September 8th Invasion alert No. 1 was brought into force, and from the night following most of the bomber force was employed in attacking shipping and ports. The Germans record fifty-two H.E. and thirty-six incendiary bombs that night at Hamburg. A steam-ferry was sunk and a motor-boat damaged. One or two workshops, and the gas, electricity and telephone lines were damaged. Forty-nine Hampdens were employed on this operation, of which forty-three claimed to have dropped one hundred and forty-six 500 lb bombs on Hamburg, besides 250 lb and incendiaries.

On the night of September 11th twenty-eight Hampdens and thirteen Whitleys were detailed against the north German docks. Three of the former claimed to have bombed shipping at Bremerhaven, where a direct hit on the liner Europa is shown in the German records. All thirteen Whitleys claimed to have hit their target at Bremen and reported large fires. The German report makes an interesting comparison with these claims. It records a heavy raid by 10-17 aircraft, thirty H.E. and 120 incendiary bombs. Fires were caused in the main and Lloyd railway stations. An egg and butter storehouse, a packing case factory and a wood depot were destroyed. Fires were caused in a distillery, a slaughter house and a fishmeal factory, and a printing works damaged. This was the result of an attack, reported as successful, against the Deutsche Schiffe "Deschimag" works.

After this the heavy bombers joined the Blenheims and Battles in their operations against shipping and barges in the ports of the Netherlands and France. Only a harassing scale of attack was maintained against Germany. Five Whitleys on September 17th/18th claimed to have hit the Blohm and Voss yard at Hamburg. Another attack on these targets was carried out on the night of the 23rd, when the major effort of the Command was upon Berlin. And on the 26th/27th twelve Hampdens were detailed to attack the Scharnhorst at Kiel.

A.H.B.6  
Translation

The risk of invasion diminished at the end of September, and the heavy bombers returned to their strategic bombing role over Germany. Occasional attacks were maintained against shipyards and naval vessels in October, however. Fourteen Wellingtons and nineteen Hampdens were detailed on October 8th to attack a shipyard at Bremen and the Tirpitz at Wilhelmshaven respectively. The Germans reported an attack by thirty five aircraft on Bremen, with a total of thirty H.E. and a hundred and ten incendiary bombs. Four people were killed and thirty-four wounded. Ten Hampdens which attacked Kiel on October 10th/11th could not see their results due to intense A.A. and searchlights. The Germans admit four bombs on the harbour and others on searchlight batteries, as well as incendiaries on an oil reservoir.

Attacks were carried out on most nights for the remainder of the month, a small number of sorties being allotted shipping targets in the general scheme of widespread operations over Germany. On October 15 forty-one Wellingtons were ordered to attack the Scharnhorst and Gneisenau at Kiel. The German report says that numerous bombs fell in the harbour, and one hit an oil store. In another heavy attack on the following night, when thirty-eight Wellingtons were detailed, the naval dockyard was damaged and a tanker hit. Twenty-seven aircraft claimed to have attacked Kiel on this night, whilst others attacked the alternative, shipyards at Hamburg, where a cable factory was damaged. On October 24th four Wellingtons and four Witleys attacked the Hamburg shipyards, whilst other targets in the town were being attacked. On this night the German records show nine harbour depots hit, one shed destroyed and a gasworks hit, and a Norwegian steamship damaged.

The scale of attack detailed and carried out upon naval targets in Germany over this period can be seen from the table below. (1)

(1)

PERIOD	SORTIES DESPATCHED	TONNAGE OF H.E. BOMBS DROPPED	CASUALTIES
July	245	158	2
August	161	72.9	3
September	219	177.2	5
October	417	275.2	7
TOTAL	1042	683.3	17



SECTION IVINCENDIARISM AND PROPAGANDA

Incendiarism A number of special incendiary weapons were devised for the attack of forests and crops during the favourable weather to be expected in the summer of 1940. The first of these to be used were the improvised light case 250 lb bomb filled with bundles of rag and petrol, and the 25 lb incendiary bomb with a parachute attached. These were dropped on forest areas on the nights of June 29th and 30th: the Karlsruhe - Stuttgart - Friburg area and Darmstadt - Hanau - Aschaffenburg area respectively. They were not particularly successful owing to unsuitable weather conditions, and so the attempt was abandoned for the time being.

It was considered that coniferous forests should be vulnerable targets to incendiary attack, however. And many important military objectives were situated in such forests. For example, in the Luneburg Heath area were the largest oil fields in Germany, the aerodromes of Hamburg, Lubeck, Schwerin, Luneburg etc. and military dumps of all descriptions. When the "razzle" incendiary leaves came to be used, therefore, another attempt was made to set fire to various forest areas.

These leaves, given the code name "razzle", were new incendiary weapons invented in America. They consisted of two strips of celluloid about three inches in length with a small piece of phosphorous wrapped in wet wadding between them. They were carried immersed in liquid in small tins, about 450 to a tin. When they were scattered from an aircraft by means of a special chute, they lay for some hours until dried out by wind or sun. The phosphorous then ignited, setting fire to the celluloid, which burned with a flame some eight inches high for about thirty seconds.

The Prime Minister was anxious to try out this weapon against German crops during July and August, the most favourable period. Production was urged on during June, in order to start dropping in large numbers on July 18th. After successful trials with a Wellington, a Whitley, a Hampden and a Blenheim, Bomber Command were ready to carry out the operation, when the Cabinet decided to cancel it on July 11th.

On August 6th authority was at last given to Bomber Command to proceed with the operation, but the weather was not suitable for some time. On the night of August 11th, however, 59 Wellingtons, Whitleys and Hampdens were despatched with 50 tins of razzles each to distribute over an area of crops and forest south-east of the Ruhr. This area was chosen because the bombs also carried were intended for the Ruhr. It was not the most suitable, as it contained many deciduous trees which would not burn so well as coniferous. The operation was repeated the following night, but suspended after this as the razzle had ignited inside aircraft in a number of cases.

It was impossible to learn the effect obtained by these operations. So trials were carried out on crops in England on August 15th. The result were very disappointing, as only those crops actually affected by a razzle caught fire.

/There

S.46344  
Encl. 33A

S.4941 File

S.5367 Encl. 33A

S.46344 Encl. 35A

Ibid Encl. 37A

S.5667 Encl. 36A

S.46344 Encl. 38A

S.4941  
Encl.30A

There was no tendency to spread, and it was concluded that climatic conditions in northern latitudes were unsuitable for starting fires in growing grain.

S.46344  
Encl.39A

As the result of further experiments a new large razzle, given the code name of "decker" was produced in September. Trials with these in a pine forest showed that, whereas razzles did not affect the pine needle carpet, the prolonged heat given by "deckers" caused a smouldering fire which spread underground and broke out sporadically. Further attacks were made on forests in the first week of September with 250 lb and 25 lb incendiary bombs and the remaining stock of razzles. Deckers were not available until October, during which they were occasionally carried incidental to bombing missions.

S.46650/II  
Encl.17A

A little more is now known of the effect of incendiary leaves. It was not generally considered that their use produced much result, beyond some slight surprise. Reports received at the time, in late September, are of interest but throw no light on the subject. A "reliable source" reported "that incendiary leaves are a terrible and efficient weapon and have created considerable havoc in places where they have been dropped". The Neue Frankfurter Zeitung in an article upon the danger of incendiary leaves stated that "it is greatly regretted that some people have been burnt by reason of their having collected the leaves as souvenirs and put them in their trouser pockets. Shortly after they have unexpectedly ignited."

B.C.I.R.  
No. 985

There are numerous mentions of incendiary leaves in the German reports prepared for the Ministry of Propaganda. Very few, however, mention their effect. The following examples from these reports give some indication:-

A.H.B. 6  
Translation

Night September 4th/5th - Incendiary leaves in Oldenburg area (Weser-Ems) and Osthannover (great quantities) - Celle, ten year old wood and fields burnt; Osterburg, wood burnt.

Night September 5th/6th - Incendiary leaves in Hassfurt (at least 100), in the Tulba, Schondra and Sinn valleys (several thousand) and also in the Ohringen, Limburg, Schluchern (some wood fires) and Budingen areas.

They are mentioned again on the nights of September 6th, 9th and 10th. Then as follows:-

Night September 11th/12th - Luneburg area, near Bardowick. large fires caused by incendiary leaves. Schleswig - Holstein, burning oats and rye in the village of Treya.

Morning report, night of September 12th/13th - North Westphalia, eight incendiaries on a farm - entire harvest burnt. This was probably 4 lb incendiary bombs.

Night September 23rd/24th - Mecklenburg, incendiary leaves caused several small fires. Incendiary leaves also reported from Oldenburg, Wittenberge-Rothenow, Osthannover and Berlin (in eight "Gauen").

After several more inconclusive reports:-

Night September 28th/29th - Celle, incendiary leaves - 400 acres of field burnt. Soltau, 100 acres of field burnt. Also in Uelzen and Luneburg areas. The next mention was on

October 7th/8th,

October 7th/8th, then on the night of October 8th/9th incendiary leaves burnt approximately 500 square metres of field and forest at Euskirchen. On October 13th/14th a granary at Dortmund was destroyed. On October 14th/15th new type incendiary leaves were reported in many areas, including Berlin and Luneberg. On October 15th/16th a granary at Ehrfurt was burnt down, and the next night a radium bath at Brambach, but it is not clear whether this was the result of incendiary bombs or leaves. On the latter night, however, incendiary leaves burned out a barn at Jena, causing damage assessed at 3000 R.M. On October 23rd a small forest fire at Gandersheim, twelve acres of forest land destroyed at Niederbarnim, and two granaries and a barn burnt at Eckartsberga were the work of incendiary leaves.

2. Propaganda Leaflets The dropping of "nickels" had been suspended when Germany opened her western offensive, in favour of bombing land targets. When all the western countries were overrun and the land campaigns were over the subject of leaflets was discussed again. The Ministry of Information which had now been formed enquired whether leaflet dropping over France might be undertaken to counter enemy propaganda, as the Germans were jamming radio broadcasts in French.

S.46650/I  
Encl. 113A

Encl. 114A

Bomber Command were prepared to undertake the task as a final exercise for pupil crews at the Operational Training Units. It was agreed also to carry a small number of leaflets on bombing raids to Germany, where this did not interfere with the primary task of bombing. On July 16th, 1940, therefore, authority was given to recommence dropping, and full instructions were sent on the 20th. The limits of the area to be covered by the O.T.U's was a line Lille-Amiens-Rouen-Brest. Later it was hoped to extend it, when some experience had been gained, and on October 29th a new line Lille-Paris-Brest was agreed to.

Encl. 116A

S.46650/II  
Encl. 17A

The first operation over France took place on the night of July 18th, when three aircraft of No.6 Group dropped leaflets in the area assigned, one of them also attacking St. Inglevert aerodrome. It had been agreed that bombs might be carried at the Group Commander's discretion, and used against any aerodrome seen to be in use. Aircraft were ordered to fly at maximum height, in order to reduce risk to a minimum, and a height of 20,000 feet was often achieved, as lightly loaded aircraft were used, without operational additions such as armour and extra turrets and guns.

Operations over France after this were left to the discretion of the A.O.C. of No.6 Group, and later of No.7 Group, when this was added to the effort in mid-August. These two Groups continued to distribute the leaflets with which they were supplied as soon after their provision as possible. Up to October the number dropped was about two million weekly. The effort was increased at the request of the propaganda department.

In the same way it was left to the A.O.Cs. of Nos.3, 4 and 5 Groups to add a few nickels to a bomber's load at their discretion. In this way nickels were regularly dropped over Germany by No.3 Group, and No.4 Group occasionally

/distributed



S.46650/II  
Encl. 6A

Ibid  
Encl. 17A

distributed some. Up to October 15th No.5 Group had disposed of none of those with which they had been supplied. At this date a conference was held in an attempt to increase the scale of leaflet dropping. It was agreed by Bomber Command on October 29th that No.5 Group should drop a Danish leaflet in conjunction with its minelaying activities. It was pointed out that the load carried had to be adjusted so as not to prejudice the efficiency of the aircraft for its primary function of bombing the objective specified. Deckers were also being dropped, so that the carriage of nickels could not materially be increased.

PART VOFFENSIVE AGAINST OIL AND MORALESECTION IBOMBING POLICY, NOVEMBER 1940 TO JUNE 1941.

1. General Review - Up to October, 1940, the pressure of events kept Bomber Command fully employed, mainly in a defensive role. When the political restrictions on bombing were removed, the campaign in France, followed by the threats of German air and sea attack on Great Britain, and the grave threat to supply routes caused by U-boats and surface raiders had diverted the bombing force from their strategic role of attacking German productive capacity.

C.O.S.(40)  
683.

In the summer of 1940 an appreciation was prepared by the Joint Planning Staff of the future strategy to be adopted to defeat Germany. Remaining on the defensive until the spring of 1942, strength at home should be built up, whilst reinforcing the Middle and Far East and West Africa. Meanwhile the "wearing down" of Germany by ever-increasing force of economic pressure should be the foundation of our strategy. Simultaneously, we must extend our air attacks on Germany, and these attacks must be directed mainly on targets that will assist our economic pressure, such as oil supplies, communications and industry".

S.4768  
Encl. 20A

This paper was studied by the Air Staff, and criticised in November by the V.C.A.S. and others mainly because it gave no clear exposition of how the war was to be won. The Navy's part was obvious - the blockade; the Army was to be built up to 55 Divisions and to wait until the blockade and the air offensive should have secured conditions where numerically inferior forces could be employed with a good chance of success. The Air Force was merely given the role of assisting to bring economic pressure to bear, whilst building up to a target force of 1600 heavy and 400 medium bombers by 1942.

S.4768  
Encl. 12A

The Prime Minister had said that only the Air Force could win the war. Therefore it was for the Air Force to say how it was proposed to do it. The experience already gained of bombing both in England and Germany showed that concentrated attacks were the only way to achieve any real effect. On taking up his appointment as Chief of the Air Staff in October, Air Marshal Portal, late C.-in-C., Bomber Command, had proposed that a primary target should be selected in a large populous industrial area, and that a heavy concentration should be delivered upon it. This would probably ensure the destruction of the target selected, e.g. a power station or gas works, with the destructive and moral effect resulting. There would also be considerable secondary effects from bombs dropping around the target damaging houses, water mains and other facilities. A heavy attack should be delivered on a target of this sort in a selected town, as often as possible during dark periods, when precise bombing of small military objectives was difficult. The maximum use should be made of fire during such attacks, the early bombers using mainly incendiary bombs to start fires, which would guide those coming later, who would interfere with fire-fighting. It will be realised that this is the technique which was eventually used with devastating effect when the bomber force had grown to full strength. The inaccuracy of bombing at this time rendered it largely ineffective, as the fires started were often not on the target, and led those aircraft which came later to bomb the wrong place.

S46368/II

BC/S23746/II  
Encl. 16B

2. The beginning of Area Bombing, October 30th, 1940. - With the decision to use the bomber force for its proper offensive purpose, with the minimum of diversion, a new directive was issued on October 30th. Under the imminent threat of invasion and of the German Air Force, disposed along the whole seaboard opposite our coasts, our attacks had inevitably been employed primarily against these two threats. The result had been a widespread diversion of effort, so that small progress had been made either with the main oil plan or with the achievement of any effect on morale. The time had come to make a definite attempt to affect the morale of the German people, now that they were facing the prospect of a long war.

The Oil Plan was still to be the primary objective when favourable conditions should obtain, particularly during moonlight periods. If a suitable oil target could not be found, aluminium plants and component factories could be selected from the lists previously given. Secondly, "regular concentrated attacks should be made on objectives in large towns and centres of industry, with the primary aim of causing very heavy material destruction which will demonstrate to the enemy the power and severity of air bombardment." The War Cabinet approved this type of attack on October 30th.

War Cabinet  
280th conclusions.

Berlin was to be selected when possible, otherwise the towns should be selected having regard to their size, distribution and the importance of the objectives they contained. As many heavy bombers as possible should be detailed for the attack. The primary objectives should be sources of power or centres of communication, or oil or aircraft industry targets where these might be suitably placed in a populated centre.

Operations against Italy were to be continued where possible. A small effort could be continued against marshalling yards in Western Germany, whilst fringe targets could be used to enable new crews to gain experience. It was hoped to get the Admiralty to agree to a reduction in mining in order to concentrate on the offensive against German centres, and they eventually agreed to one squadron only being kept on this task. On December 13th the C.-in-C. ordered that only learner crews should be employed on gardening operations.

BC/S23746/II  
Encl. 30A.

Encl. 52A.

This policy was pursued, so far as possible, until January, 1941. The most serious diversion was a threat by the enemy capital ships and submarines. Concern had been expressed in a signal in October - "potential threat now offered by enemy heavy ships Tirpitz, Bismarck, Scharnhorst and Gneisenau considered so serious as to warrant special effort being made to damage them". In early November this threat was driven home by the activities of the Admiral Scheer in the North Atlantic. On November 6th it was reported that she was attacking trade, and might return to Brest, St. Nazaire, or Le Verdun. Bomber Command was to make arrangements to bomb her intensively should she be located. On the same day the serious character of the submarine menace caused a request to concentrate the effort available for the attack of ports in occupied territory against Lorient until further notice. On December 4th, owing to the continued menace of German submarines in the Western Approaches, early attacks were asked for against their bases at Bordeaux and Lorient when weather should preclude attacks on Germany. Later in the month the Admiralty feared that the Scharnhorst and Gneisenau were almost ready to start commerce raiding. Urgent requests for photographs of Kiel were made, and when a P.R.U. photograph finally confirmed, on December 22nd, that they were both in floating dock there once more, and Lutzow was alongside, an attack was requested.

B.C. 540  
App. C. 87A.M. Signal  
X 873A.M. Signal  
X 887A.M. Signal  
X 884.BC/S. 23746/II  
Encl. 55A.

The policy of large-scale attack on towns was reiterated on December 2nd, as a result of the heavy German attacks on Coventry, Southampton and Bristol during November. It was suggested that some crews should do two sorties to increase the weight of attack. German crews had done this, but it was impracticable for Bomber Command owing to the longer distance to be covered, to reach one of the nearer German towns. Area attack had already been made during November on Berlin, Essen, Munich, Hamburg and Cologne, but it was not until December 16th that the 'blitz' reprisal attack could be carried out against Mannheim by 134 aircraft, the largest number so far despatched. 235 should have taken part, but weather cut the number down. This was the first raid whose intention was to cause maximum destruction to a town, with no specific targets therein laid down. One more area, that of Bremen, was attacked, on January 1st, 2nd and 3rd 1941, before the new directive of January 15th reduced the priority of such attacks.

RECP5.

DB Ops Folder  
Bombing Policy  
Encl. 8A.

DB Ops Folder  
Oil Policy  
Encl. 7.

3. Special Effort against Oil, January 15th - The Chiefs of Staff reviewed the alternative targets available, and recommended to the War Cabinet on January 7th, 1941, that the primary aim of the bombing force for the next six months should be the destruction of the German synthetic oil plants. The lowering of enemy morale, particularly in industrial areas, was to be the secondary aim. The renewed stress on oil targets was a result of the Fifth Report of the Committee on the German Oil Position, presided over by Mr. Geoffrey Lloyd, M.P., which had been submitted to the War Cabinet on December 16th, 1940. This report suggested that the position of oil supplies to the Axis Powers would be critical during the next six months, after which increased production and improved transport from the Roumanian oilfields would bring relief. The Lloyd Committee assumed, on the evidence available, that air bombardment of the German synthetic plants up to October 4th had reduced their output by 15%, and that this would continue.

S.46368  
BC/S23746  
Encl. 69A.

The new directive to Bomber Command was issued on January 15th 1941. After summarising the latest analysis of Germany's oil position, it pointed out that the destruction of the synthetic plants would be the best available method of reducing German supplies to a critical point. It went on:- "in these circumstances, it has been decided that the sole primary aim of your bomber offensive, until further orders, should be the destruction of the German synthetic oil plants". These were seventeen in number, and the complete destruction of the nine largest would reduce Germany's internal production of oil by about 80%.

When weather conditions should preclude the attack of oil objectives, the bomber offensive was to be directed towards harassing the enemy's main industrial towns and communications, including periodical heavy concentrations against the former. Towns and communications were also to be used as alternative targets. The only diversions envisaged were invasion ports, if a threat should arise, and enemy naval forces, on specific occasions.

BC/23746  
Encl. 74A.

Mine-laying operations were purposely omitted from this directive, but on January 25th permission was given to undertake them (i) for the training of inexperienced crews; (ii) in order to make use of the new Stirling and Manchester aircraft, where they had not been modified to full operational requirements; and (iii) when conditions were unsuitable for other operations.

Ibid.  
Encls. 75A to  
90A.

The main diversions which occurred during the period of this directive resulted from the activities of the Hipper, and of enemy long-range aircraft, in attacking Atlantic convoys. This was a critical period in the Battle of the Atlantic, and requests were received for the bombing of Brest when the Hipper was reported there, and of the Focke-Wolfe air bases at Bordeaux and Stavanger. These attacks were always to be subject to the primary oil objectives. At the end of February it became necessary for Bomber Command to take over certain duties of Coastal Command, to release aircraft of the latter for increased convoy protection. And great pressure was exerted by the Admiralty for a change in the bombing directive in favour of naval targets. Finally the Prime Minister ruled that for the next four months the efforts of the Command should be devoted to defeating the enemy attempt at blockade, and a new directive was issued on March 9th.

Encl. 95A

R.E.C.P./  
DO/5

4. Limitations due to Weather and Crew Position. - Ample experience had been gained by the second winter of the war of the importance of the weather factor in planning bombing operations. With the almost complete lack of navigational aids this was an overriding consideration. The C.-in-C. explained this to the Prime Minister on December 24th, 1940, "the controlling factor at this time of year is weather. I have the difficulty of not only forecasting the weather in the target area - or so often now in trying to find a lucrative target in the only area offered by the weather - but also that at the base aerodrome for homing purposes".

BC/S23746  
Encl. 92A

A good example of the effect of weather was given by the C.-in-C. in a D.O. letter to the Chief of the Air Staff on February 28th, 1941. Although the primary aim had been oil targets, owing to weather limitations the operations actually carried out from January 1st to the night of February 27th were:-

- (1) 3 nights exclusively on oil.
- (2) 19 nights on naval targets (13 exclusive, 6 part effort)
- (3) 6 nights on industrial towns (other than naval targets)
- (4) 5 nights on channel ports only.

The selection of the two latter categories had been entirely the result of the weather.

The Air Staff had by this time realised the limitations due to weather to some extent. Allowance was made for them in bombing directives by providing targets in different areas of Germany, as well as at various ranges, including fringe targets and mine-laying for occasions when deep penetration was impossible. There were frequent occasions, however, when the meteorological forecast did not give an accurate picture. This resulted in the target selected being impossible to locate, and in heavy losses due to unexpected changes of wind or cloud, or icing conditions.

Another factor which severely curtailed the effort of the Command during this period was lack of aircrew. This was partly due to the need to build up the O.T.U's for the sake of future expansion. But there were other major causes of reduction. Wellingtons and Blenheims had to be flown out for the reinforcement of the Middle East Command. In the case of the Wellingtons, this involved the supply of two complete squadrons, (Nos. 37 and 38), and half of No. 115, a total of 30 crews. In addition, odd reinforcing aircraft were despatched to a total of 66, making a grand total of 96, between August 31st, 1940 and March 1st, 1941 - over a squadron per month from No. 3 Group.

RECP/DO/35  
4/3/41.

/ Owing

RECP/DO/35  
2/3/41

RECP/DO/7  
8/3/41.

Owing to the breakdown of the ferry pilot organisation at the same period, all Groups of Bomber Command had to ferry their own replacement aircraft. As the maintenance units were in many cases situated in Scotland and Ireland, and winter weather often added a delay, this meant that a ferrying crew was often away from its squadron for a fortnight. In the case of No. 3 Group for example, twenty aircraft awaited collection at the beginning of March, 1941, which was equivalent, at 10 sorties as a squadron average, to the loss of two squadrons from operational duty. In addition to this, crews had to be granted leave and were occasionally sick. The total result being that the Command could often raise only a small proportion of its paper strength. Even this paper strength was very low during the winter of 1940/41, as is shown by the following table:-

BOMBER COMMAND CREW POSITION

Group	1.9.40.		1.12.40.		1.3.41.	
	Op. Fit Crews	Establishment	Op. Fit Crews	Establishment	Op. Fit Crews	Establishment
No. 1	49	80	33	120	28	120
No. 2	222	260	127	180	98	180
No. 3	138	160	92	240	158	240
No. 4	59	120	60	120	82	140
No. 5	112	140	119	160	123	180
Total	580	760	431	820	489	860
Op. Fit Crews expressed as percentage of establishment.		76%		53%		57%

It can easily be seen why the effort of the Command at this stage of the war was so pitifully inadequate to the task with which it was charged.

It was only during this period that the increasing photographic evidence began to shake previously held views of the efficacy of British bombing. The evidence that these views had been optimistic opened the way to an increased drive for effective aids to navigation and bombing, and for an increase in the size of bombs used and in the size of the bomber force. These aspects are dealt with in the next parts of the narrative.

5. The Battle of the Atlantic - after great pressure had been exerted by the Admiralty and others, the bombing directive of January 15th concentrating on oil was abandoned on March 9th. The attempt to destroy oil plants had been unsuccessful, and it was beginning to be realized that no decisive effect could be achieved on such targets with the means available. The Prime Minister ruled, therefore, that Bomber Command should be thrown in to the Battle of the Atlantic. This had reached a critical phase, with heavy sinkings inflicted by German U-boats, surface raiders such as the Hipper and the Admiral Schoer, and long-range aircraft.

S46368  
BC/S23746  
/II Encl.  
95A.

The directive of March 9th quoted the Prime Minister's words "we must take the offensive against the U-boat and the Focke-Wolfe wherever we can and whenever we can. The U-boat at sea must be hunted, the U-boat in the building yard or in dock must be bombed.

/The

The Focke-Wulf and other bombers employed against our shipping, must be attacked in the air and in their nests". It was explained that this did not entirely exclude attacks on oil objectives, and the C.A.S. suggested that something like a quarter of the effort might be retained on these. A list of suggested targets connected with submarines and long-range aircraft accompanied the directive. Many of these lay in congested areas where an effect on morale might be obtained in addition, and these were to be given priority.

Encl.100A.

Encl.104A.

Special diversions from this directive were requested soon after; first, an attack on Berlin during the visit of the Japanese envoy, Matsuoka, from March 28th to April 4th; and secondly, when Germany was expected to attack Yugo-slavia at the beginning of April. A heavy attack on a German city, Berlin if possible, was desired as reprisal for the anticipated German attack on Belgrade.

BC/Form  
540/ App.  
B1305

The North Sea patrols taken over from Coastal Command were entrusted to No.2 Group. On March 15th instructions were issued as to these:- "Your primary objective is to be the enemy coastwise shipping between Denmark and Ushant". When for any reason it was found impracticable to attack shipping, No.2 Group were given an unrestricted choice from the lists of fringe targets issued, and they might attack at discretion any aerodrome or enemy troops in enemy or occupied territory. First priority, however, was to be given to enemy submarines in ports in occupied territory.

R.E.C.P./  
DO/6

A.M.Signal  
X 143.

On April 15th the C.-in-C. of Bomber Command protested to the Chief of the Air Staff in a D.O. letter regarding the wasted efforts of the Command in attacking enemy heavy ships at Brest. Between January 4th and April 15th 829 tons of high explosive had been thrown into Brest harbour, 259 tons aimed at the Hipper from January 4th to March 3rd, and 570 tons aimed at the Scharnhorst and Gneisenau up to April 15th. Daylight as well as night sorties had been made. It was reported that Gneisenau, had been damaged, and that these ships had been 'sewn in' by mines. He went on - "are we therefore to continue ad nauseam to cast hundreds of tons more on to the quays and into the waters of Brest Harbour". This appeal resulted in permission being given on April 17th to transfer the primary effort to targets in Germany. This was still subject, however, to three stipulations regarding the battle-cruisers.

- (1) Daily reconnaissance by P.R.U.
- (2) Frequent attacks by small forces when weather should be favourable.
- (3) The battle-cruisers again to be given first priority for attack when any movement was seen or suspected.

This was a step once more towards the proper strategic role of Bomber Command, but the fears of the Admiralty continued to force a large diversion of the bomber effort to be directed towards immobilising these ships for some time to come.

BC/S23746/  
II Encl.125B

Towards the end of May the Air Staff once more pressed for a return to the long term strategic bombing policy. It was pointed out that since March 10th, when the Prime Minister had ruled that the Battle of the Atlantic should have priority, the bomber effort had been directed mainly against Brest, Hamburg, Kiel and Bremen, with lesser attacks on Mannheim, Koln and Hanover. The total tonnage of bombs dropped was approximately 1000 tons on the first three and 500 on Bremen. The time was now ripe to revert to the offensive aim, the crushing of Germany's war effort.

6. The Progress of Policy up to June 1941. - During the first eight months of the war discussion was centred upon the legitimacy of different types of bombing policy. Owing to the overwhelming superiority of the German forces the initiative lay entirely with them. Fear of reprisal prevented the undertaking of any operations where retaliation might be effective. Meanwhile, however, the major bombing plans drawn up before the war were elaborated and revised in the light of the limited experience gained. The principal lesson learnt was the necessity of relying on night bombing if losses were to be restricted to an economical rate.

The six weeks of the German campaign in the West in May and June, 1940 were a period of improvisation and emergency. The bomber force was used as long-range artillery, for which it was neither designed nor trained. An effort was made, however, to put into effect the plans made for the strategic use of Bomber Command. Whenever any bomber effort could be spared from its army support role, attacks were attempted on German oil supplies and communications.

After the fall of France the bomber forces were still required in a defensive role throughout the summer. An attempt was made to combine this with long term policy, by attacking the aircraft industry at its sources, as well as maintaining some attacks on oil. The critical period of September, however, when invasion was daily expected forced the command to concentrate almost entirely on defensive bombing, - invasion preparations, aerodromes and German communications in the West.

With the ending of the invasion "season" in October another attempt was made to use Bomber Command in its proper offensive role. Oil targets retained their priority throughout the winter, but experience gained of the difficulties of precision bombing at night caused the initiation of "area bombing" in addition. Precision targets in moonlight and good weather, otherwise attacks on "industrial areas", was the order throughout the winter.

Large diversions of effort had been forced upon the bomber force by Admiralty fears of the heavy German naval units and U-boats, and by the heavy losses these were causing in the Atlantic. It was not until March 1941, however, that the attack upon them was given first priority for Bomber Command by the Prime Minister's ruling. The assault on oil resources had failed owing to the weather and the weakness of the force available. At the beginning of the year it had appeared that the destruction of synthetic oil plants would have the most immediate effect on Germany's war strength. Intervening events, particularly Germany's occupation of the Balkans and her threat to Middle Eastern oil resources, had altered this view. So when three months had been devoted to the Battle of the Atlantic, and Bomber Command could turn once more to the bombing of Germany, an attack on transportation and morale was considered the best policy to pursue.

BC/S23746/II  
Encl. 125B.

Much had been learned about the limitations of night bombing in the course of a year's experience of attacking German war industry. A paper on bombing policy prepared at the end of May, 1941 for the C.A.S. lays down the tactical requirements for the future use of the bomber force:-

"(a) The targets selected for attack must be mainly in an area which we can reach within the hours of darkness all the year round."

/ (b)



- "(b) The task we set ourselves must be commensurate with the size of the bomber force available. At the moment our bomber force, even under the most favourable conditions, is only capable of dropping 200 tons of bombs on Germany on a given night." Consequently the number of targets selected should be kept low so as to ensure a concentrated effort upon each.
- (c) Owing to the proved difficulty of finding and hitting precise targets on dark nights, a large number of the targets should be so situated that the misses and near misses are of value.
- (d) The targets should be in industrial areas, so that "shorts and overs" will kill, and if the precise objective cannot be seen there will be no difficulty in finding a target, whose attack will strike at the enemy's morale.
- (e) The precise targets selected for attack on moonlight nights should be big enough to ensure that adequate damage can be inflicted upon them.
- (f) The plan should allow of alternative target areas, suitable for attack when weather conditions over the main targets are unsuitable."

It will be seen that many of the conditions essential to the destruction of the German war potential had already been appreciated. The solution of them, by radar aids to navigation, by the growth of the bomber force, and finally by the Pathfinder technique, will be seen in the later parts of this narrative.

SECTION IITRANSITION FROM SPECIFIC TO AREA  
BOMBING, NOVEMBER - DECEMBER, 1940

Introduction - The bombing directive of October 30th, 1940, marked a drastic change in the object and method of bombing operations. From this time concentrated attack was aimed at. Instead of attacking a number of scattered targets of one or two special categories, such as oil, on any one night, one town or industrial area was now chosen as the principal target for the night. The change was not effected all at once, however, during November and December several specific targets were detailed for attack within the chosen area. It was not until the New Year of 1941, apart from one "Abigail" raid of December 16th, that an industrial centre was chosen without specific objective within it.

During November the campaigns against oil and communications retained their priority, and centres were chosen with them in mind. 537 sorties were despatched against the former, and 561 against the latter, during the month. In December aircraft and armament factories, and objectives connected with the Battle of the Atlantic were added on a larger scale than before. The latter are dealt with separately in Part VI.

The first mass raid, without specific objective other than an industrial centre, took place on December 16th against Mannheim. This type of raid had been given the code name Abigail, and Mannheim that of Rachel, so that the operation was called "Abigail - Rachel". The operation order specified that all available aircraft of Nos. 2, 3, 4 and 5 Groups should be employed, including those which had operated the previous night. Three alternative towns had been chosen - Bremen, code name Jezebel, 126 4.12.40. Dusseldorf, code name Delilah, or Mannheim. An aiming point was specified in each by reference to one of the existing Targets therein. That at Mannheim was 205°D55 (Motorenwerke Mannheim A.G.) 1500 yards.

2. Berlin - The directive of October 30th gave Berlin priority when selecting a town area as an objective, and on November 1st it was the principal objective. Only thirty-eight sorties were directed against it, however, as Magdeburg and Kiel were also attacked. On November 14th a bigger attack, by fifty aircraft, was ordered against Berlin. On this occasion a number of land mines were dropped, and considerable fires and explosions were claimed on the targets chosen, the principal railway termini.

The next attack on Berlin was not until the night of December 15th, when sixty aircraft were despatched against power stations, an armament factory and railway station in the city, and the German Air Ministry building. A number of successful attacks were claimed, the majority being on targets in the city other than those specified. Smaller scale operations, involving thirty-seven and twenty-four sorties respectively, took place on December 20th/21st and 21st/22nd.

Contemporary reports of doubtful reliability stated that the raids of December 15th and 20th were very successful. In the

/first

B.C.I.R. No.  
1173 22/12/40

first considerable damage was reported at Spandau and to the railway line between Zehlendorf and Wannsee, with several bombs on railway stations. On the night of December 20th four underground stations were reported severely damaged, and the arsenal near the Friedrichplatz blown up.

B.C.I.R. No.  
1183 26/12/40

A total of two hundred and eighty-three sorties were directed against Berlin during November and December, 1940. No German records have been discovered giving accurate accounts of the damage done during these two months, the only definite results mentioned being damage to a Luftwaffe barracks, a station and underground railway and a few buildings in residential areas on the night of December 15th.

A.H.B.6.  
Translation

3. Hamburg - The city and port of Hamburg contained many important objectives which had already been attacked, especially oil plants, railways and port facilities. The latter, including shipyards and shipping, were of especial importance to the war at sea.

Three big attacks were made on Hamburg during November. The first, by sixty-seven sorties on November 15th/16th, was directed against oil and power plants, shipping and railway targets. It was part of the counter-attack to the German "blitz" on Coventry on December 14th. This was followed up the next night, November 16th, by the biggest attack of the month. One hundred and thirty-one aircraft took part, being directed against specific oil, power and rail targets in the city. Very good results were reported on the first night on all targets. On the 16th cloud interfered with observation, and many aircraft failed to find the target. A large number of hits in the Hamburg area were claimed, however.

B.C.I.R. No.  
1115 25.11.40

Intelligence sources claimed to be reliable at the time, reported that six factories were destroyed on these two nights. A kerosene depot was set on fire and an important railway station damaged. Heavy damage was also reported from this source on the Blohm and Voss ship-building yards.

The third attack of November, on the 24th, was smaller. Forty three aircraft were despatched, but few results were observed as the area was again covered by cloud. No operations against Hamburg were undertaken in December. The total sorties in November amounted to two hundred and seventy-nine.

A.H.B.6.  
Translations

Reliable reports now available from German records of the results of the big attacks of November 15th and 16th do not make a very impressive showing for the effort expended. On the first night 120 H.E's and 700 incendiaries were reported. In the Blohm and Voss dockyard the old laboratory was gutted, water mains damaged, and incendiaries fell on the destroyer Erich Steinbrinck. Three tanks and pipelines of an oil company were damaged, as well as a number of houses and other buildings. On the second night power cables and telegraph wires were damaged, incendiaries fell on a new dry dock in the Blohm and Voss yard, and bombs fell to port and starboard of the Bremen without damage to her.

4. Cologne - Cologne was one of the most important German industrial centres, and was easily identifiable and accessible, being on the Rhine. Several attacks of some weight were made on it in November and December, although not comparable to those upon Berlin, Hamburg and Mannheim. The total during the two months amounted to two hundred and five aircraft, directed against oil, armament and railway

objectives within the town.

After small attacks on the nights of November 12th and 13th, Cologne became the principal target for the nights of November 26th and 27th, when thirty-five and fifty-six aircraft respectively were despatched against it. In December the only operations against Cologne were on the nights of December 19th and 20th, by thirty-seven and twenty-two sorties respectively.

Some idea of the actual distribution of bombs can be obtained from the German assessment given in Appendix W. Both Cologne and Mannheim were included in the area of Luftgau Kommandos XII/XIII, who were responsible for this assessment. Otherwise no evidence as to the results of these attacks has been obtained.

5. Mannheim ("Abigail-Rachel") - Another of the most important of the industrial centres on the Rhine was Mannheim-Ludwigshafen. The town of Mannheim is on the right bank, Ludwigshafen on the left. Both were attacked on a number of occasions in November and December. In the latter month Mannheim was chosen as the target for the first mass raid undertaken by Bomber Command without specific objective beyond an "industrial centre". This operation was given the code-name "Abigail-Rachel", and took place on December 16th.

Prior to this attacks had been detailed on power and rail targets in Mannheim or Ludwigshafen on November 6th by fifteen Hampdens, on November 10th by eighteen, and on November 28th by twenty-six Wellingtons and Hampdens. Two operations in December, on the 10th and 11th, against similar targets in these towns, were carried out before the Abigail attack. Thirty-six aircraft were employed on the first, and twenty on the second.

B.C.O.O.  
No. 126

The original operation order for the Abigail raid was issued on December 4th, 1940. Its intention was "to cause the maximum possible destruction in a selected German town", and was therefore a radical departure from the previous policy of bombing industrial objectives only. It was intended that over two hundred aircraft should take part, but when the operation took place on December 16th the number was cut to one hundred and thirty-four, owing to the doubtful duration of good weather.

B.C.O.O.  
No. 127

On December 13th a second operation order was issued by Bomber Command, with the intention of being "prepared to carry out operation Abigail at short notice." This specified one aiming point in each selected town, and ordered No. 3 Group to detail fourteen aircraft with the maximum load of 4 lb incendiary bombs to make the initial fire-raising attack. These aircraft were to be flown by the most experienced crews available. This was the first instance of the use of a "pathfinder" force. It was intended to maintain a steady scale of attack to as late an hour as would provide darkness for the return journey, if weather should permit. 1,000 and 500 lb bombs were to be carried in preference to 250 lb bombs. No. 5 Group was to carry land mines if possible, and two "Imps" were in fact dropped. These were magnetic mines fused for use as land mines, a full description of which can be found in the A.H.B. Armament Monograph.

Ops. 356  
16.12.40

On December 16th a signal from Bomber Command to Nos. 2, 3, 4 and 5 Groups at 1030 hours ordered operation Abigail-Delilah for that night. This stood for Dusseldorf. Owing to further

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/weather

Ops. 359  
16.12.40

weather reports this was amended at 1315 hours to Abigail-Rachel, i.e. Mannheim.

The first aircraft on the target bombed at 1945 hours and the sixty-one Wellingtons despatched continued to attack until 0330 on December 17th. Only fourteen of them failed to bomb their primary target. The Whitleys of No. 4 Group were second on the target. Thirty-five were despatched, and attacked from 2042 to 2145, with a second wave after the Hampdens from 0200 to 0255. Only two Whitleys failed to bomb Mannheim. The Hampdens, twenty-nine of which were despatched, attacked between 2255 and 0210, twenty of them finding the target. Out of nine Blenheims despatched three were able to attack Mannheim, one of which was abandoned and one forced landed on return. Two of the others crashed in England, and one was missing. Thus out of 134 sorties despatched 103 bombed Mannheim, dropping 89 tons of H.E. bombs, in addition to an unusually heavy load of incendiaries. These consisted of 42 special 250 lb incendiaries, 2 of 25 lb and 13,586 of 4 lb. Total casualties were ten aircraft, including those which crashed on return.

Results reported by all the successful aircraft were satisfactory. Examples are as follows: bombs seen to fall across the centre and on north, north-west and south-east of the aiming point. Straddled railway south-east of Rhine bridge. Many explosions and fires visible 20 miles away. Many aircraft reported up to twenty-five fires burning on their arrival at target. Fires were also reported to be visible 35 miles away, and after  $1\frac{1}{2}$  hours flying on the return journey. Bombs were reported as bursting both in Mannheim and Ludwigshaven station yards. The weather over the target was reported as clear, with good visibility and moonlight.

A.H.B.6.  
Translation

The German record of this first "blitz" attack reports 100 H.E's and 1000 incendiaries and reveals the following damage:-  
Lanz machine works hit - 4 million R.M. damage, several sheds and workshops destroyed, 25% loss of production.  
Ship and machine construction Co. - direct hit on turners shop, 8 lathes destroyed, some loss of production.  
Mannheim-Rheinau power station - 20,000 volt H.T. wires damaged.  
Main railway station - delayed action bomb exploded later, damaging administrative building and signals. Goods and sheds at the main goods station were damaged.  
Water mains damaged, making fire-fighting difficult, and resulting in the outbreak of large fires.  
German-American petroleum Co. - shed destroyed, tanks undamaged.  
Ludwigshaven station - goods wagons damaged. Complete loss of production at the Erbar sugar factory. All rail traffic was restored by 0800 hours on December 17th.

6. The Ruhr and other German Targets. - A number of towns in the industrial area of the Ruhr were heavily attacked during November and December, 1940. 168 sorties were directed at Dusseldorf, 159 at Gelsenkirchen, 86 at Duisburg and 72 at Essen. All these attacks on Dusseldorf were made between November 28th and December 9th. Gelsenkirchen was attacked on November 10th, 12th and 17th, and December 19th and 20th, in addition to small intervening raids. The targets here were the two big synthetic oil plants. The only heavy attack on the important inland port and rail centre of Duisburg was by forty-three aircraft on December 20th. Similarly there was one major raid on Krupps works at Essen by sixty-three aircraft on November 7th.

A few other towns in Germany received a certain amount of attention during this period. 57 sorties were directed against

Bremen, 54 against Kiel, 46 against Munich, and 32 against Magdeburg. The important synthetic oil plant at Merseburg, near Leura, also had 54 sorties directed against it, all Whitleys of No. 4 Group. The 46 sorties mentioned above, directed against Munich, were all despatched on one night, November 8th. On this night Munich was the principal objective of the Command, in honour of the Nazi party rally taking place there. It had been suggested that bombing should be timed to begin exactly at 2120 hours (German time) at which time the bomb had exploded in the Burgerbraukeller there on November 8th, 1939. The attack actually started at 2034 and went on until 2210 (British time).

No German records have been found of the results of these operations, whose success can only be gauged by a comparison between the sorties despatched and the bomb tonnage dropped in Appendix U. No indication can be given as to the destination of these bombs which were dropped. At Appendix W is shown the distribution of bombs in south-west Germany at this period. Some idea can be obtained from this of the proportion of bombs dropped which reached a useful target. 65% in November and 33½% in December were reported by the Germans to be in open country in this area, 10½% and 29½% in residential districts and the remainder on military objectives of some description, i.e. 24½% for November and 37% in December. The figures for December were much improved by the heavy blitz attack on Mannheim, which is included in the area.

7. German Bomber Aerodromes. - The aerodromes in use by the German bomber forces attacking Great Britain remained the most constant commitment of No. 2 Group Blenheims during this period, and occasional attacks upon such targets were put in by other Groups also. The biggest scale attacks in November were on the night of the heavy German raid on Coventry November 14th/15th, and the following night.

B.C.O.O.  
No. 125

An operation order had been issued by Bomber Command on November 14th stating that "reliable information has been received that the enemy has planned a concentrated night bombing attack on one of four areas in South-east England". The whole of the German long-range bombing force was expected to be employed. The available resources of Bomber, Fighter and Coastal Commands were to be used for the dual purpose of:-

- (a) countering the German attack;
- (b) making a concentrated attack on a German town during the same night.

The medium bombers were given the role of maintaining security patrols over the night bomber aerodromes being used by the enemy, while the heavy bombers made the concentrated attack on Germany. The operation was to be known as "Operation Cold Water". Learner crews of other groups were to be added to the effort of No. 2 Group on security patrols against night bomber aerodromes. These would normally be Eindhoven, Schipol and Soesterburg.

B.C.O.R.B.  
App. B1135.

B.C.O.R.B.  
Extract from  
telephone log

Operation "Cold Water" was not ordered until November 15th, but on the 14th orders were issued at short notice to switch aircraft on to intruder duties. At 1620 hours No. 2 Group were ordered to put their maximum number on to patrols of enemy aerodromes. No. 3 Group were then told to attack Schipol and Soesterburg, and No. 4 Group Eindhoven. Thirty-five Blenheims actually took off on this duty, as well as fifteen Wellingtons

and four Whitleys. On November 15th Operation Cold Water was carried out by forty-seven Blenheims on the German bomber aerodromes, whilst sixty-seven heavy bombers were detailed to attack Hamburg. This was followed the next night by a still heavier reprisal attack on Hamburg, as has been described in the sub-section above on that city.

The next occasion when a heavy effort was directed against bomber aerodromes was on December 6th. This time the weather was the deciding factor. It gave little hope of being able to carry out successful attacks against targets in Germany, Italy or Western France. It was favourable for enemy operations against England, and the object of the night's operations was "to disorganize the enemy's night flying aerodromes and to destroy as many enemy aircraft as possible."

Fifty-five aircraft of Nos. 2, 3 and 5 Groups took part in this attack upon enemy aerodromes. Twenty additional Hampdens of No. 5 Group were reserved, as they had been every night since November 26th, for an experiment. They were to attempt to intercept enemy bomber aircraft over their target by concentrating a stepped-up patrol over the area being attacked. On this night, December 6th, they made their first attempt over Bristol, but without success. In the attack on enemy aerodromes many bursts were reported across flarepaths, but results cannot be guessed.

After this the Blenheims carried on their harassing attacks upon German bomber aerodromes, until they were relieved by Fighter Command aircraft. The latter took over this duty on December 21st/22nd in accordance with an Air Ministry request on December 11th. This was the start of "Intruder" operations by suitably fast twin engine fighters.

8. Italian Targets - Operations against targets in Italy had been resumed by the Whitleys of No. 4 Group on August 13th, 1940. Thirty-six aircraft had been despatched that night against the Fiat works at Turin and the Caproni works at Taliedo, Milan. After this the Group had merely carried out an occasional attack on a very small scale. The total sorties in August were 67, including the above operation, whilst there were only 14 in September and 12 in October.

In November the scale was increased somewhat, a total of 48 sorties being despatched. A new directive was issued by Bomber Command to No. 4 Group on November 11th concerning Italian operations. This said that targets in Northern Italy were to be attacked with all available aircraft whenever weather conditions should be favourable.

With regard to the violation of Swiss air, the primary consideration was that the targets laid down (given in Appendix P) should be attacked if within range. Aircraft should be routed over Swiss territory if necessary. Violations should be avoided when practicable, and all care must be taken to avoid bombing Swiss territory.

In this connection an extract from the 265th Conclusions of a meeting of the War Cabinet on October 3rd is of interest.

"The Foreign Secretary informed the War Cabinet that on the previous day the Swiss Minister had discussed the R.A.F. violations of Swiss neutrality with complete good humour. If we had to pass over Switzerland, he hoped that as far as possible we would use the Geneva route. Later on the weather might make it impossible for us to fly over his

/country,

Ops 294  
B.C. 6/12/40  
Note 1.

D.R. Ops Folder  
Employment of  
Air Striking  
Force.  
Encl. 102.

B.C.O.R.B.  
App. B1124.

D.B. Ops  
Folder  
"Directifs"

country, in which case he hoped that we could make a virtue of necessity and draw attention to the correctness of our attitude."

Four operations in all were carried out in November. The first on November 5th/6th was almost totally abortive. Out of nineteen Whitleys despatched against the Pirelli works at Milan, a Fiat subsidiary at Turin, and a base metal plant at Aosta, only one claimed to have reached its target, and observed no results. Of the rest, one was missing, two came down in the sea, three bombed French ports as alternatives, and the rest abandoned their task. Three nights later a more successful operation was carried out, in which ten out of eleven sorties claimed success. The other operations against Italy during the month were on the nights of November 23rd and 26th. 60% and 50% respectively, of the sorties on these nights claimed success.

B.C.O.R.B.  
App. B1155.

In December the Wellingtons of No. 3 Group took over the task of attacking Italian targets, owing to shortage of Whitley aircraft. In the operational order issued to the group it was laid down that the number employed should not normally exceed fifteen aircraft. Otherwise the instructions were the same as those to No. 4 Group previously. The group concerned was in both cases given a fixed list of German Targets from which to choose alternatives if weather should preclude attack upon Italian objectives.

The first operation undertaken against Italy by No. 3 Group under this directive was on the night of December 4th. Fifteen aircraft were directed against the Royal Arsenal at Turin. Nine reported success, whilst a further four reported attacks upon other targets in Turin. One Wellington failed to return. Other operations were carried out on December 18th and 21st, a total of 30 sorties being detailed against Italy during the month.

The only other operations carried out against Italy in the period up to May 31st, 1941 were on January 11th and 12th. The Royal Arsenal at Turin was again the target detailed to 11 aircraft on the former night and two on the latter. In addition, seven Wellingtons were detailed on January 12th to attack the oil refineries at Porto Marghera, Venice. Direct hits on buildings were reported by the crews, one large building appearing to disintegrate. A liner believed to be the Conte di Savoia or the Rex was machine-gunned by one of the aircraft from 300', whilst another attacked Padua aerodrome from 20 feet, on its return journey. No Italian records can at present be found to show the results achieved by these few attacks. In any case, they were intended for moral rather than material effect.





## SECTION III.

AREA BOMBING, THE FIRST PHASE Jan. - May, 1941.

1. Distribution of Effort, Jan. - May, 1941 - The policy of concentrating bombing operations against one or two areas per night was accepted by January, 1941. The area was now chosen first, the type of objective afterwards. Gradually the choice of specific targets within the area gave place to a central aiming point. It was during January that the "fish code" came into use. Each German town of industrial or military importance was allotted the name of a fish, and an aiming point within each was included in the code (see Appendix U). After January 15th practically all operations against German targets were detailed in this way. A new code for the designation of individual targets came into use in March. In place of one letter and two or three figures, e.g. A70, for Gelsenkirchen (Buer) synthetic oil plant, two letters and four figures were used, e.g. GQ1537, for the same plant at Gelsenkirchen.

Three principal factors governed the choice of targets during this period. The first, as described above, was the choice of a suitably important area. The second, in force up to mid-March, was the choice of oil targets where possible. The third, which influenced target selection throughout the period, and became the primary consideration after mid-March was the Battle of the Atlantic. This long struggle at sea was at a critical phase at this time, and by the Prime Minister's order Bomber Command had to do its utmost to assist the navy. The method of doing this was to bomb the naval ports and ships, the U-boat harbours and Focke-Wolf aerodromes, whilst No. 2 Group carried out frequent anti-shipping patrols along the enemy coast line. These Battle of the Atlantic operations are dealt with in Part VI.

The principal operations in January were against Bremen on the 1st, 2nd and 3rd, against the oil plants at Gelsenkirchen on the 9th, and against Wilhelmshaven on the 15th and 16th. 128 aircraft were despatched on the first Bremen raid, and 47 on the second, against oil, shipping, transport and food targets. On the third raid 71 aircraft were given a central aiming point. This operation was given the code-name "Divan-Jane"; "Divan" being a new term, altered on January 7th to Goodwood, for the former code-name "Abigail" to denote a full-scale raid. "Jane" was the temporary code-word for Bremen. On the Gelsenkirchen raid of January 9th 134 aircraft were engaged. Wilhelmshaven was attacked five times in January, by 32 sorties on the 8th, 26 on the 11th, 96 on the 15th, 81 on the 16th, and 34 on the 29th. The objective in each case was the battleship Tirpitz.

In February the principal operations were against Hanover by 221 sorties on the 10th, 126 sorties against Cologne on the 26th, and 116 against the Tirpitz at Wilhelmshaven on the 28th. In addition heavy attacks were carried out against Dusseldorf, Bremen, and the oil plants at Hamburg, Sterkrade Holten and Gelsenkirchen. The French ports were attacked on seven nights in the month, the heaviest effort being directed against Brest.

On March 1st Cologne was the target of 131 bombers, followed by 71 on the 3rd. On the 12th Hamburg, Bremen and Berlin were detailed to 88, 87 and 72 aircraft respectively. This was followed up by the despatch of 140 aircraft to Hamburg the following night. For the rest of the month the effort was divided once more between two or

/ three

B.C.O.O.  
No. 129.

three objectives including Gelsenkirchen, Dusseldorf, Lorient, Bremen, Kiel, Wilhelmshaven, Berlin and Hanover. Until on March 30th another full scale attack was put in against Brest. The Scharnhorst and Gneisenau had reached Brest by March 28th after a period of commerce raiding in the Atlantic.

In April the heaviest operations were against Kiel, on the 7th by 228 sorties and on the 8th by 159. On April 16th 106 aircraft were directed against Bremen, and the following night 118 against Berlin. Kiel was the target on four other nights during the month for forces ranging from 62 to 97 aircraft. Other German towns attacked included Dusseldorf, Cologne, Hamburg and Mannheim. In addition, a force of heavy bombers was detailed to attack Brest on eight nights and three days during the month. Apart from abortive attempts at the end of March, this was the first time for almost a year that heavy bombers had been detailed to operate in daytime.

By far the largest scale operation yet undertaken took place on May 8th. 184 sorties were despatched to Hamburg and 133 to Bremen and in addition 23 Blenheims to Bremerhaven and the Kiel canal. The scale of operations was at last growing noticeably larger, as is illustrated by the table below. An extra group, No.1., had by this time been added to the heavy bomber strength.<sup>(1)</sup> In addition to the increase in numbers of aircraft despatched, both the proportion of new heavy bombers was increasing, and the size of the bombs carried. 1900 lb and 2000 lb bombs had been in use for some months, and the first 4000 lb bomb was used against Emden on March 31st/April 1st. A number of these were carried on the large-scale raids in May. Manchesters, Stirlings and Halifaxes carried two to three times the weight of bombs that the old heavy bombers could carry.

The following sub-sections are devoted to further details of the area-bombing of German objectives. It is left to Part VI to deal with the operations connected with the Battle of the Atlantic during this period.

2. Hamburg - This, the second largest city in Germany, contained important targets included in the oil plan. In addition, it was an important shipping centre, both on account of its shipbuilding yards and its immense port facilities. It is not surprising, therefore, that 911 sorties were directed against it during this period, the largest number against any individual area in Germany.

There was only one small attack in January, by 24 Blenheims against an oil objective on January 4th and none in February. On March 12th and 13th large-scale operations were directed against Hamburg. 88 sorties were detailed in the first and 140 in the second, being divided in both cases between the central aiming point designated under the code-name "Dace", and the Blohm and Voss shipyards.

/ In

(1)

LARGE-SCALE OPERATIONS IN MAY, 1941								
Over 100 Sorties			Over 90 Sorties			Over 50 Sorties		
Target	No.	Date	Target	No.	Date	Target	No.	Date
		MAY			MAY			MAY
Hamburg	184	8	Mannheim	100	12	Brest	89	7
Mannheim	150	5	Brest	97	4	Bremen	81	11
do.	135	9	Hamburg	95	2	Kiel	65	18
Bremen	133	8	Cologne	95	17	Cologne	64	27
Hamburg	119	6	do.	93	16	do.	51	23
do.	119	10	Hamburg	92	11			
Cologne	101	3						
Hanover	101	15						

In April there was one attack only. 50 aircraft were detailed on April 26th against "Dace".

In May a succession of heavy area attacks was organised against Hamburg. On May 2nd, 95 aircraft took part, on May 6th, 119, on May 8th 184, with a further 133 directed against Bremen. 119 aircraft were despatched on May 10th, and 92 the following night. In all, 340 tons of explosive was dropped upon the city during the month of May. The operation on May 8th, combined with an attack on Bremen the same night, employed 317 aircraft, the largest force yet to operate on one night. This included 10 of the new heavy bombers.

A.H.B.6.  
Translations  
of German  
Official  
Reports.

A few German reports of the damage caused on these nights have been found. The first concerns the raid on March 12th, and records four bombs on the show-rooms and machine-shop of Blohm and Voss, and 100 incendiary bombs. The administrative buildings and telephone exchange were destroyed, but there was no immediate effect on production.

On the night of April 26th, 30 H.E. bombs and numerous incendiaries are recorded. An instrument makers roof was set on fire, a magazine damaged, there was a direct hit on the Hamburg-Lubeck railway line, which stopped traffic, and a naval depot shed was damaged. This was the total result of an operation in which 50 aircraft took part.

In May there are a number of reports of damage. On the night of May 2nd 57 H.E. and 1100 incendiary bombs were confirmed. 10 sheds were gutted near Howaldtswerke, 50-70 trams damaged in Sodweg depot. The Blankenese railway station was out of service because of two delay bombs. A Rhine boat was hit by incendiaries, damaging 200 tons (metric) of oil-cake, a dock-yard, three timber works, one vegetable oil works and an artificial fertiliser works were damaged by H.E.s. or by fire. On May 6th 25 H.E. and 100 incendiaries were recorded, a dock-yard goods station and barracks being damaged.

On the night of May 8th, the biggest raid so far, in which 184 aircraft were engaged, 350 H.E.s. and 3000 incendiaries are recorded. This is a much higher proportion than usual, and a considerable list of damage is recorded. The principal items are the following:-

- 3 H.E's on Howaldts dockyard - no loss of production.
- 2 H.E's and 20 incendiaries on North dockyard. Transport building damaged by fire - no loss of production.
- Deutsche dockyard: fitters shop and docks I, II & III heavily damaged by H.E's. Timber depot of Uhlman & Wendt burnt down.
- Blohm and Voss: delay bomb in power station, direct hit on plywood store, gasometer gutted, fires in main magazine, cable store, east timber store and foundry, 3 BV 138's damaged, 3 winches out of order. In spite of the damage, no loss of production expected.
- Stulchen dockyard: warehouse gutted, dredger Odin sunk, roof of conversion shed burnt.
- German mineral oil works at Wilhelmsburg: 2 H.E's and numerous incendiaries, pipe line broken, 1000 tons of lubricating oil burnt, distribution centre hit. Distribution resumed in a few days in tankers.
- Two machine factories, a motor factory, a radio equipment depot, and a machine oil depot were damaged more or less severely.

/ On

On May 10th/11th 350 H.E's and 5000 incendiaries were recorded. There were 25 large fires, 6 of which were still burning the next morning; fires in the dock area, sheds hit by H.E's, damage to main lines near the main railway station. A hangar at Fuhlsbittel aerodrome was hit, and the Hermann Goring barracks damaged by fire. At Blohm and Voss, the yard and workshops were hit, and considerable damage caused, with some loss of production. Delayed action bombs fell in the A.R.P. workshops, near the gasworks, and two on the quays. At the German American Petrol Co. a shed was gutted, and a workshop severely damaged. The next night, May 11th, 150 H.E.'s and 3000 incendiaries were recorded. Blohm and Voss again received the brunt, with H.E's on the boiler house of the power station, in a machine shop, a timber store, and dock areas, causing loss of production. Three boats were destroyed and two police barracks and Altona main railway station were hit.

3. Cologne:- The city of Cologne received the largest number of attacks of any German area during this period. This was due to its position, suitable as a weather alternative, as well as to its importance. The number of sorties directed against it was 908, second only to Hamburg among German towns.

There were no operations against Cologne in January or in February until the 26th, when 126 aircraft were despatched against it. This was an area attack detailed by the code-name "Trout", and included five of the new heavy bombers, Manchesters of No.5 Group. This was their first operation against a target in Germany.

On five nights in March Cologne was amongst the targets detailed. The first occasion was another large-scale attack on March 1st, 131 aircraft taking part. This was followed by 71 sorties on the 3rd and 19 on the 4th. On March 19th No.3 Group alone operated against Cologne, despatching 36 aircraft, and on the 27th the same group despatched 39, whilst Nos.4 and 5 Groups were operating against Dusseldorf.

There were two small operations during April, by 11 Blenheims on the 4th and by 10 Wellingtons on the 17th, followed by a larger one on the 20th. On the latter night 61 aircraft were despatched against Cologne.

During May Cologne was the principal target on five nights, 504 sorties in all being directed there (see sub-section (i) above). All these were area attacks directed according to the code-name "Trout". There is a certain amount of information in German records regarding the results of these operations during May, which can be compared with the effort employed.

A.H.B.6.  
Translations.

On May 3rd, when 101 sorties took part, there was insignificant damage to houses in Cologne and suburbs. The only industrial damage reported was the burning of the pattern sheds at the Humboldt Deutz works. On the night of May 12th, on which Mannheim was the target, 23 H.E's and several hundred incendiaries fell on Cologne. 30 fires were caused, including three large ones, and damage was done to two factories and a timber depot. On May 16th, when 93 sorties were despatched, little damage was reported, but the 95 sorties on the following night, May 17th caused 33 fires, three of them being large, and hit a railway repair shop, a rubber factory and a wagon works. The next raid, by 51 sorties on May 23rd, produced reports of 9 H.E. and 150 incendiary bombs, but little damage and no loss of production. Reports on the final operation of the month against Cologne, by 64 aircraft on the 27th, mention 26 aircraft dropping 20 H.E's and several hundred incendiaries with equal lack of result.

4. Bremen - Like Hamburg, Bremen contained numerous important oil and industrial objectives, in addition to its port facilities. For this reason a total of 812 sorties were directed against it during the five months under review, January to May 1941. Ten attacks were carried out in all, apart from its use occasionally as an alternative target by aircraft directed against Hamburg.

The first three operations took place on January 1st, 2nd and 3rd. Bremen had been chosen as the second industrial area to be attacked by a full-scale effort of Bomber Command. Since the operation "Abigail - Rachel" against Mannheim on December 16th, the code-name for such an operation had been changed to Divan. The towns chosen for attack were Bremen, Dusseldorf or Mannheim, which were given the code-names "Jane", "Ryan" and "Belinda" respectively. The aiming point given under "Jane" was 85° A363 1 1/4 miles. A363 was the code number for the Bremen gas works, whose gasometers should stand out well.

B.C.O.R.  
No.128  
20/12/40.

On January 1st all five groups were directed against Bremen, and 128 sorties were despatched. Each group, however, was given a specific target in the area. The same procedure was used on January 2nd, when 41 sorties were despatched. Finally, on January 3rd the general order "Divan-Jane" was given, after "Divan-Ryan" had been given and cancelled within an hour. All five groups again took part, but the total number of aircraft despatched only amounted to 71. The number was reduced owing to deteriorating weather.

B.C.O.R.B.  
Apps.B1217 &  
Apps.1218

The results reported were good on all three nights. The snow-covered country side caused the town and river to stand out and on each occasion fires were reported to be visible from 80-100 miles away on the return journey. The area clouded over during part of the attack on the first two nights, but on the third visibility was perfect throughout. As a result 28 sorties were abortive on the first raid, 20 on the second, and only 7 on the third. On the third night Bremen was described as "like a gigantic illuminated Christmas tree". The A.A. defences were reported as taking three forms; curtain or box type barrage; heavy bursts concentrated at the apex of searchlights; and individual firing at aircraft, accurate below 10,000 feet.

B.C.O.R.B.  
App.A628

Bremen received no more than individual diversionary attacks for some time after this. There was one large-scale operation in February, by 79 sorties on February 11th and two in March, by 72 sorties on the 12th and 58 on the 17th. One Stirling took part in the latter. No.3 Group alone despatched 28 sorties there on March 31st. On April 16th another full-scale operation was carried out by the four heavy bomber groups. By this time No.1 Group was able to raise eleven sorties. The total despatched was 106, most of which were directed against the "Deschimag" naval shipbuilding yards, only 35 of them being allotted the usual aiming point under the code-name "Salmon".

During May two combined operations took place, in which both Hamburg and Bremen were allotted. On May 8th a total of 317 heavy bomber sorties was despatched, the largest number up to that time. Of these, 133 were detailed to Bremen. On May 11th 173 aircraft were employed against the two cities. Nos.1 and 3 Groups despatched 92 to Hamburg, Nos.4 and 5 Groups 81 to Bremen. Three of the new heavy bombers took part.

To judge the result of these attacks we have a full German report of the raid on the night of January 1st, and short summaries of those of January 2nd and 3rd, March 12th and May 8th and 11th:-

/ January

A.H.B. 6.  
Translations.

January 1st/2nd - Attack by 60 aircraft reported; 50 H.E. and 1,000 incendiary bombs.

Completely destroyed: Cortes and Schlueter machine factory; Auerback machine factory, sub contractors to Bremer Vulkan; Van Grothe paint factory; Buessing saw mills; Meier box and container factory, material store and one warehouse; long distance power station in the harbour of Hemelingen (gas, water and electricity supplies in Hemelingen were affected).

Sluiter foundry was destroyed and its aluminium stores damaged. Some loss of production. Timber stores of the Rolandwerft were burnt down. This dockyard was building 6 high-speed launches for the R.L.M. Their store of light metal components and rare woods was lost by fire.

The Borgwarldt automobile factory (formerly Hansa-Lloyd) lost 8 days production.

The Lloyd-Dynamo searchlight works were severely damaged, and two searchlights destroyed, all by one H.E.

About 100 incendiaries, several H.E. bombs and a number of delays dropped on the Focke-Wulfe works at Bremen-Hemelingen. The old building, three adjoining shops and the club-house were completely destroyed and other work-shops damaged. 80 new machine tools lost, fire and water damage in the warehouse on the "OBO" site. Loss of production about 4 weeks. The details were given by the German Ministry of Aircraft Production as follows:-

M.E.110: manufacture of wings ceased.

F.W.189: manufacture of fuselage and inner surfaces ceased.

F.W.200: Minor damage to components.

M.E.110: Minor damage to fuselages.

F.W.190: Minor damage to wings and fuselages.

Mechanical training shop completely destroyed. Stores of training workshop completely destroyed.

On January 2nd the Bremer Warehouse was partly gutted, all sheds being burnt down, two barges sunk, and the steamer Kattegat set on fire. The Atlas-Marine works were damaged by fire. On the following night 50 H.E's and 4000-4500 incendiaries were reported. The Focke-Wulfe works were again hit, and two aircraft damaged. Two steamers, a number of sheds, the technical college and the Moor Research Institute were set on fire.

On March 12th there was an alarm at 11 p.m. which lasted until 6 a.m. on March 13th. 30-40 aircraft were reported. 40-50 H.E's were dropped on the area of the Focke-Wulfe works, causing three days loss of production on Condors. Four completed F.W.189's were damaged. There were two H.E.'s on the magazine and foundry of the Atlas works.

On May 8th 200 H.E's and 2000 incendiaries were reported. Several firms and a P.O.W. camp damaged by fire. On May 11th 160 H.E's and numerous incendiaries were reported. A storehouse at the Atlas works and three dockyard sheds were burnt down. The Weser aircraft works were hit by 3 H.E's and 30 incendiaries; the Weser dock was hit and a steamer sunk. The Focke-Wulfe drawing office was partly gutted, traffic installations on the main and goods stations damaged, and 16 packing rooms of a timber depot gutted.

5. Mannheim-Ludwigshaven - The industrial areas of Mannheim and Ludwigshaven, on either side of the Rhine, had been chosen as target for the first "blitz" attack of the war upon a German town area on December 16th, 1940 (see previous section). After this they were not again chosen for a heavy attack until May, 1941. The only operations directed against the area before then were by 15 sorties on February 8th, and by 71 on April 29th.

In the large-scale operations of May, 1941, as seen above, Mannheim figures three times. 150 sorties on May 5th 135 on May 9th, and 100 on May 12th were directed against this area. The short nights excluded the more distant targets such as Berlin at that time of year, so Mannheim suffered accordingly.

A.H.B.6.  
Translation

The German official reports show little damage on April 29th. 32 aircraft were reported, the I.G. Farben works at Oppau, the Pioneer Corps barracks and the Bergin chemical works were hit. On May 5th a few bombs and insignificant damage was recorded. On May 9th a large number of H.E's and incendiaries were reported, mainly in the town and dock area. Heavy damage was caused, including a loss of production of three days at the Daimler Benz works, and several fires in factories. Pilots reported fires as visible for 80 miles on this occasion. These heavy May attacks on Mannheim do not appear to affect the distribution of bombs in south-west Germany, shown in Appendix W. Approximately 50% are reported as falling in open country, the same as for the two previous months.

6. Hanover - Apart from the important oil refinery at Hanover-Misburg, which had been attacked several times, Hanover was not chosen as an industrial area for heavy attack until February 1941. It contained numerous objectives, including submarine component plants. By February the U-boat menace was in the forefront of tactical considerations, and every effort was being urged to reduce the output.

B.C.O.R.B.  
App.A677

On February 10th the heaviest "crash concentration" yet despatched was directed against Hanover. 221 sorties were detailed with "Eel", the code-name indicating an aiming point in the centre, as their target. The total sorties on all targets which took off on this night were 263, and of these 245 successfully attacked a target, so it can be seen that the operation resulted in an unusually heavy scale of attack. "The weather over Hanover was clear and moonlight enabled a good proportion of the aircraft to find their targets", in the words of the intelligence summary. Later sorties reported the target most effectively bombed, with many fires burning.

This operation was followed up by a "nuisance" raid of 28 aircraft the following night, when Bremen was the principal target. Apart from another operation on this small scale in March, Hanover was left alone until May 15th. On that night it took its place in the heavy operations of May with an attack by a total of 101 sorties despatched once more with "Eel" as their target. This was the same number of sorties as had been despatched by No.3 Group alone on the big February attack.

7. Berlin - Besides being the capital and by far the largest German city, Berlin contained numerous industrial objectives. Its great distance across enemy territory, however, restricted the weight of attack upon it. The old type heavy bombers could only reach it from late August to mid-April without being caught in daylight over enemy territory.

The Bomber Command report of June 1941, gives the following summary of attacks. (1)

/ "Berlin

(1) Statistical data used in documents at this time (1940-41) are unreliable. The above figures do not agree with those used in this narrative and its appendices, which are taken from the "Form E" reports upon individual sorties, which are the most accurate figures known.



"Berlin was first attacked in August, 1940. Since then it has been attacked 51 times with a total of 647 tons of H.E. bombs and 64,000 incendiaries. The following figures illustrate the growing weight of attack which has been directed against this target:-

- (a) In the first raid, on the night 25th/26th August 1940, 22 aircraft dropped 18 tons of bombs on Berlin.
- (b) On the night 17th/18th April 1941, 81 aircraft dropped 68 tons.
- (c) During the short night period May-June 1941 when Berlin was out of darkness range except for the new-types of aircraft of superior speed, 22 aircraft dropped 68 tons.

It will be seen that three of the figures quoted above are identical and so they may be linked up in a more interesting way and expressed thus:

At the beginning of the period 22 aircraft carried 18 tons of bombs to Berlin; at the end of the period the same number of new-type aircraft 68 tons. About the middle of the period this tonnage required a force of 81 aircraft to carry it."

There were no operations against Berlin in January or February. The first in this period was by 72 sorties on March 12th. On this night a total of 247 aircraft were despatched against Hamburg (88), Bremen (87) and Berlin. On March 23rd Berlin was the target for Nos. 1, 3 and 4 Groups, 63 aircraft in all, whilst No. 2 Group carried out a diversionary operation against Hanover.

In April there were four attacks upon Berlin. The first was by 80 aircraft on April 9th. The second was the large-scale operation referred to in the above report, in which 118 aircraft were detailed. The third and fourth were by Stirlings alone, 3 on the 25th and 10 on the last night of the month. The nights were by then too short for the slower old-type bombers to reach Berlin. For the same reason a force of 14 of the new heavy bombers - Stirlings and Manchesters - carried out the only attack in May, on May 15th.

A.H.B.6.  
Translations.

German records report an attack by 34 aircraft in four waves on the night of March 12th. The Deutsche Harmetallwerke lost two days production, and fires or slight damage were caused at Siemensstadt, Daimler Benz and a factory at Marienfelde. The April 9th attack was reported to be by 60-70 aircraft. 40 H.E's and about 3000 incendiaries are recorded. Fires were started in the State Opera House, the State Library, the University, the Old Palace, the Reich Ministry of Agriculture and in the Unter den Linden; also on the roof and 2nd floor of Bellevue Castle, in the Rhein-Metall Borsig works in Marienfelde, and the food office in Poulastrasse. The summary of damage in Berlin shows incidents reported in 120 places, including 5 industrial installations, 5 centres of communication, 10 public buildings, 2 military objectives, a hospital and some private dwellings. A large number of persons had to be evacuated.

On the night of April 25th only one of the three Stirlings despatched reached and bombed Berlin. This aircraft dropped five 1000 lb and seven 500 lb bombs in the centre of the city without observing its results. The German report shows damage to buildings and a broken gas main. It also reports that 4 incendiaries caused considerable damage to the offices of the "Luftfahrtbedarf" (aero-accessories) Co, with a 50% drop in output for 3-4 weeks, and that the underground line from Potsdamer station was closed because of an

/ unexploded

unexploded time bomb. No incendiaries or delay bombs were carried, however! The German report notes that this attack was carried out by only one aircraft. There is no record of the operation by ten Stirlings on April 30th, although two of the aircraft reported that they had bombed the city. The rest failed to reach it, as did all but two on May 15th. On this occasion, again, there is no German confirmation.

8. The Ruhr - The campaign against the Ruhr was continued on a much smaller scale during this period. A total of 311 sorties was directed against Dusseldorf during the five months from January to May, 1941, 265 against Gelsenkirchen, and a smaller number against the oil plants at Sterkrade Holten and Homburg. All these attacks except those against Dusseldorf were directed against oil targets. At Dusseldorf an area aiming point was detailed under the code name "Perch".

The heaviest attacks upon this area were on January 9th, when 134 aircraft of all five groups were directed against the synthetic oil plant at Gelsenkirchen-Nordstern, on February 15th, when 143 were detailed, half of them against Homburg and half against Sterkrade Holten, both synthetic oil targets, and finally on March 14th, when the two oil plants at Gelsenkirchen were detailed to 87 sorties, whilst 41 aircraft of Nos. 1 and 2 Groups were sent to Dusseldorf. Dusseldorf was also the objective for 80 aircraft on February 25th and 53 on April 10th in addition to several small scale attacks.



SECTION IVPROPAGANDA

S.46650/II  
Encl. 42A The dropping of propaganda leaflets continued during the winter 1940-41 as a subsidiary task on bombing missions, and as a training exercise for Operational Training Units. In December Bomber Command were urged by Air Ministry to increase their incidental deliveries of leaflets to Germany, in view of an improvement in the standard of material. As a result, No. 2 Group was added to those taking part in the task on December 6th and the participation of the new No. 1 Group was promised as soon as it should become operational.

Ibid  
Encl. 19C, 25A. A project was mooted by the Ministry of Economic Warfare for the distribution of leaflets on Christmas Eve in place of bombs. The Air Staff view was, however, that bombers should only go to Germany without bombs in most exceptional circumstances.  
Encl. 58C. Later the Ministry of Information enquired whether bombs were to be dropped on Christmas Eve, so that broadcast propaganda could be prepared accordingly. In view of the Prime Minister's announcement in the House of Commons that no truce would be agreed to at Christmas, the Secretary of State replied "it is not for me to declare a bombing truce of my own." If Christmas Eve should be unsuitable for bombing, however, full credit for refraining should be claimed. It was suggested that the radio broadcasters should be prepared for either eventuality. In point of fact no operations took place on December 24th or 25th. On the former night doubtful weather conditions were the primary reason.  
Encl. 58A. On Christmas night the truce was continued owing to the good behaviour of the enemy on the previous night.  
No. 3 Group  
O.R.B.

S.46650/II  
Encl. 88A On March 28th 1941, another reminder of the importance of propaganda was sent to Bomber Command by the Director of Plans, Air Ministry. During the previous three months small quantities of leaflets had been dropped by Nos. 1 and 3 Groups, very few by Nos. 2 and 4 Groups, and none by No. 5 Group. As a result, many of the leaflets distributed became out of date and had to be withdrawn for pulping. On April 19th the Command were informed that the Prime Minister was especially interested in carrying as many leaflets as possible into Germany.  
Ibid  
Encl. 95A

Encl. 85A, 99A, 100A. In March and April 1941, respectively, arrangements were made by Bomber Command to drop tea and coffee over Holland and Belgium. About 4000 lb of tea, a gift from the Dutch of Batavia, was dropped over Holland in small cotton bags. Each bag weighed about two-thirds of an ounce and bore a label with the words "Holland will rise again. Greetings from the Free Netherlands Indies. Keep a good heart." As a result of the success of this dropping the Free Forces asked for coffee to be dropped over France. It was arranged for No. 6 Group to drop ten cases made up in small packets. The Dutch naval attaché reported that the reaction of his people to the gift of tea was to ask "Why not bombs?"  
Ibid  
Encl. 99A

The number of leaflet dropping or "nickel" operations carried out by Nos. 6 & 7 Groups can be seen in the Monthly Summary of Operations at Appendix U. The precise number carried by operational groups cannot be ascertained, as a few bundles were merely added as a make-weight on an occasional bombing operation. Copies of all the leaflets dropped with their translations can be found in Appendix D to the Bomber Command Operations Record Book for the period.



PART VITHE WAR AT SEASECTION IGENERAL REVIEW

Introduction. - The attempt of each side to blockade the other by attack upon her sea communications was naturally an integral part of the strategic war between Great Britain and Germany. The insular position of the former, and the speedy land conquests of the latter made this struggle far more vital to Great Britain than to Germany.

The war at sea began on September 3rd, 1939. It was not until June, 1940, however, that Germany was able to concentrate her energies upon it. With the occupation of the whole of Western Europe in that month, and especially the French Atlantic seaboard, she was able to attack the British supply lines with every advantage in her favour. During the remainder of the period this attack brought Great Britain very close to disaster. The losses suffered through surface raiders, submarines, long-range aircraft, and mines during the period under review were as follows:-

BR. 1337  
1.10.45.

BRITISH MERCHANT-VESSELS LOST BY ENEMY ACTION

Month	1940							1941				
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Number	61	64	56	62	63	73	61	41	75	83	75	92
(approx) Tonnage (000 tons)	283	271	278	324	302	304	265	209	315	365	362	387

The scale of loss reached in March-May, 1941, was never exceeded except at the climax of the U-Boat war in the winter of 1942-43. By then the aid of Russia and America had removed all doubt of the ultimate outcome.

2. The Part of Bomber Command. - From the outbreak of hostilities Bomber Command had played a part in the war at sea. Earlier parts of this narrative have shown the effort expended in attacking naval bases and other ports, shipping at sea and in harbour, the ship-building and naval armament industries, and the factories and operating bases of the long-range aircraft used in commerce-raiding. During the first period of "phoney" war tasks connected with the war at sea, were the only offensive operations carried out by Bomber Command, and have been dealt with as such. For the remainder of 1940 they were so inextricably mingled with the general operations of the Command that they have been included therein. The minelaying campaign alone, being entirely distinct, is dealt with below.

In 1941 concentration of bombing became the rule. And in March Bomber Command was instructed to give first priority to the Battle of the Atlantic. For this period, therefore, the operations directed to this end are studied separately below. Even so no clear line of distinction can be drawn. It must be remembered that targets connected with the war at sea existed in most of the industrial areas whose attack has been described in Part V.

Especially in the case of the great ports of Hamburg and Bremen.

O.R.B.

App. B 1251

The role of No. 2 Group during this period was principally connected with the war at sea, and has therefore been included under this heading. The variety of tasks carried out makes it difficult to classify. The directive to No. 2 Group on January 21st, 1941 laid down that it should participate in the oil plan and in area attacks when these were laid on in full strength. This side of its work has been included above. In addition two squadrons were to specialise in daylight operations, either with fighter cover or under cloud cover according to weather. The operations with fighter cover were known as "circus" operations and were intended to draw German fighters into combat with our own in conditions tactically favourable to us. Any shipping seen during daylight cloud cover raids was to take priority for attack. Occasional attacks on marshalling yards and aerodromes were also included in the directive.

O.R.B.

App. B 1305

O.R.B.

App. B 1364,

1365

1337

On March 15th, shipping targets, including the channel ports, were given absolute priority for No. 2 Group. And on April 9th, all its squadrons were put on to daylight operations. The success of the shipping sweeps carried out justified this. It was proposed in addition to form a daylight flight of Wellingtons and Hampdens in Nos. 3 and 5 Groups respectively, to join in these shipping and other attacks. The proposal regarding Wellingtons was dropped, but a Hampden flight of No. 61 Squadron was attached to No. 2 Group for a period, and carried out several daylight operations under cloud cover at the end of April. They returned to night operations under No. 5 Group on May 1st.

B.C. Signal

Ops. 268

1.5.41.

3. The major German Naval Units. The most important units of the German fleet with which Bomber Command was required to deal during this period are reviewed shortly below, with their positions and movements.

A.H.B.

II/4/62

Scharnhorst and Gneisenau. These two battle-cruisers were in close company for most of this period. They had a displacement of 26,000 tons and a speed of 29 knots. Their armament was nine 11 inch, twelve 5.9 inch and fourteen 4.1 inch guns, and in addition they had sixteen 1.46 inch anti-aircraft guns. After a short cruise off the Norwegian coast in June, 1940, the two ships remained at Kiel until about January 22nd, 1941. Whilst there they were attacked on eleven occasions, a few hits being claimed but not confirmed. During February and March, 1941, they were in the Atlantic attacking commerce. The first known attack was upon the British ship Trelawney on February 22nd. During six weeks of the two months they were at sea the two vessels sank and destroyed 22 British ships. On March 28th, their presence in Brest was established by photographic reconnaissance, and they remained there for the rest of the period. Four major attacks were directed against the two ships in Brest between this date and the end of May (see under "Brest", Section III(2)), in addition to numerous small-scale operations.

Bismarck. The battleship Bismarck had been under construction at the Blohm and Voss yard at Hamburg for a long time and was known to be nearing completion in the summer of 1940. During July, August and early September a number of attacks were carried out upon her there. Between September 11th and 23rd she moved to Kiel, which she left on September 28th, moving out of range of photographic reconnaissance. On May 19th/20th, 1941, Bismarck and the cruiser Prinz Eugen left the Baltic, and were identified in Norwegian waters on May 21st. Air attack was impossible during the next two days owing to the weather closing

173.

down. The enemy force was sighted in the Denmark straits on May 23rd by two cruisers of the Royal Navy, and shadowed by Coastal Command aircraft on May 24th. The shadowing aircraft witnessed the action in which H.M.S. Hood was sunk and Bismarck damaged. The latter was relocated on May 26th and sunk by torpedoes on May 27th, thus removing one of the major threats to British shipping.

Prinz Eugen. After accompanying Bismarck as described above, Prinz Eugen made for Brest. On May 27th a force of 52 Wellingtons and 12 Stirlings carried out a daylight search but failed to locate her, as she was far to the south at the time. She arrived at Brest on June 1st.

II/K/36/5  
Encl. 75.

Hipper. The Hipper, to whose class Prinz Eugen also belonged, was a 10,000 ton cruiser capable of a speed of 32 knots. During December, 1940 she left German waters and was sighted and engaged on December 25th by H.M.S. Berwick in position 43°22' N. 25°20' W. She reached Brest on December 27th, after photographic reconnaissance earlier in the day had shown her absence. It was reported on January 3rd and definitely established the next day that the Hipper was in dry dock at Brest. From that night onwards Bomber Command made repeated attacks (see under Brest, Section III (2)). During January Bomber and Coastal Command dropped 108 tons of bombs in the vicinity of the cruiser, apparently without effect. On February 2nd, Hipper went to sea, returning to Brest on February 14th. Bomber Command renewed the attack in February and March, but Hipper was able to return to Germany. She left Brest on March 15th/16th, and was photographed at Kiel on April 25th.

Tirpitz. The battleship Tirpitz was under construction at Wilhelmshaven, being considerably less advanced than Bismarck. Up till March 18th, 1941, when her absence was first reported by Photographic reconnaissance, a considerable bombing effect was expended in trying to delay her completion. These attacks were intensified in January and February, as she was known to be nearly ready to go to sea. A total of 442 sorties were despatched there during these two months. (see Section III (4) below).





## SECTION II

MINELAYING

Outline of Policy. The policy regarding aerial minelaying and the technical development of the "M" magnetic mine are dealt with in the Coastal Command narrative for this period. As Coastal Command were chiefly concerned with the war at sea, and had a close liaison with the Admiralty, the direction of the minelaying campaign was entrusted to them. No. 5 Group merely made available the number of aircraft ordered by the current bomber directive whenever possible. In spite of this subsidiary role, however, from the start of the campaign on April 13th, 1940, Bomber Command invariably laid a greater number of mines than Coastal Command and the Fleet Air Arm combined.

Owing to its large bombing commitment, minelaying was always a subsidiary operation for Bomber Command, and was sometimes regarded as an unnecessary drain upon the meagre resources of bomber aircraft. The majority of the Air Staffs both in London and at Bomber Command, however, realized the great value of minelaying. It was only the overwhelming scale of the bombing offensive demanded by successive directives, which prevented the satisfaction of the Admiralty's constant demand for a greater effort to be devoted to mining.

see Part II.  
Section IV.B.  
S.1636/I  
Encl. 988.

see Part III.  
Section I.

The first period of this campaign has been dealt with in Part II of this narrative. From April 13th, to May 14th, 1940 286 mining sorties were carried out by Bomber Command, and 181 mines were successfully planted. Operations were then suspended until June 5th, in favour of support to the land campaign in the Netherlands and France. When they were resumed after the Dunkirk evacuation only one squadron of Hampdens was allocated to the task. Approximately six aircraft operated on any suitable night. The anti-invasion directive of July 4th increased the scale of effort to twelve aircraft per night by the allocation of three squadrons to the task. The result can be seen in the summary of operations at Appendix J2.

S.1636/I.  
Encl. 170A.

BC/S.23824/2  
Encl. 121A

see Part V.  
Section I.

This scale of effort continued on suitable nights until, by the directive of September 21st, 1940, these three squadrons were switched on to the direct attack of the enemy submarine industry. On September 29th, this was modified at the request of the Admiralty, minelaying continuing on those nights unfavourable to precision bombing. On January 10th, 1941, No. 5 Group was instructed by Bomber Command to undertake mining only for the training of inexperienced crews, and, on permission from Command, by up to 15 aircraft on nights when the weather should preclude bombing. This was confirmed on January 25th, following the directive which ordered a special effort against oil targets on January 15th. The new heavy bombers, Stirlings and Manchesters, could also be used for mining until the necessary modifications were carried out to make them operationally fit for full bombing duties.

BC/S.23746/II  
Encl. 95A

The new bombing directive of March 9th, 1941, gave the first priority to Battle of the Atlantic targets. It was left to the Command's discretion whether to attack enemy submarine bases by bombing or mining. Mining during March did not increase much, due partly to weather and shortage

/of

of crews, until the end of the month. During April and May, however, the scale was considerably increased. On several occasions No. 5 Group put a full scale effort on to the task, e.g. 42 sorties on March 20th, 38 on May 26th.

Full details of the mines laid by Bomber Command can be found in Appendix J2. Appendix J3 contains the code used, in alphabetical order of areas mined and code-words used. The minelaying campaign was known throughout as "Gardening", and most of the code-words used were the names of vegetables.

This campaign played an important part in the battle for supremacy in the Atlantic, which was carried on throughout the war. The laying of mines off the enemy coast had both a defensive and an offensive purpose. It interfered with the free action of enemy naval forces, including submarines, causing some damage to them. In addition it hindered the movement of coastal and other merchant shipping, resulting in serious loss of supplies to the enemy, both by sinkings and by delay whilst a passage was swept.

2. Operations, June to December, 1940. When minelaying was resumed after the Dunkirk evacuation, six Hampdens were despatched on the night of June 5th, 1940, all of which successfully laid in the Langelands Belt area. The effort of one squadron continued to be devoted to this task on all suitable nights in June, amounting to 21 out of the remaining 26 nights of the month. During the month 122 sorties were despatched for the loss of two aircraft, and 89 mines were laid. The principal laying areas were the Elbe estuary and Kiel Bay. No. 5 Group were given permission to carry bombs on external bomb racks in addition to the mine, in order to complete the load. These bombs could be used against ships, seaplane bases or aerodromes on the route. Frequent attacks on such targets were made in the course of minelaying sorties.

BC/S23746/I  
Encl. 18A.

On July 4th the effort devoted to mining was increased to three squadrons. As a result the sorties increased to about twelve per night from July 5th. This number was reduced during the moonlight phase between July 16th and 27th, as priority was given to the bombing of aircraft and oil targets in Germany. A special operation was also carried out on July 25th, eighteen Hampdens attacking the Dortmund-Ems canal aqueduct over the river Ems. Nine of the aircraft carried special "M" bombs for dropping into the water, which were an adaptation of the standard magnetic mine. Most of the 150 mines laid during the month were in the channels leading to Kiel and in the Elbe estuary. (see Appendix J2).

SL636/I  
Encl. 132A.

In August the suggestion was made by Bomber Command that minelaying should be suspended during the moonlight period. The Admiralty requested that a small effort should be maintained, however, as a complete cessation would give the enemy a valuable breathing space in which to overhaul their sweeping craft and gear, and to rest their crews. It was agreed to keep one squadron on the task. As a result only ten sorties were despatched between August 13th and 22nd.

CC/7010/16  
Encl. 149A.

On August 19th the Admiralty asked for the areas round Lorient, Brest and St. Nazaire, to be included in the mining programme, as part of the anti-invasion measures. So 11 mines were laid off Lorient on August 22nd and on the two following nights large-scale operations were organised against the other French ports, La Rochelle being added.

On the 23rd, 40 sorties were despatched and 31 mines laid in the approaches to Brest harbour. On the 24th 29 sorties laid 13 mines outside St. Nazaire and 12 near La Rochelle. Eight more were laid off Lorient on August 27th. In the course of these short-range operations on the French coast numerous bombing attacks were carried out against shipping, docks, aerodromes and A.A. batteries. Each mining aircraft was able to carry two 250 lb. bombs in addition to the mine.

SL636/I  
Encl. 152B

A.H.B.  
II/K/33

SL636/I  
Encl. 165A

An accident occurred at Scampton aerodrome on August 28th in which eighteen mines exploded. All mining operations were cancelled after this until September 6th. Meanwhile naval ratings were sent to carry out new tests, in particular as to the safety of the delay mechanism. This had been devised for a proportion of the mines laid, so that immediate sweeping by the enemy would be ineffective. Two further modifications to the fusing of the "A" Mine, Mark I, were introduced during September; the IMP which detonated on impact, and the TIM which detonated immediately if it hit a solid surface but only after 6 secs if it landed in water. Three IMPS were dropped on Berlin on November 14th/15th, whilst the TIM was used against harbours and canals.

SL636/II  
Encl. 2A

The scale of operations was reduced in the last four months of the year, owing to increased emphasis on bombing. The average number of sorties per month for these four months was only 63. They were directed against the French ports and the Elbe estuary in September. In October Keil Bay and Lorient were the principal areas, whilst in November and December Brest began to receive the biggest share of attention. The Admiralty proposed in November that mining should be concentrated against the enemies' base ports. The lines of communication should be left until these had been dealt with. The mining areas were classified A,B,C and D in order of importance (see Coastal Command narrative).

3. Operations, January to May, 1941. The effort devoted to minelaying by Bomber Command continued to be small for the first three months of 1941. There were three larger operations, however, against the Brest area. The first, by 42 sorties on February 21st, was in an attempt to prevent the Hipper from getting to sea again, as she had between February 2nd and 14th. The other two were in March, and were directed against the Scharnhorst and Gneisenau. On March 20th 42 mining sorties were directed to Brest, Lorient and St. Nazaire in case the battlecruisers should attempt to enter. And on March 29th, when their arrival at Brest had been established, 25 sorties were despatched to "sew them in", followed by a further 10 the following night.

SL636/II  
Encl. 21B.

The attempt to prevent the break-out of the two battlecruisers employed the majority of the mining effort of Bomber Command in April. The effort devoted to the task was increased with this in view, 156 sorties being despatched. Of these, approximately half were sent to Brest. Apart from this, a new area had been opened to aerial minelaying by the Admiralty, comprising a large stretch off the Frisian Islands. There was a constant stream of important enemy traffic passing along the coastal channels between the Elbe and Terschelling. Fifty mines were laid in this area during April and May.

Apart from this steady campaign against the new area, the principal operations in May were aimed at the Prinz Eugen. After she parted company from the Bismarck she appeared to be heading for a French port. In view of this, 48 mining aircraft were despatched to Brest and St. Nazaire on May 25th, 26 to Brest on the 26th, and 36 to the two ports once more on the 27th. Prinz Eugen did not enter Brest, however, until June, 1st.

4. Results achieved. Frequent reports were received during this period of casualties due to minelaying. The accuracy of these could seldom be checked, and there was seldom sufficient data to decide whether the mine had been laid by Bomber Command, Coastal Command, the Fleet Air Arm or the Royal Navy. On August 18th, 1940, a handsome tribute was paid by the Admiralty to the work of the R.A.F. in this field. Up to date, they stated, approximately 780 mines had been laid, some 520 by Bomber Command and 260 by Coastal Command. It had not been possible to obtain reliable information concerning the damage inflicted upon the enemy, except from areas visible to neutral observers. From such areas the sinkings reported amounted to nearly 100,000 tons, including 22 German ships.

To illustrate contemporary assessment of results a specimen of the periodical "Summary of Losses" issued by the Naval Intelligence Division is given in Appendix XI. The following extracts are from the first edition of S.D. 244, the Air Ministry report on "Sea Mining Operations," issued in March 1941:-

"One of the first successes known was the blowing up of one train-ferry and the damaging of two others in the Great Belt. These results were attributed to internal explosions as a result of sabotage. Other early reports of sinkings gave the cause as unknown or were accompanied by vague references to submarines, and it was some little time before the true cause of the sinkings was fully appreciated. Nor had the Germans any effective counter to the magnetic mine."

The number of ships sunk or damaged in the areas mined by Bomber Command up to the end of 1940, according to this report, was 91.

A more reliable record of the German losses due to mining is given in the post-war list compiled from German sources. This is not yet complete, and the details available are often insufficient to show whether the sinking was due to Bomber Command or some other agency. The tonnage of German merchant shipping known to have been mined during the period from April, 1940 to the end of May, 1941 amounts to a total of 51,610 tons (see Appendix X2).

## SECTION III

THE BATTLE OF THE ATLANTIC, DECEMBER, 1940 to MAY, 1941

Critical Stage of the War at Sea. As mentioned in the "policy" section of Part V (sect; I (2)), the principal diversion from strategic bombing in this period was due to the threat to British shipping by German capital ships, submarines and aircraft. This led to a demand for air attack upon German ships in naval ports, submarine bases and component factories, and aerodromes used by the long-range Focke-Wolf "Condor" employed in commerce raiding. The operations carried out against German ports up to the end of 1940 have been mentioned earlier, as they were part of the general strategic bombing campaign against centres in Germany. Targets attacked in connection with the war at sea were at Hamburg and Bremen, Kiel, Wilhelmshaven, Emden and Bremerhaven. The first two have been included in Part V owing to the numerous strategic targets they contained. The latter are dealt with below for January to May, 1941.

This period of early 1941 was a critical stage in the battle for commercial lifelines and naval supremacy in the Atlantic. The battlecruisers Scharnhorst and Gneisenau with the cruiser Prinz Eugen reached western French ports by March 28th after a spell of commerce-raiding. The U-Boat attacks had grown to such proportions as to cause serious alarm. And the long-range aircraft based on Merignac aerodrome, Bordeaux, were taking their toll of shipping out of range of home-based fighter protection.

BC/S23746/II  
Encl. 95A

C.I.U. Report  
R.D. 39  
21/3/41.

R.D. 57

The bomber directive of March 9th, 1941, quoted the Prime Minister's ruling that "we should devote our energies to defeating the attempt of the enemy to strangle our food supplies and our connection with the United States." Soon after this the first detailed report on German ship-building issued by the photographic reconnaissance unit revealed a vast drive in submarine construction which had begun in the latter half of 1940. 118 U-Boats under construction had been identified. In April 144 were identified, including 24 which were fitting out.

The effect of these threats to British supply routes was the diversion of an increasing number of bomber sorties to Battle of the Atlantic targets. Apart from those devoted to minelaying, which have been dealt with, (Sect. II), the increase can be seen in the following figures:-

Sorties against Battle of Atlantic targets.					
<u>Dec. 1940</u>	<u>Jan. 1941</u>	<u>Feb.</u>	<u>Mar.</u>	<u>April</u>	<u>May, 1941</u>
377	499	721	1170	2376	1003

B.C. Report During the three months that the directive of March 9th was in force the bombing effort against Battle of the Atlantic targets amounted to 4468 sorties, 5,822 tons of bombs and 154 sea mines. The warships in Brest alone accounted for 1161 of these sorties and 1655 tons of bombs.

2. Warships at Brest. As mentioned in Section I(3) above several German warships arrived at Brest during this period. The cruiser Hipper was identified there on January 4th, 1941, and the battlecruisers Scharnhorst and Gneisenau on March 28th. In each case a large bomber effort was immediately put out in an attempt

to immobilize them, so that they could not put to sea again to recommence commerce-raiding.

For the attack on the Hipper 53 sorties were despatched to Brest on January 4th, 12 on January 10th and 27 on January 12th. Another attack was put in on February 2nd by 36 aircraft, but Hipper had already put to sea. She returned on February 14th, and a further attack was put in on February 22nd by 29 Wellingtons. On February 24th 57 sorties were despatched, including nine of the new heavy bombers, Stirlings and Manchesters. This was the third operation by the former and the first by the latter. Neither were used for long-range work as yet. After another operation against her by 54 sorties, including two Stirlings, on March 2nd, and by 2 Stirlings alone the following night, Hipper left Brest on the night of March 15th and returned to Germany.

When the Scharnhorst and Gneisenau were found to be docked at Brest on March 28th, an attempt was made by six Hampdens to attack in daylight on March 29th. The cloud cover was insufficient, however, so mines were laid that night on a large scale outside Brest harbour. Another daylight attempt by twelve Hampdens the next day was abandoned for the same reason, and an attack was put in that night, March 30th/31st by all groups. 109 aircraft, including 4 new heavies, took part, and many claimed bursts close to the battlecruisers. In addition 10 aircraft were despatched to lay mines in Brest area, all except two accomplishing their task.

In early April several more attempts were made to attack the ships by day. On April 1st 11 Hampdens abandoned the task when near the French coast owing to lack of cloud. On April 3rd 23 Hampdens were despatched, and one carried out an attack with four 500 lb S.A.P. bombs. On April 5th one out of ten Hampdens attacked and another was missing. Meanwhile both minelaying (see Section II) and bombing attacks were carried out on the nights of April 3rd, 4th and 6th. The night bombing attacks during April and May are shown below. (1)

Contemporary assessment of results showed two hits on Gneisenau on the night of April 4th, one on each ship on the 6th, three on the Gneisenau on the 10th and one on the 12th. In May Scharnhorst was reported hit on the night of the 3rd and Gneisenau on the 4th. The damage resulting from the early April attacks was sufficiently severe for the Germans to send a special commission to investigate it. Their report (No. D-115), dated April 24th, 1941, from Rheinmetal Borsig at Breslau, says that

/Gneisenau

(1)

April	3rd	4th	6th	10th	12th	14th	22nd	23rd	28th
Sorties	89	54	65	48	66	94	26	67	25
(approx) Tonnage	80	39	69	50	41	152	36	78	22
May	3rd	4th	7th						
Sorties	32	97	89						
(approx) Tonnage	49	131	126						



AHB/6. Translation Gneisenau had received three hits in the bows near the armoured turret. Two of these had penetrated the upper deck and detonated inside the ship. The third detonated in the upper deck, with a second explosion against the armoured deck below. This was presumed to be the explosion of oxygen bottles stored there. A German list of merchant marine losses shows that the tanker J.T. Essberger was sunk at Brest on April 4th, 1941. These are the only results so far known for certain.

N.I.D. 24/  
T.235/46.

3. Kiel. The big Baltic naval port, Kiel, was the most important target in Germany connected with the war at sea. It was the principal German naval base, with dockyards, shipbuilding, engineering and armament works, food and fuel stores. Its activities in U-Boat construction were of outstanding importance; whilst the German major naval units located there during this period included Scharnhorst and Gneisenau up till the end of January, 1941; Bismarck in March; the cruisers Nurnberg, Holn, Emden and later Hipper; and two old battleships of the Schlesien class.

The attacks carried out against Kiel up to the end of October, 1940, have been described amongst anti-invasion operations (Part IV, Section III(4)). During October the scale of attack increased as the Scharnhorst and Gneisenau appeared to be ready for sea. On October 15th and 16th 41 and 38 aircraft respectively were despatched against Kiel. The attack was maintained at intervals through November and December, 1940, 54 sorties being despatched during that time. In January and February, 1941, however, no attacks were made upon Kiel owing to the greater priority of other targets. These included Wilhelmshaven, the other large German naval port.

From March, 1941, when Battle of the Atlantic targets were given first priority, Kiel became the most important objective in Germany. Between the date of the new directive, March 9th and the end of May 900 sorties were directed against it, the largest number against any town in Germany.

This attack began with 27 sorties on March 11th, followed by 99 on March 18th. In April a total of 695 sorties were directed against Kiel. The heaviest attacks were by 228 sorties on April 7th, and by 159 the following night, directed against the DUETSCHER WERKE and Krupps shipbuilding yards. The vast majority of aircraft claimed success on both nights, large fires and explosions in the target areas being reported. There were only two smaller attacks in May.

AHB.6

Translations  
German  
reports.

There are fairly comprehensive German accounts of all the principal attacks during this period. That of March 18th reports four attacks by 40 to 50 aircraft, some 47 H.E. and 900 - 1000 incendiaries being mentioned. Several public buildings were hit, long-distance telephone lines, lighting circuits and power cables broken. The damage mentioned in the two shipyards includes:- Krupps, Germaniawerft - sawmill and material testing station hit by H.E.s, walls of the quay endangered by a "dud", one H.E. dropped in the water at the dock edge. Work was only held up for a short while. Deutsche-Werke - M.T. vehicle shed and model shed gutted, apprentices workshop 50% destroyed, ship-construction hall partly burnt down.

On the night of April 7th the tramway supply power station was gutted and several small workshops damaged. The damage to shipyards included the following:- Deutsche Werke - 60% loss of production for an unspecified time. Machine shops, machine-tool shops, drawing office and restroom gutted. First floor of the ship-and machine building



administrative block, several constructional shops and offices gutted. Numerous smaller fires, including U-Boat and armoured vehicle workshops. In the harbour for small craft a 5-ton floating crane was sunk. Kriegsmarinewerft (formerly Howaldtswerke) - Production fell by 25% for a short time. The cable shed, artillery stores sheds, and other stores and boat-houses were razed to the ground. The French A.A. cruiser Nymphe was damaged by an H.E. bomb. Incendiaries on the Schleswig Holstein and the Scheer. Germaniawerft - Production at a standstill. Administrative buildings, carpentry shop, paint shop, gutted, foundry and electric power plant damaged. A number of other buildings damaged.

On the night of April 8th the tramway cables were broken at several points, and tracks destroyed. An express train Berlin to Kiel was hit at Elmschenhagen station. Local trains were stopped owing to damage to tracks and power cables. Deutsche Werke - 2 torpedo-boats severely damaged, welding sheds for U-Boats and about 20 welding plants, and vehicles in sheds destroyed. Major or minor damage caused in almost all sections, including timber sheds, carpentry shop and cookhouse. Kriegsmarinewerft - Naval dockyard - Bomb penetrated deck and side of a U-Boat depot ship, several landed on docks and wharves, little damage.

Germaniawerft - Damage in main administrative block, foundry, power station, mechanical workshop, engine shops, coppersmiths shop, electrical store, etc. The machine-shop of the Bohne works and a gasometer were completely destroyed, electricity and water mains broken at several points, numerous barracks burnt out, and railway stations damaged.

There are further reports of later raids in April, that of April 15th by 97 sorties being reported as about 51 aircraft, which was about the number definitely claiming to have found their target through 8/10th cloud. Damage was small. On April 24th and 25th also, little damage was caused to military objectives. On both nights gas, water and electricity mains were broken, and on the latter, two cranes and quay installations were damaged.

A fairly comprehensive account has been given of the damage at Kiel, since it is available from irrefutable sources. It serves as an example of the effect which was being attained at this time in concentrated raids upon targets in an identifiable position. Most of the evidence regarding this early period of attack has been covered by the vastly greater scale of devastation achieved in the latter years of the war. As a consequence, the results at this period have been dismissed by most authorities as negligible. Yet, although they cannot compare with that obtained later, it can be seen that when a raid was concentrated, even at this date some hindrance was caused to the German war effort.

4. Wilhelmshaven and other German ports. The attack on the second great German naval base, Wilhelmshaven, was concentrated principally against the Tirpitz, under construction at the Kriegsmarine Werft, and the submarine graving docks. The period of heaviest attack was January - February, 1941, when it was feared that Tirpitz was nearly ready for sea. 269 sorties were sent to Wilhelmshaven in January and 173 in February. The heaviest attacks upon the port were by 96 sorties on January 15th, 81 on January 16th, and 116 on February 28th. The German account of the raid of January

War Diary of 15th/16th says that "the damage caused by this raid, compared with the results of previous attacks on home naval bases," was considerable. There was a great deal of damage to the naval shipbuilding yards; in some cases this caused severe limitation to the output capacity of the yards. "The main targets - the Tirpitz, the U-boat construction yards, and the locks at the 3rd entrance to the harbour - were not hit." The attack tailed off to 68 sorties during March, 6 in April and none in May.

Other German ports attacked at this time in connection with the Battle of the Atlantic included Hamburg and Bremen, which have been dealt with in Part V. The only others of importance were Emden and Bremerhaven. Only some 56 sorties were directed at the former and 64 at the latter during the period January - May, 1941. One point of interest is that Emden was the only target in Germany against which a daylight sortie was attempted by heavy bombers. On April 27th and 28th a Stirling was despatched on a cloud cover attack. On the former day it turned back owing to insufficient cloud cover, but on the latter the docks at Emden were bombed from 2000 feet, the rear gunner also opening fire, whilst the aircraft was below cloud.

5. Ports and Aerodromes in occupied countries. Apart from Brest, which has been dealt with above, a number of French, Belgian and Dutch ports were attacked during this period. The attacks upon submarine bases at Lorient and Bordeaux in December, 1940 have been mentioned. The docks at Boulogne were also attacked in December, and at intervals throughout the rest of this period, as they were used to shelter E-boats. 262 sorties in all were directed against them from January to May. The next target of this nature in order of importance was the oil wharves at Rotterdam. Constant harassing attacks were maintained against them throughout the period, amounting to 219 sorties. Lorient was again attacked during March by 105 sorties in all. Calais, Dunkirk, St. Nazaire, Le Havre, Flushing and Antwerp were also detailed. These fringe targets were usually allotted to inexperienced crews for their first two or three operations.

The long-range aircraft base at Bordeaux-Merignac has also been mentioned earlier. From here the Focke-Wulf Condors operated, attacking Allied shipping far out in the Atlantic. The modern French aircraft factory there was used for their repair. 42 sorties were despatched against Merignac during the period January to May, 1941.



SECTION IVTHE ROLE OF NO.2 GROUP, JANUARY - MAY, 1941.

e.g.  
B.C.Signal  
Ops.502  
5.1.41.

The Tasks laid down. As has already been mentioned (Sect.I(2)) the tasks allotted to No.2 Group were mainly concerned with the war at sea. When not otherwise detailed, it was left to the A.O.C.'s discretion to despatch aircraft either by day or night to attack targets on or near the enemy-occupied coast. Most of these were docks or aerodromes, or oil storage tanks for supplying U-Boats and other shipping.

B.C.Signal  
Ops. 522.

Ops.540  
10.1.41.

On January 8th a list of primary targets for daylight attack was given which included French, Belgian and Dutch ports. On January 10th No.2 Group was relieved of night operations so that the effort by day, especially against coastal targets, might be intensified. On the nights when a concentrated area attack was put in by the Command No.2 Group was still expected to participate, as has been seen in Part V of this narrative.

B.C. O.R.B.  
App. B.1251.

A general directive to No.2 Group was issued by the A.O.C.-in-C. Bomber Command on January 21st, 1941. The decision to concentrate the effort of Bomber Command upon attacking the synthetic oil plants made it necessary to review the part played by No.2 Group. Most of the oil targets were too far for the Blenheim, and the same consideration ruled out many of the industrial areas to be attacked. When possible, however, Blenheims would participate. In addition two squadrons were to be allotted and trained for daylight operations in co-operation with Fighter Command. Boulogne, Calais, Dunkirk and Cherbourg were allotted as suitable targets for this purpose.

B.C. O.R.B.  
App. B.1279.

These operations, given the code name "Circus", were intended to force the enemy to give battle under conditions tactically favourable to the British fighters. In order to compel him to do this, the bombers must cause sufficient damage to make it impossible for him to ignore them. The targets selected were shipping and barges or dock installations at the ports mentioned. Any opportunity was also to be taken of attacking convoys or shipping seen at sea. When the weather was unsuitable for these operations the two squadrons were to be used for cloud-cover raids on shipping and fringe targets.

B.C. O.R.B.  
App. B.1251.

When not employed against oil or area objectives the remaining squadrons of No.2 Group were to harass enemy marshalling yards and aerodromes by night. The selection of targets was left to the A.O.C., in consultation with Fighter Command as to those aerodromes in use by the enemy.

A.M. Signal  
X500  
28.2.41.

At the end of February the situation in the north-western approaches made it necessary to concentrate the resources of Coastal Command on the protection of shipping in that area. Bomber Command was therefore requested to take over the duties performed by Coastal Command in the North Sea. This involved No.2 Group taking over the operations against submarine bases previously carried out by Nos.53 and 59 Squadrons of Coastal Command. In early March No.114 squadron, one of those allotted to daylight duties, was loaned to Coastal Command.

B.C. O.R.B.  
App. B.1317  
No.2 Gp.  
O.R.B.  
12.3.41.

On and after March 12th No.2 Group was ordered to carry out daylight sweeps with the object of locating and attacking enemy shipping along the coast from Denmark to Ushant. The area was divided by the group into six "beats", lettered A to F, one or more of which were allotted daily. Under warm front conditions

2 Gp.O.O.No.20  
11.3.41.  
25.3.41.

of poor visibility some four to six aircraft were dispersed over the beat area in order to reconnoitre it effectively. In cold front conditions when visibility was good, the aircraft were to fly in pairs, threes or more to ensure that when a sighting was made it could be effectively attacked.

In clear weather security was to depend on flying below the height at which the enemy warning system was effective, i.e. at about 50 feet. In cloudy weather, cloud cover was to be used. The importance of all aircraft being on their beats simultaneously was emphasized, so that enemy fighters would have insufficient time to get airborne and reach the area. Standing patrols of enemy fighters were to be avoided by careful timing after consultation with Fighter control. Attacks from 1,000 feet, either level or shallow dive, were advocated. Wireless silence was to be maintained until 30 miles from base on return. Nos.21, 82 and 139 Squadrons were first detailed.

B.C. O.R.B.  
App. B.1305.

When for any reason it should be impracticable to attack shipping No.2 Group was given unrestricted choice from the lists of fringe targets which had been issued. Enemy aerodromes or troops could also be attacked. So far as possible first priority was to be given to enemy submarines in occupied ports. No.2 Group issued an operational order explaining the use of warm front and anticyclonic cloud to provide security for bomber attacks on short range objectives between Brest and the Skaw. This area was divided into Beats numbered 1 to 12, to be allotted at discretion. No.18 Squadron was added to those detailed above for this daylight work.

2 Gp. O.O.  
No.24  
4.4.41.

2 Gp. O.O.  
No.22  
28.3.41.

B.C. Signal  
Ops. 104.  
9.4.41.

On April 9th the group was authorised to use all its squadrons for daylight operations. Attacks were to be carried out on coastal targets in Germany, and targets in the interior where cloud cover permitted. Attacks on fringe targets in Germany could also be carried out in clear weather, using a very low approach for security. In order to force the enemy to bring back fighters from the Balkans, and to keep his defences guessing, attacks were to be varied between shipping, occupied territory and Germany itself. No.2 Group operational order providing for these tasks gave the following statistics of operations carried out since March 12th, when they were begun by the group:-

Ops.105.  
9.4.41.

No.2 Gp. O.O.  
No.27.  
12.4.41.

315 day bomber sorties flown under the enemy defence system from Lorient to the Skaw, a distance of over 1200 miles.  
355 ships sighted, 121 attacked, 6 sunk, 8 severely damaged (including one destroyer), and 89 damaged to a lesser degree.

A.M.W.R.  
Shipping  
Assessment

The final assessment of German shipping losses is not yet complete, but it is clear that these figures are excessive (see Appendix X2). They were based upon the reports of crews. The Air Ministry War Room assessment for the period was 3 ships (1650 tons) sunk, 4 (6580 tons) seriously damaged and 10 (4460 tons) damaged to a lesser degree.

No.2 Gp. O.O.  
No.27

By this operational order dated April 12th the enemy coastline was divided into Beats numbered from 1 to 19. These superseded the Beats A to F and 1 to 12 previously laid down, as the directive aimed at destroying shipping as well as coastal objectives. The depth of penetration was defined for each beat, according to the risks entailed. On April 17th, No.2 Group asked and obtained approval to base one flight of Blenheims at Manston, to attack shipping reported as passing through the Channel. This was the real start of the "Channel Stop", which later took heavy toll of enemy coastwise shipping in these narrow waters.

No.2 Gp.Signal  
Ops.952  
B.C. Signal  
Ops.177.

/ On

No.2 Gp. O.O.  
No. 28  
22.4.41.

On April 22nd orders were given for the circus operations described above to be intensified, with the same object of keeping enemy fighter forces occupied. In addition "Blot" operations were introduced. These were similar attacks upon enemy coastal objectives in clear weather with fighter cover, but were carried out at low (i.e. 50 feet) or medium height. "Circus" and "Blot" operations were also to be co-ordinated. In order to draw enemy fighters to the former, it was to be at least ten minutes before the latter. On April 30th Nos. 107 and 114 Squadrons were loaned to Coastal Command.

B.C. O.R.B.  
App. B.1375

On May 5th amended instructions were issued regarding attacks at sight upon enemy shipping. These gave aircraft the "maximum freedom to attack compatible with the safety of our own shipping and naval forces" in the North Sea, Bay of Biscay and English Channel. On May 30th an amended operational order regarding day and night beats was issued, superseding that of April 12th. Results of shipping attacks reported to date were again given, 74 ships totalling 195,000 tons now being claimed as destroyed, with a further 18 ships (41,000 tons) hit and probably destroyed. These figures can be compared with the Air Ministry War Room assessment of 33 ships (63,275 tons) sunk and 17 ships (37,690 tons) severely damaged, or with the incomplete German figures given in Appendix X 2, 5 ships of 11,887 tons sunk, for the period.

A.M.W.R.  
Shipping  
Assessment

2 Group O.O.  
No. 22  
28.3.41.

2. Fringe Operations - From January to mid March, 1941 No. 2 Group was engaged in strategic attacks co-ordinated with the other groups, as described in Part V, and in attacks upon "fringe" targets involving little penetration of enemy territory by night and day. The targets principally chosen were aerodromes in use by enemy bombers, and docks and the shipping in them in France, Belgium and Holland. Oil stores were also attacked. The method and scope of these attacks has been described above, whilst the monthly effort devoted to them is shown in the table below and in Appendix U.

Fringe targets attacked in January 1941 included the docks at Antwerp, Amsterdam, Boulogne and Ostend, and oil stores in Rotterdam docks. This latter objective was detailed to some two or three sorties per week throughout the period. Aerodromes were sometimes detailed, but more often attacked as secondary or last resort targets. The majority of daylight operations during January were abandoned owing to lack of cloud cover or poor visibility. The largest daylight effort of the month was on Jan 11th, when 19 aircraft were despatched against a variety of targets. Only one attacked its primary target at Rotterdam, four attacked ships, barges or E boats, three docks and one the aerodrome at Haamstede. Four 250 lb and four 40 lb bombs were carried by most of these aircraft. One was missing and the remainder abandoned their tasks.

In February daylight sorties once more did not have much success in reaching their primary objectives. Many attacks were made on other objectives, however. The large number of alternative fringe targets was now being made use of by crews who were frustrated by the weather from attacking the targets allotted to them. Of eleven aircraft despatched on Feb 9th, for example, two attacked their primary targets, Le Havre docks and an oil store in Flushing harbour, and three others attacked alternatives at Antwerp,

/Boulogne

Boulogne and Calais, the rest being abortive. The next day Dunkirk and Calais docks were successfully attacked by seven aircraft, whilst a dusk patrol of five aircraft attacked Emden, Haamstede and Soesterburg aerodromes, docks at Den Helder and a railway wagon at Zuilen.

Fringe targets attacked by night during the month were again principally docks and aerodromes. Dunkirk and Ostend docks were detailed on Feb 4th/5th, thirteen out of fifteen aircraft finding a target. Of a further fifteen aircraft detailed against aerodromes that night all but one found a target, whilst seven more, directed against Quiberon Peninsula all bombed objectives therein. Other successful nights against docks were Feb 15th and 23rd. On the former, nine aircraft were despatched to Boulogne, eight of which claimed to have bombed it, the ninth attacking Le Havre. On the 23rd seventeen sorties were sent to Boulogne, three to Quiberon and one to Calais. Only six failed to attack one of these targets. One was missing, and its result is not known. Aerodrome objectives were detailed on the nights of Feb 4th, 21st and 25th. Attacks were carried out at St Omer, Evreux, Lille, Vitry en Artois, Enghien, Vannes Lanveoc, Rennes, Amiens-Glisy, Eindhoven, Barly, Cambrai and others. Further attacks by one or two aircraft were carried out on other nights on both types of target. The full effort for the month will be found in Appendix U.

See Section IV (1) "Circus" and "Blot" operations with fighter escort were occasionally carried out by day as described above. The first "circus" took place on Feb 26th, when twelve Blenheims were despatched against Calais docks. Another was carried out by six Blenheims against Boulogne on March 5th. The first "blot" was on April 21st against Le Havre, which could not be identified owing to cloud.

No. 2 Gp.  
O.O. 22  
28.3.41

Up to March 12th No. 2 Group continued to devote its main effort to docks and aerodromes, apart from the attacks upon targets in Germany co-ordinated with the other groups. After that date the group was primarily concerned with shipping, as described below. Many land targets were still attacked, however, when no shipping could be found. At the end of March "fringe" operations were organised, like the shipping patrols, into "beats".

No. 2 Gp.  
O.R.B.

After April 11th the whole effort of No. 2 Group was used for day operations, with the object of drawing back enemy fighters from the Balkan theatre. Moonlight operations were resumed in addition in May. Anti-shipping patrols were the primary object of the group throughout these two months. A flight of nine Hampdens was attached to No. 2 Group from April 13th to May 1st to experiment in daylight operations under cloud cover. They carried out a total of 31 sorties for the loss of two aircraft, but the majority turned back owing to lack of cloud cover. Their use by night was considered to be of more value, and they were recalled to No. 5 Group on May 1st.

It had been proposed to experiment in the same way with a Wellington flight, but this was dropped.

/The



The scale of effort devoted to the attack of fringe targets by No. 2 Group during this period is shown below. (1)

2 Gp. O.O.  
No. 20  
11.3.41.

3. Anti-Shipping patrols - No. 2 Group had for long been playing its part in the Battle of the Atlantic by attacks upon shipping in ports and at sea. On March 12th, 1941, the group began regular daylight patrols to search for and attack enemy shipping. It was made responsible for the enemy coastline from Denmark to Ushant, which was divided into six "beats", lettered A to F, comprising between them the most profitable shipping lanes for air attack.

2 Gp. O.R.B.  
31.3.41.

On the first day of this patrol, March 12th, two out of five Blenheims found ships to attack, but were uncertain of their result, observing near misses only. Patrols of one or two beats, each on about this scale, were carried out on most days in March, the average results being misses of 20 yards. On March 20th two aircraft claimed hits, and on the 24th a fishing boat with a white swastika on its red sail was reported sunk, two of the crew being seen in the water. Results were beginning to be obtained as the crews gained experience of this type of low-level attack. A very circumstantial account was given of an attack on two cargo vessels of approximately 3000 tons on March 31st. Two explosions were seen on one which turned to steam and dirty yellow smoke. On the other three hits were observed, the explosions being followed by large jets of steam, turning to clouds of steam and black smoke. Both ships were reported to be on fire. This claim can not be confirmed, as nothing appears for March, on the incomplete German record of losses given at Appendix X2.

On April 9th the whole group was turned over to daylight operations, including shipping and coastal targets, and new beats numbered 1 to 19 were laid down by the group on April 12th. When patrolling these beats shipping was to be the primary objective, targets on land being attacked as a last resort. As a result the tonnage of bombs aimed at shipping objectives rose from 17 tons in March to 65.4 in April.

No. 2 Group  
O.R.B.

Patrols were carried out on every suitable day, ships being observed and attacked by some of the aircraft on most days, whilst the remainder attacked the land targets detailed, such as Borkum, Leiden or IJmuiden. Hits were claimed on a merchant vessel of 1500 tons on April 13th, another of 4000 tons the next day, and on 3 coastal vessels and a freighter on April 15th. On April 17th a cloud of black smoke 30 seconds after the bombing of a 6000 ton ship was confirmed by two aircraft. On a dawn attack on Terneuzen the next morning a ship of about 800 tons was

/reported

(1)

#### OPERATIONS AGAINST FRINGE TARGETS

Month	Type	Sorties	Tonnage	Casualties
January	Night	30	10.1	-
	Day	80	4.8	2
February	Night	107	31.7	2
	Day	119	22.8	1
March	Night	89	10.7	-
	Day	35	27.2	6
April	Night	47	7.3	3
	Day	185	57.2	7
May	Night	42	13.6	-
	Day	124	18.5	8



reported as disintegrating after direct hits. Later in the day a 5000 ton ship was reported as being left in flames, and a flak-ship sunk. Inconclusive claims of this nature were made on most days of the month, but German records found so far for this period are too incomplete to assess results. The table below shows the effort devoted to this task.

No. 2 Group  
O.R.B.

In May patrols of the beats were carried out on moonlight nights in addition to daylight, and results claimed continued to improve. In a summary of operations from March 12th to May 30th, 1941, No. 2 Group claimed 77 ships (220,000 tons) destroyed, 18 ships (41,000 tons) probably destroyed, and 54 ships (52,000 tons) damaged. Once more, however, no confirmation of these figures can be obtained, as the investigation of German records is not yet complete. Being taken from the enthusiastic reports of the crews concerned, the figures are undoubtedly optimistic (see Appendix X2).

The scale of effort devoted to anti-shipping patrols by No. 2 Group during the first months of 1941 is shown below.<sup>(1)</sup>

#### ANTI-SHIPING OPERATIONS

(1)

<u>Month</u>	<u>Type</u>	<u>Sorties</u>	<u>Tonnage</u>	<u>Casualties</u>
Jan.	Day	-	2.5	-
Feb.	Day	-	1.1	-
Mar.	Day	143	17	2
April	Day	533	65.4	13
May	Day	257	37.1	10
	Night	29	12.5	1

APPENDICES

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/P

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U.S. PRESIDENT'S APPEAL ON  
BOMBING.

"The ruthless bombing from the air of civilians in unfortified centres of population during the course of the hostilities which have raged in various quarters of the earth in the past few years, which have resulted in the maiming and death of thousands of defenceless women and children, has profoundly shocked the conscience of humanity.

If resort is had to this sort of inhuman barbarism during the period of tragic conflagration with which the world is now confronted, hundreds of thousands of innocent human beings, who have no responsibility for, and who are not even remotely participating in the hostilities which have broken out, now will lose their lives.

I am therefore addressing this urgent appeal to every government, which may be engaged in hostilities, publicly to affirm its determination that its armed forces shall in no event and under no circumstances undertake bombardment from the air of civilian populations or unfortified cities, upon the understanding that the same rules of warfare will be scrupulously observed by all their opponents.

I request an immediate reply."

(This message was sent at 4 a.m. American time, 10.30 a.m. B.S.T. on September 1st, 1939).

APPENDIX A.2

BRITISH REPLY TO U.S. PRESIDENT'S APPEAL ON BOMBING

(Published September 1st, 1939).

"His Majesty's Government welcome the weighty and moving appeal of the President of the United States against bombing from the air:-

Deeply impressed by the humanitarian considerations to which the President's message refers, it was already the settled policy of His Majesty's Government, should they become involved in hostilities, to refrain from such action, and confine bombardment to strictly military objectives, upon the understanding that those same rules will be scrupulously observed by all their opponents.

They had already concerted in detail with certain other Governments the rules that in such an event they would impose upon themselves and make publicly known."

ANGLO-FRENCH DECLARATION ON THE CONDUCT OF WARFARE  
(Published September 3rd, 1939)

"The Governments of the United Kingdom and France solemnly and publicly affirm their intention, should a war be forced upon them, to conduct hostilities with a firm desire to spare the civilian population and to preserve in every way possible, these monuments of human achievement which are treasured in all civilised countries.

In this spirit, they have welcomed with deep satisfaction President Roosevelt's appeal on the subject of bombing from the air. Fully sympathising with the humanitarian sentiments by which that appeal was inspired, they have replied to it in similar terms.

They had indeed some time ago sent explicit instructions to the Commanders of their Armed Forces prohibiting the bombardment of any except strictly military objectives in the narrowest sense of the word.

Bombardment by artillery on land will exclude objectives which have no strictly defined military importance, in particular, large urban areas situated outside the battle zone. They will furthermore make every effort to avoid the destruction of localities or buildings which are of value to civilisation.

As regards the use of naval forces, including submarines, the two Governments will abide strictly by the rules laid down in the Submarine Protocol of 1936, which have been accepted by nearly all civilised nations. Further, they will only employ their aircraft against merchant shipping at sea in conformity with the recognised rules applicable to the exercise of maritime belligerent rights by warships.

Finally, the two allied Governments reaffirm their intention to abide by the terms of the Geneva protocol of 1925 prohibiting the use in war, of asphixiating or poisonous or other gases, and of bacteriological methods of warfare. An enquiry will be addressed to the German Government as to whether they are prepared to give an assurance to the same effect.

It will of course be understood that in the event of the enemy not observing any of the restrictions which the Governments of the United Kingdom and France have thus imposed on the operations of their armed forces these Governments reserve the right to take all such action as they may consider appropriate."

GERMAN REPLY

"The Reich Government has taken note of the joint declaration of the French and British Governments in which the said Governments have maintained that they wish to observe certain principles in the conduct of warfare, in particular that of air warfare.

The Reich Government recall that after the failure of the Disarmament Conference, they were the first to propose that the efforts of the Powers should be concerted with the object of establishing, by means of agreements, provisions relating to the conduct of warfare, extending the scope of these provisions as far as possible. These proposals were then in no way seconded by the other Powers. Moreover, the Chancellor of the German Reich stated publicly in his Reichstag speech of 1st September, at the beginning of the action against Poland which Germany has been forced to take, that the operations would be conducted on the German side in accordance with the said German proposals, and would not be directed against women and children. At the same time, on this occasion, the Chancellor of the German Reich gave the Reich Air Force instructions to confine its attacks to military objectives. In this same connection, the German Government welcomed the appeal of President Roosevelt and gave him an affirmative reply. Moreover, in answer to the British Government which had made a special point of submitting this question to the German Government, the latter issued a communication stating that Germans would observe the provisions of the Geneva protocol of 1925 relating to the employment of asphyxiating and poisonous gases and all other gases of the same nature. The German forces on land, on sea and in the air have observed these German declarations in the strictest manner possible. The said declarations, however, as was affirmed at the time of their formulation, were naturally based on the a priori conditions that the enemies of Germany would observe the same rules for the conduct of warfare. In this connection, the Reich Government are obliged to point out that the enemies of Germany have already, in repeated instances, and in the most flagrant manner, failed to adhere to their assurances and to observe their solemn undertakings. The British Government, completely contrary to the solemn assurance given in their declaration relating to the protection of the civilian populations, have of their own accord freed themselves from all the recognised rules relating to the conduct of naval warfare by the provisions which they have announced with regard to contraband: in this way, they have inaugurated the widest possible blockade against women and children. Moreover, the Polish Government, in the absence of any military expediency, have employed numerous open towns as focal points of their military operations, and have therefore transformed them into a field of battle. They have, in addition, with the organs at their disposal, publicly invited the civilian population to take part in unrestricted action by francs-tireurs against the German Army. In numerous localities, the Polish civilian population has answered this appeal and has been guilty of the most fearful atrocities against German soldiers. Finally, Polish troops, resorting to measures contrary to their undertakings - as has been authentically proved by events - have employed yellow cross gas.

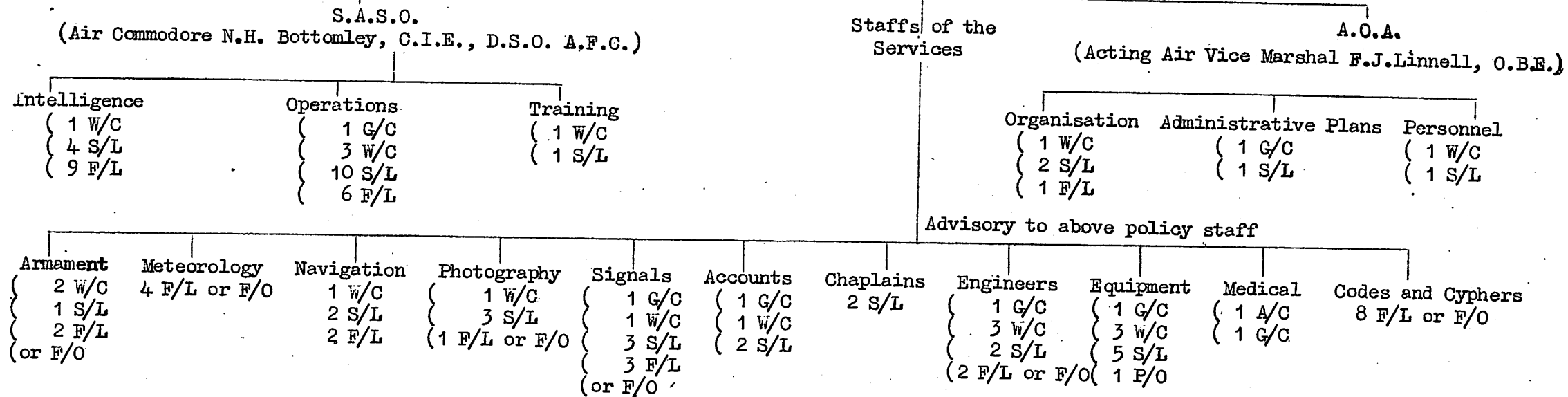
The German forces will continue in the future to abide by the principles which have been proclaimed by their Fuhrer and in accordance with which they will wage warfare in a chivalrous and humane manner. The German Government, however, must reserve to themselves the right to reply to any violation of the law on the part of their enemies in the manner which they deem suitable, and as regards the war waged by Great Britain with the weapon of blockade against women and children, which they have at their disposal, and which will confront the enemy with the terrible consequences of the methods which they have thought fit to employ."

(Apparently undated, but transmitted through the Swedish Minister on September 18th, 1939)



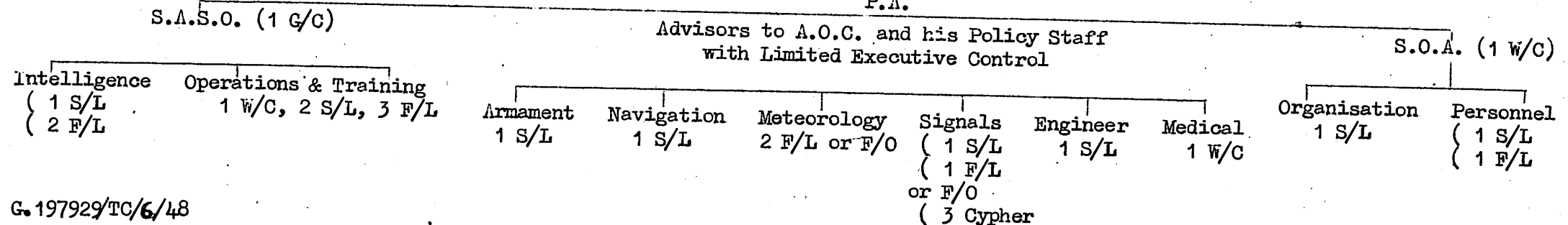
# APPENDIX B.1. - ORGANISATION OF BOMBER COMMAND HEADQUARTERS, SEPTEMBER, 1939

A.O.C.-in-C.  
(Air Chief Marshal Sir E.R. Ludlow-Hewitt, K.C.B., C.M.G., D.S.O., M.C.)  
P.A.



## APPENDIX B.2. - ORGANISATION OF A BOMBER GROUP HEADQUARTERS, SEPTEMBER, 1939

A.O.C. (A/V/M. or A/C)  
P.A.



G.197929/TC/6/48

## COMPOSITION OF BOMBER COMMAND, 31.8.39

Group & Sqn.	Station	Aircraft	Establishment		Strength	Date of Equipment (S. 1656)		
			I.E.	I.R.				
I	12	Bicester	Battle	24	8	34	Feb-Oct. 1938	
	15	Abingdon	"	"	"	32	June-Oct. 1938	
	40	"	"	"	"	31	June-Oct. 1938	
	88	Boscombe Down	"	"	"	32	Dec. 1937	
	103	Benson	"	"	"	34	July-Aug. 1938	
	105	Harwell	"	"	"	30	Aug-Nov. 1937	
	142	Bicester	"	"	"	32	Mar.-April 1938	
	150	Benson	"	"	"	32	August 1938	
	218	Boscombe Down	"	"	"	32	Jan.-Feb. 1938	
	226	Harwell	"	"	"	32	Oct. 1937	
II	18	Upper Heyford	Blenheim	16	5	22	May 1938	
	35	Cranfield	Battle	24	8	31(+2 Anson)	April-May 1938 (Group Pool Sqn.)	
	52	Upwood	"	"	"	(36(+10 Anson)	Nov. 1937 " " }	
	57	Upper Heyford	Blenheim	16	5	24	April-Oct. 1938	
	63	Upwood	Battle	24	8	(30(+10 Anson)	May-Aug. 1937 (Group Pool Sqn.)	
	82	Watton	Blenheim	16	5	(21(10 long-nosed)	March 1938	
	88	Hucknall	Battle	24	8	21	May-June 1938 (Group Pool Sqn.)	
	104	Bassingbourn	Blenheim	16	5	(21(+10 Anson)	May 1938 ( do. }	
	108	"	"	"	"	(21(+10 Anson)	June 1938 ( do. }	
	114	Wyton	"	"	"	22(+20 long-nosed)	July-Sept. 1937	
	139	"	"	"	"	20(+10 do.)	July-Sept. 1937	
	207	Cranfield	Battle	24	8	23(+2 Anson)	May-Oct. 1938 (Group Pool Sqn.)	
	III	9	Honington	Wellington	12	4	16	Jan.-Mar. 1939
		37	Feltwell	"	"	"	16	May-June 1939
38		Marham	"	"	"	17	Nov. 1938-Jan. 1939	
75		Stradishall	"	"	"	8(+8 Anson)	July 1939 (Group Pool Sqn.)	
99		Mildenhall	"	"	"	19	Oct.-Nov. 1938	
115		Marham	"	"	"	16	Mar.-May 1939	
148		Stradishall	"	"	"	16(+9 Anson)	Mar. 1939 (Group Pool Sqn.)	
149		Mildenhall	"	"	"	20	Jan.-Feb. 1939	
214		Feltwell	"	"	"	17	June 1939 (Reserve Sqn.)	
215		Honington	"	"	"	16	July 1939	
IV		10	Dishforth	Whitley	16	5	21	Mar.-June 1937
		51	Linton-on-Ouse	"	"	"	18	Feb. 1938-Mar. 1939
	58	"	"	"	"	21	Oct. 1937-Jan. 1938	
	77	Driffield	"	"	"	15	Nov. 1938-Jan. 1939	
	78	Dishforth	"	"	"	21	July-Sept. 1937 (Training)	
	97	Leconfield	"	"	"	15(+8 Anson)	Jan.-Mar. 1939 (Group Pool Sqn.)	
	102	Driffield	"	"	"	16	Oct.-Nov. 1938	
	166	Leconfield	"	"	"	14	June 1939 (Group Pool Sqn.)	
	V	7	Firmingley	Hampden	12	4	16(+8 Anson)	April-May 1939 (Group Pool Sqn.)
44		Waddington	"	"	"	16(+1 " }	Jan-Mar. 1939	
49		Scampton	"	"	"	21(+4 " }	Oct. 1938	
50		Waddington	"	"	"	16(+4 " }	Jan. 1939	

<u>Group &amp; Sqn.</u>	<u>Station</u>	<u>Aircraft</u>	<u>Establishment</u>		<u>Strength</u>	<u>Date of Equipment (S.1656)</u>
			<u>I.E.</u>	<u>I.R.</u>		
V 61	Hemswell	Hampden	12	4	16(+4 Anson)	Feb.-Mar. 1939
76	Finningley	"	"	"	20(+7 " )	Mar.-Apr. 1939 (Group Pool Sqn.)
83	Scampton	"	"	"	17(+4 " )	Nov. 1938-Mar. 1939
106	Cottesmore	"	"	"	16(+4 " )	May 1939 (Reserve Sqn.)
144	Hemswell	"	"	"	16(+3 " )	Mar.-Apr. 1939
185	Cottesmore	"	"	"	15(+4 " )	June 1939 (Reserve)
VI 21	Watton	Blenheim	16	5	24	Aug. 1938
90	West Raynham	"	"	"	21(long nosed)	May-June 1937
101	"	"	"	"	21( do. )	June-Oct. 1938
107	Wattisham	"	"	"	21( do. )	Aug. 1938
110	"	"	"	"	20(18 do. )	Dec. 1937-Jan. 1938
TOTAL - 55 SQUADRONS			920	300	1313	

## ORDER OF BATTLE: BOMBER COMMAND - 26.9.59

Air Officer Commanding-in-Chief - Air Chief Marshal Sir Edgar R. Ludlow-Hewitt, K.C.B., C.M.G., D.S.O., M.C.

UNIT 1	Commander 2	Permanent Aerodrome or Location 3	Present Location 4	Type of Aircraft 5
<u>NO. 1 GROUP</u>				
H.Q., A.A.S.F.	A.V.M. P.H.L. Playfair, C.B., C.V.O., M.C.	Rheims	Rheims	
71(B) WING	Gp.Capt. (Acting) H.S.P. Walmsley, O.B.E., M.C., D.F.C.	Betheniville	Betheniville	
15(B) Sqn	Wg.Cdr. J.L. Wingate	Betheniville	Conde	Battle
40(B) Sqn	Sqn.Ldr. H.C. Parker	Betheniville	Betheniville	Battle
72(B) WING	Gp.Capt. H.S. Kerby, D.S.O., A.F.C.	Rheims-Champagne	Rheims-Champagne	
105(B) Sqn	Wg.Cdr. D. Macfadyen	Rheims-Champagne	Villeneuve Les Vertus	Battle
226(B) Sqn	Wg.Cdr. S.L.G. Pope, D.F.C., A.F.C.	Rheims-Champagne	Champagne	Battle
74(B) WING	Gp.Capt. R.T. Leather A.F.C.	Challerange	Challerange	
103(B) Sqn	Wg.Cdr. H.J. Gemmel	Challerange	Challerange	Battle
150(B) Sqn	Wg.Cdr. A. Hesketh, D.F.C.	Challerange	Eoury	Battle
75(B) WING	Gp.Capt. A.H. Wann	Auberive-sur-Suippes	Auberive-sur-Suippes	
88(B) Sqn	Wg.Cdr. K.H.R. Elliot, D.S.O.	Auberive-sur-Suippes	Mourmelon	Battle
218(B) Sqn	Wg.Cdr. L.B. Duggan	Auberive-sur-Suippes	Auberive	Battle
76(B) WING	Gp.Capt. R.M. Field	Barry-au-Bac	Barry-au-Bac	
12(B) Sqn	Wg.Cdr. A.G. Thackray	Barry-au-Bac	Barry-au-Bac	Battle
142(B) Sqn	Wg.Cdr. C.L. Falconer	Barry-au-Bac	Barry-au-Bac	Battle
<u>NO. 2 GROUP</u>				
A.V.M. C.T. Maclean, C.B., D.S.O., M.C.		Wyton	Wyton	
S.H.Q. Wyton	Gp.Capt. F.H. Laurence, M.C.	Wyton	Wyton	
114(B) Sqn	Wg.Cdr. G.R.C. Spencer	Wyton	Alconbury	Blenheim Mk. IV
139(B) Sqn	Wg.Cdr. L.W. Dickens	Wyton	Wyton	Blenheim Mk. IV
S.H.Q. Wattisham	Gp.Capt. (Acting) O.R. Gayford, D.F.C., A.F.C.	Wattisham	Wattisham	Blenheim Mk. IV
107(B) Sqn	Wg.Cdr. B.E. Eabery, D.S.O., A.F.C.	Wattisham	Martlesham	Blenheim Mk. IV
110(B) Sqn	Wg.Cdr. I. McL. Cameron	Wattisham	Wattisham	Blenheim Mk. IV
S.H.Q. Watton	Gp.Capt. F.J. Vincent, D.F.C.	Watton	Watton	
21(B) Sqn	Wg.Cdr. L.T. Keens	Watton	Watton	
82(B) Sqn	Wg.Cdr. S.H. Ware	Watton	Bassingbourn	Blenheim Mk. IV
S.H.Q. W. Raynham	Gp.Capt. A.S. Maskell	W. Raynham	W. Raynham	
104(B) Sqn	Wg.Cdr. J.H. Hargroves	W. Raynham	W. Raynham	Blenheim Mk. IV
<u>NO. 3 GROUP</u>				
A.V.M. J.E.A. Baldwin, C.B., D.S.O., O.B.E.		Mildenhall	Mildenhall	
S.H.Q. Mildenhall	Gp.Capt. F.H. Coleman, D.S.O.	Mildenhall	Mildenhall	
99(B) Sqn	Wg.Cdr. (Acting) J.F. Griffiths	Mildenhall	Newmarket	Wellington I
149(B) Sqn	Wg.Cdr. G.H. Russel, D.F.C.	Mildenhall	Mildenhall	Wellington IA
S.H.Q. Marham	Gp.Capt. (Acting) H.P. Lloyd, M.C., D.F.C.	Marham	Marham	
38(B) Sqn	Wg.Cdr. C.D. Adams	Marham	Barton Bendish	Wellington I
115(B) Sqn	Wg.Cdr. H.G. Rowe, D.F.C.	Marham	Marham	Wellington IA
S.H.Q. Honington	Gp.Capt. W. Sowrey, D.F.C., A.F.C.	Honington	Honington	
9(B) Sqn	Sqn.Ldr. R.A.A. Cole	Honington	Honington	Wellington I
S.H.Q. Feltwell	Gp.Capt. O.F. Modin, D.S.O.	Feltwell	Feltwell	
37(B) Sqn	Wg.Cdr. F.J. Fogarty, D.F.C., A.F.C.	Feltwell	Feltwell	Wellington IA
214(B) Sqn	Wg.Cdr. W. Sanderson, D.F.C.	Feltwell	Methwold	Wellington I
S.H.Q. Bassingbourn		Bassingbourn	Bassingbourn	
215(B) Sqn	Wg.Cdr. S.L. Quine, M.C.	Bassingbourn	Bassingbourn	Wellington I
<u>NO. 4 GROUP</u>				
Air Cdre. A. Cunningham, D.S.O., M.C., D.F.C., A.F.C.		Linton-on-Ouse	Linton-on-Ouse	
S.H.Q. Linton-on-Ouse	Gp.Capt. A.D. Pryor	Linton-on-Ouse	Linton-on-Ouse	
51(B) Sqn	Wg.Cdr. J. Silvester	Linton-on-Ouse	York	Whitley Mk. III
58(B) Sqn	Wg.Cdr. J. Potter	Linton-on-Ouse	Linton-on-Ouse	Whitley Mk. III

/SH. Q. Dishforth

APPENDIX C2 - Contd.

1	2	3	4	5
NO. 4 GROUP - contd.				
S.H.Q. Dishforth 10(B) Sqn 78(B) Sqn	Gp.Capt. E.G. Hopcraft, D.S.C. Wg.Cdr. W.E. Staton, M.C., D.F.C. Wg.Cdr. R. Harrison, D.F.C., A.F.C.	Dishforth Dishforth Dishforth	Dishforth Dishforth Dishforth	Whitley Mk. IV Whitley Mk. IVA Whitley Mk. V
S.H.Q. Drifffield 77(B) Sqn 102(B) Sqn	Gp.Capt. A. Lees, D.S.C., A.F.C. Wg.Cdr. J. Bradbury, D.F.C. Wg.Cdr. T.F. Toogood	Drifffield Drifffield Drifffield	Drifffield Drifffield Cottam	Whitley Mk. III Whitley Mk. III
NO. 5 GROUP				
S.H.Q. Hemswell 61(B) Sqn 144(B) Sqn	Gp.Capt. E.A.B. Rice, M.C. Wg.Cdr. C.H. Brill Wg.Cdr. (Acting) J.C. Cunningham	Hemswell Hemswell Hemswell	Hemswell Finningley Hemswell	Hampden Hampden
S.H.Q. Scampton 49(B) Sqn 83(B) Sqn	Gp.Capt. E.C. Emmett, M.C., D.F.C. Wg.Cdr. J.S. Chick, M.C., A.F.C. Wg.Cdr. R.B. Jordan	Scampton Scampton Scampton	Scampton Newton Scampton	Hampden Hampden
S.H.Q. Waddington 44(B) Sqn 50(B) Sqn	Gp.Capt. L.H. Cockey Wg.Cdr. J.H. Boothman, A.F.C. Wg.Cdr. L. Young	Waddington Waddington Waddington	Waddington Waddington Tollerton	Hampden Hampden
S.H.Q. Cottesmore 185(B) Sqn	Gp.Capt. E.B. Grenfell, A.F.C. Wg.Cdr. E.D. Barnes, A.F.C.	Cottesmore Cottesmore	Cottesmore Cottesmore	Hereford Hampden Anson
106(B) Sqn	Sqn.Ldr. W.C. Sheen	Cottesmore	Cottesmore	Hampden Anson
NO. 6 GROUP				
S.H.Q. Abingdon 97(B) Sqn	Air Cdre W.F. MacN. Foster, C.B.E., D.S.C., D.F.C. Gp.Capt. T.W. Elmhirst, A.F.C. Wg.Cdr. E. Burton	Abingdon Abingdon Abingdon	Abingdon Abingdon Abingdon	Whitley Mk. II Anson Whitley Mk. I
166(B) Sqn	Wg.Cdr. J.C. Roden, A.F.C.	Abingdon	Abingdon	
S.H.Q. Harwell 75(B) Sqn	Gp.Capt. J.M. Herring, D.S.O. M.C. Wg.Cdr. D. D'A. A. Greig, D.F.C., A.F.C.	Harwell Harwell	Harwell Harwell	Wellington Mk. I Anson
148(B) Sqn	Wg.Cdr. H.A. Haines, D.F.C.	Harwell	Harwell	Wellington I Anson
S.H.Q. Benson 52(B) Sqn 63(B) Sqn	Gp.Capt. C.W. Mackey Wg.Cdr. G. Combe Wg.Cdr. P.J.R. King	Benson Benson Benson	Benson Benson Benson	Anson - Battle Anson - Battle
S.H.Q. Upper Heyford 7(B) Sqn	Gp.Capt. F. Soden, D.F.C. Wg.Cdr. L.G. Nixon	Upper Heyford Upper Heyford	Upper Heyford Upper Heyford	Hampden Anson
76(B) Sqn	Wg.Cdr. D.S. Allan	Upper Heyford	Upper Heyford	Hampden Anson
S.H.Q. Cranfield 35(B) Sqn	Gp.Capt. W.H. Dunn, D.S.C. Sqn.Ldr. H.F. Chester	Cranfield Cranfield	Cranfield Cranfield	Anson Battle
207(B) Sqn	Wg.Cdr. J.N.D. Anderson	Cranfield	Cranfield	Anson Battle
S.H.Q. Bicester 104(B) Sqn	Gp.Capt. G.W. Bentley, D.F.C. Wg.Cdr. M.E. McKay	Bicester Bicester	Bicester Bicester	Anson Blenheim Mk. I Blenheim Mk. IV
108(B) Sqn	Wg.Cdr. J.H. Fowle	Bicester	Bicester	Anson Blenheim Mk. I Blenheim Mk. IV
S.H.Q. Upwood 90(B) Sqn	Wg.Cdr. A. Leach, M.C.	Upwood Upwood	Upwood Upwood	Blenheim Mk. I Blenheim Mk. IV
S.H.Q. Hucknall 98(B) Sqn	Sqn.Ldr. F.W. Dixon Wright	Hucknall Hucknall	Hucknall Hucknall	Battle
1 Flight N.Z. Air Force	Sqn.Ldr. M.W. Buckley, M.B.E.	Marham	Barton Bendish	Wellington I

APPENDIX C3

ORDER OF BATTLE 14.11.40.

Group	Station	Squadrons	Type	Remarks	
No.1	Newton	103 <sup>x</sup> 150 <sup>x</sup>	Wellington	To Syerston 1st Dec. to Snaith in March	
	Swinderby	300 <sup>x</sup> 301 <sup>x</sup>	"		
	Syerston	304 <sup>x</sup> 305 <sup>x</sup>	"		
	Binbrook	12 <sup>x</sup> 142 <sup>x</sup>	"		
No.2	Wattisham	107, 110	Blenheim	To re-equip. with Bostons (DB7)	
	Watton	21 82	"		
	Horsham St.Faith	114 139	"		
	West Raynham	18 101	"		
	Swanton Morley	105	"		
No.3	Feltwell	75	Wellington	(37 & 38 Squadrons had { flown out as reinforce- (ment to Middle East.	
	Marham	115	"		
	Mildenhall	99 149	"		
	Honington	9 311	"		
	Stradishall	214	"		
	Wyton	15 <sup>x</sup> 40 <sup>x</sup> 57 <sup>x</sup>	"		
	Oakington	218 <sup>x</sup>	Stirling		
	"	7 <sup>x</sup>			
No.4	Leeming	10	Whitley	Commenced to form 7.11.40	
	"	35 <sup>x</sup>	Halifax		
	Dishforth	51 78	Whitley		
	Driffield	-	"		
	Linton-on-Ouse	58 102	Whitley		
	Topcliffe	77	"	Temporarily on a C. & M. basis	
No.5	Hemswell	61 144	Hampden	Commenced to form 1.11.40	
	Scampton	49 83	"		
	Waddington	44	"		
	"	207 <sup>x</sup>	Manchester		
	Lindholme	50	Hampden		
	Finningley	106	"		Non-operational. Reserve Sqdn.
	Doncaster	271	Miscellaneous		Non-operational. Transport Sqdn.
	(Transport)				

NOTE: Squadrons marked x at half squadron strength - non-operational during re-equipment.

APPENDIX C.4

PROPOSED EXPANSION - 27.3.41.  
(Based on Aircrew and Aircraft Position Forecast.)

Group and Aircraft	No. of Squadrons			Notes
	Position at 27.3.41.	at Dec. 1941		
		at 16 IE	Old Heavies at 24 IE	
I Wellington IC " II " III Fortress (or Liberator) Stirling  Total	6 2    8	6(a) 2 4 3  (b) 15	4(a) 1 3 3  (b) 11	(a) 2 at half strength.     (b) Possibly some from III Group.
II Blenheim Wellington IC	9	5 4(c)	5 3(c)	at 24 IE (c) at half strength
III Wellington IC Wellington IV Stirling  Total	11  1 12	6 6 11 23	4 4 11(d) 19	(d) Possibly some to I Group.
IV Wellington II Whitley Halifax  Total	1 6 1 8	4 8 4 16	3 6 4 13	
V Hampden Manchester Lancaster  Total	6 3  9	9(f) 4(g) 2 15	6 4 2 12	(f) Possibly 10 (g) Possibly 3
<u>Grand Total</u>  New Heavies Old Heavies Old Medium  Total  Aircraft	  5 32 9  46  736	  24(1) 49(m) 5  78  1208	  24(1) 34(n) 5  63  1320	  (1) 384 aircraft. (m) 744 " (n) 756 (including 5 half squadrons)

## ORDER OF BATTLE - 29.5.41.

GROUP AND SQUADRON	STATION	AIRCRAFT (Establishment)		TYPE	REMARKS
		I.E.	I.R.		
I	Hucknall				
103	Newton	16	2	Wellington IC	
150	Newton	16	2	Wellington IC	
300	Swinderby	16	2	Wellington IC	Polish
301	Swinderby	16	2	Wellington IC	Polish
12	Binbrook	16	2	Wellington II	
142	Binbrook	16	2	Wellington II	
304	Syerston	16	2	Wellington IC	Polish
305	Syerston	16	2	Wellington IC	Polish
II	Huntingdon				
110	Wattisham	16	4	Blenheim V	
21	Watton	16	4	Blenheim V	
82	Watton	16	4	Blenheim V	
18	Horsham	16	4	Blenheim V	
	St.Faith				
139	Horsham	16	4	Blenheim V	
	St.Faith				
105	Swanton Morley	16	4	Blenheim V	
107	West Raynham	16	4	Blenheim V	
114	Horsham	16	4	Blenheim V	
	St.Faith				
90	West Raynham	8	2	Boeing B 178	(Fortress) forming.
101	West Raynham	16	2	Wellington IC	
III	Exning				
99	Waterbeach	16	2	Wellington IC	
149	Mildenhall	16	2	Wellington IC	
115	Marham	16	2	Wellington IC	
9	Honington	16	2	Wellington IC	
75	Feltwell	16	2	Wellington IC	New Zealand Squadron.
214	Stradishall	16	2	Wellington IC	
57	Feltwell	16	2	Wellington IC	
311	Honington	16	2	Wellington IC	Czech Squadron.
40	Wyton	16	2	Wellington IC	
218	Marham	16	2	Wellington IC	
7	Oakington	16	2	Stirling	
15	Wyton	16	2	Stirling	Half Squadron operational.
P.R.U. No.3	Oakington	6 2		Spitfire Wellington	
IV	York				
51	Dishforth	16	2	Whitley V	
58	Linton	16	2	Whitley V	
10	Leeming	16	2	Whitley V	
77	Topcliffe	16	2	Whitley V	
102	Topcliffe	16	2	Whitley V	
78	Middleton	16	2	Whitley V	
	St.George				
104	Driffield	16	2	Wellington II	
405	Driffield	16	2	Wellington II	R.C.A.F. - forming.



GROUP AND SQUADRON	STATION	AIRCRAFT (Establishment)		TYPE	REMARKS
		I.E.	I.R.		
IV					
35	Linton	16	2	Halifax	
76	Leeming	16	2	Halifax	Non-operational
V					
61	Grantham				
	Hemswell	16	2	Hampden	To re-equip with Manchester
144	Hemswell	24	3	Hampden	
49	Scampton	24	3	Hampden	
83	Scampton	24	3	Hampden	
44	Waddington	24	3	Hampden	
50	Lindholme	24	3	Hampden	
106	Coningsby	24	3	Hampden	
207	Waddington	16	2	Manchester	
97	Coningsby	16	2	Manchester	Half Squadron operational
271	Doncaster	16	2	Transport	

APPENDIX D1

O.T.U. ORGANISATION 11.4.40.

No.	<u>From</u> <u>Sqdns.</u>	<u>Station</u>	<u>To</u> <u>Supply</u>	<u>A/C</u> <u>Establishment</u>	<u>Weeks</u>	<u>Course</u> <u>Flying Hours</u>	<u>Personnel</u> <u>Pilots</u>	<u>Est.</u> <u>Obs.</u>	<u>U/T</u> <u>A/Gs</u>
10	{ 97	Abingdon	4 Group	Whitley 40+14	6	55	60	30	60
	{ 166			Anson 14+4					
11	215	Basingbourn	3 "	Wellington 40+14	6	55	60	30	90
				Anson 14+4					
12	{ 52	Benson	AASF	Battle 45+15	6	60	60	60	60
	{ 63			Anson 14+4					
	{ 207								
	added by 25th)								
13	{ 104	Bicester	2 Group & AASF	Blenheim 27+9	6	60	60	60	60
	{ 108			Anson 9+3					
14	185	Cottesmore	5 Group	Hampden 27+9	6	55	60	-	60
				Anson 27+9					
15	{ 75	Harwell	3 Group	Wellington 40+14	6	55	60	30	90
	{ 48			Anson 14+4					
16	{ 7	Upper	5 Group	Hampden 27+9	6	55	60	-	60
	{ 76	Heyford		Anson 27+9					
	{ 35	Upwood	2 Group & AASF	Blenheim 27+9	6	60	60	60	60
				Anson 9+3					
18		Hucknall	Poles	Battle 12+4	6	60	-	-	-

RESERVE SQUADRONS

98	France	AASF	Battle
101	West Raynham	2 Group	Blenheim
214	Stradishall	3 "	Wellington
78	Linton	4 "	Whitley
106	Finningley	5 "	Hampden

BOMBER COMMAND OPERATIONAL TRAINING UNITS  
MAY, 1941

<u>Type</u>	<u>O.T.U.</u>	<u>Service</u> <u>Type</u>	<u>Ansons</u>	<u>Esti- mated</u> <u>Output</u> <u>Feb.</u>	<u>May</u>	<u>Remarks</u>
Wellington	No. 11 Bassingbourn	40+14	14+4	18	20	
	No. 12 Benson	20+7	7+2	-	8	Move to Chipping-Warden in August.
	No. 15 Harwell	40+14	14+4	18	20	
	No. 20 Lossiemouth	40+14	14+4	12	18	
	No. 21 Moreton-in-the-Marsh	40+14	14+4	-	12	Opened March-April.
	No. 22 Wellesbourne-Mountford	40+14	14+4	-	-	To form in May
	No. 23 Pershore	40+14	14+4	-	-	To form in May
	No. 24 Honeybourne	40+14	14+4	-	-	To form in August
	No. 27 Lichfield	40+14	14+4	-	-	To open shortly
	No. 18 Bramcote	20+7	7+2	8	8	Polish OTU to full Strength in May
Whitley	No. 10 Abingdon	36+12	12+4	16	16	
	No. 19 Kinloss	36+12	12+4	16	16	
Hampden	No. 14 Cottesmore	37+12	19+6	15	15	
	No. 16 Upper Heyford	37+12	19+6	15	15	
	No. 25 Finningley	16+5		-	15	Opened March
		9 +3 Manchesters				
		18+6 Wellingtons (in lieu of Ansons)				
Blenheim	No. 13 Bicester	12+4 (Mk. I)	12+4	16	16	
		24+8 (Mk. IV)				
	No. 17 Upwood	11+4 (Mk. I)	12+4	14	14	To convert to Wellingtons in Aug-Sept.
		21+8 (Mk. IV)				

## APPENDIX E

## MONTHLY AVAILABILITY OF AIRCRAFT AND CREWS

(Average per month)

Page 1.

Group	A/C Serviceable	Crews Serviceable	Effective Crew Strength	A/C Available with Crews
<u>September, 1939.</u>				
1 (AASF)	145		178	144
2	140		185	90
3	77		86	68
4	61		74	54
5	71		128	68
Total	494		653	424
<u>October, 1939.</u>				
1 (AASF)	139		201	136
2	125		143	78
3	89		85	68
4	61		69	40
5	74		122	73
Total	488		620	395
<u>November, 1939.</u>				
1 (AASF)	135		209	130
2	98		123	81
3	83		83	71
4	58		65	32
5	74		115	74
Total	448		594	388
<u>December, 1939.</u>				
1 (AASF)	118		178	116
2	104		112	43
3	81		72	56
4	58		67	30
5	75		102	73
Total	436		531	318
<u>January, 1940.</u>				
1 (AASF)	111		187	110
2	71		72	40
3	60		71	34
4	45		68	33
5	65		128	59
Total	352		526	276
<u>February, 1940.</u>				
1 (AASF)	117		146	100
2	76		72	43
3	69		79	50
4	60		67	36
5	67		112	62
Total	389		476	291
<u>March, 1940.</u>				
1 (AASF)	106		185	113
2	79		63	44
3	75		81	53
4	47		65	41
5	64		126	40
Total	371		520	291

## APPENDIX E

Group	A/C Serviceable	Crews Serviceable	Effective Crew Strength.	A/C Available with Crews.
<u>April, 1940.</u>				
1 (AASF)	137		197	102
2	66		71	66
3	73		88	36
4	47		67	36
5	59		132	66
Total	382		555	216
<u>May, 1940</u>				
1 (AASF)	96+		149	129
2	85		83	80
3	85		95	56
4	47		70	38
5	55		120	43
Total	368+		517	346
<u>June, 1940</u>				
1 (AASF)	No returns available.	No returns available.	139+	No returns available.
2	54	77	116	54
3	89	86	102	82
4	39	49	66	38
5	54	76	119	54
Total	236+	288+	492	228+
<u>July, 1940.</u>				
1	63	66	103	43
2	161	153	205	140
3	119	94	111	89
4	65	55	70	55
5	83	87	118	79
Total	491	453	607	376
<u>August, 1940.</u>				
1	53	64	75	53
2	181	151	225	147
3	118	91	147	90
4	61	63	77	48
5	74	91	122	72
Total	487	460	646	410
<u>September, 1940.</u>				
1	79	87	101	78
2	218	138	216	136
3	119	117	144	109
4	72	53	79	53
5	92	97	122	89
Total	580	542	662	515
<u>October, 1940.</u>				
1	85	86	96	79
2	217	136	200	133
3	100	93	138	88
4	59	45	99	45
5	71	62	123	60
Total	532	472	656	455

Group	A/C Serviceable	Crews Serviceable	Effective Crew Strength.	A/C Available with Crews.
<u>November, 1940.</u>				
1	34	23	51	20
2	133	114	189	106
3	118	106	151	80
4	39	42	97	34
5	48	81	130	48
Total	372	366	568	288
<u>December, 1940.</u>				
1	39	25	32	25
2	139	93	118	93
3	99	94	120	82
4	56	47	92	46
5	65	96	168	65
Total	398	255	530	311
<u>January, 1941.</u>				
1	53	25	26	24
2	100	81	117	81
3	130	113	138	110
4	70	65	95	61
5	66	85	168	66
Total	419	369	544	342
<u>February, 1941.</u>				
1	64		32	
2	104		126	
3	134		149	
4	64		109	
5	83		182	
Total	449		508	
<u>March, 1941.</u>				
1	63		31	
2	85		113	
3	155		138	
4	63		87	
5	107		192	
Total	443		561	
<u>April, 1941.</u>				
1	88		44	
2	121		134	
3	164		163	
4	74		81	
5	106		194	
Total	553		616	
<u>May, 1941.</u>				
1	128		81	
2	117		131	
3	162		154	
4	68		109	
5	115		218	
Total	590		693	

APPENDIX F

WESTERN AIR PLANS AT 3RD SEPTEMBER 1939

- W.A.1 Plans for attack on the German Air Striking Force, and its maintenance organisation (including aircraft industry).
- W.A.4 Plans for the attack of German military rail, canal and road communications.
- (a) Attack on rail and road communications in Western Germany in a concentration period.
- (b) Attack to delay a German invasion of Southern Holland, Belgium and France.
- W.A.5 Plans for attacking German manufacturing resources.
- (a) Attack on German war industry.
- (b) Attack on the Ruhr and its effect on the military lines of communication in Western Germany.
- (c) Attack on Germany's war resources of oil
- W.A.6 { Plans for attacking Italian manufacturing resources  
{ 5(c) re-numbered W.A.6 in January, 1940  
{ 6 became known by its code name - Haddock plan
- W.A.7 Plans for counter offensive action in defence of seaborne trade in co-operation with the Navy, i.e. attack on the fleet or on the bases of enemy surface, submarine and air forces operating against our trade.
- (a) Attack on WILHELMSHAVEN
- (b) Limited attack with air forces alone on WILHELMSHAVEN.
- W.A.8 Plans for attack on specially important depots or accumulations of warlike stores, other than air, in enemy country.
- W.A.9 Plans for putting the Kiel canal out of action.
- W.A.10 Plans for the destruction of enemy shipping and facilities in German mercantile ports - precedence being given to the Baltic.
- W.A.11 Plans for attack on forests.
- W.A.12 Plans for attacking the German fleet or a section thereof at sea.
- W.A.13 Plans for attack on enemy's headquarters and administrative offices in Berlin and elsewhere.
- W.A.14 Plans for dropping propaganda leaflets.
- W.A.15 Plans for mine-laying in German waters
- W.A.16 Plans for laying mine "A" Mk.V in Inland Waterways.

(NOTES: Plans 2 and 3 concerned Coastal Command alone.  
Plan W.A.16 added later.)

APPENDIX G1

NICKEL DROPPING AREAS

S46650  
Enc.67b.

For the purpose of Nickel dropping Germany was divided into areas. In geographical order these were.

- Area 1 (a) The Ruhr including Duisburg, Mülheim, Gelsenkirchen, Bochum, Elberfeld, Barmen, Remscheid, Solingen, Oberhausen.
- (b) West bank of the Rhine and Dusseldorf, including Krefeld, Viersen, Düren, Cologne, Aachen.
- (c) Mainz, Frankfurt on Main, Offenbach, Hanau, Mannheim, Ludwigshafen, Darmstadt.
- (d) Nuremberg, Fürth, Ingolstadt, Munich.
- (e) Württemberg, and Baden, including Karlsruhe, Pforzheim, Stuttgart, Cannstatt, Ulm, Friedrichshafen, Freiburg.
- Area 2. Berlin, Potsdam, Spandau.
- Area 3. Hamburg and Bremen; Lübeck, Kiel and ports at other end of Kiel Canal, e.g. Wilhelmshaven, Cuxhaven.
- Area 4. Magdeburg, Dessau, Halle, Merseburg, . Bitterfeld.
- Area 5. Saxony, Leipzig, Chemnitz, Zwickau, Plauen, Dresden, Meissen.
- Area 6. East Germany, Stettin, Frankfurt on Oder, Leignitz, Gorlitz and Breslau.



CONTENTS OF LEAFLETS DROPPED ON GERMANY FROM SEPTEMBER 1939 -  
APRIL 1940

<u>No. of Leaflet</u>	<u>Contents</u>
EH 151	Entitled "To the German People".
158	Material approved personally by the Prime Minister, dealing with export of money by all the leaders of the Nazi party.
225	Extracts from "Mein Kampf".
260	Message to Austria entitled "Heads Up".
262	Statement on Britain's war aims as made by Prime Minister Chamberlain during a broadcast speech on 26th November 1939.
263) 264)	Entitled "France and Great Britain" - their unity of purpose etc.
267	Entitled "Great Britain to the Czech people".
271	Addressed to "Hamburg - the Gate of the World".
273	Entitled "Warning message from Great Britain" regarding the unnecessariness of the war.
276	Entitled "Warning message to the German People".
280	Prime Minister's broadcast to the German people.
284	Written from the standpoint of one individual to another rather than from the British to the German people, and attacking individuals rather than a regime.
288	Entitled "The Fuhrer Speaks".
290	Summary of Britain's reply to a speech by Herr Hitler.
293	Entitled "Great Britain answers Hitler".
298	Addressed to "German Workers" exhorting them to work for peace, freedom and human rights.
300	Entitled "Germany's Lost U-boats".
301	Entitled "Great Britain to the Czech people".
302	Entitled "Germany must import or capitulate".
303	Entitled "British message to Poland".
304	Entitled "The Lion has Wings".
306	Entitled "Who pays for Hitler's war?" - addressed to German mothers.
307	Entitled "Why?" - series of questions re political, economic and domestic conditions.
309	Entitled "Unpublished" - extracts from Mr. Chamberlain's speech at Birmingham.
323	Entitled "A March 15th Message from Britain" to the Czechoslovakians on the date of the German occupation of their country one year ago.

No. of  
Leaflet

Contents

324 )	
325 )	
326 )	Entitled "Die Ruhr Arbeiter" (fascimile headline of the
327 )	official Ruhr newspaper).
328 )	
330 )	
331 )	
332 )	
333 )	Entitled "Gestapolen" - fate of Poland at the hands of the
334 )	Gestapo.
335	Entitled "Hamburgen Fremdesblatt" (faosimile headline of
	official newspaper, the "Hamburge Fremdenblatt").
336	Regarding Britain's fight against the annexation policy
	and oppression of Germany.
337	Entitled "Victory in the East".
338 )	Entitled "Kieler Wahre Nachrichten" (fascimile for the
339 )	official newspaper "Kuhr Neueste Nachrichten").
340 )	
341 )	
342 )	
343 )	
344 )	
345 )	Entitled "Gestapolen" (vide 331).
346 )	
347 )	
348 )	
349 )	
WV 1 - 10	Entitled "Wolkiger Beobachter" - newsheets.

## APPENDIX G3

## SUMMARY OF NICKEL OPERATIONS - SEPTEMBER 1939 TO APRIL 1940

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
<u>1939</u>				
<u>SEPTEMBER</u>				
3/4	Hamburg Bremen Ruhr	10 Whitleys	EH 273	1 a/c forced landed at Amiens.
4/5	Ruhr	6 Whitleys	EH 273	
5/6	Mainz Darmstadt Mannheim Frankfurt	4 Whitleys	EH 276	
7/8	Lubeck Kiel Wilhelmshaven	8 Whitleys	EH 276 and EH 280	
8/9	Hanover  Ruhr Munster Koln Osnabruck Hanover	11 Whitleys     2 Wellingtons	EH 276     EH 273	1 a/c interned in Belgium. 1 a/c missing. 1 a/c crashed at Bue.
10/11	Kaiserslautern  Stuttgart Frankfurt Nuremburg	6 Whitleys	EH 280	1 a/c crashed on take-off.
24/25	Bremen Hamburg Ruhr	4 Whitleys	EH 151	
25/26	Bremen Osnabruck Munster	3 Whitleys	EH 151	
27/28	Bremen Osnabruck Munster	3 Whitleys	EH 280	
28/29	Bremen Ruhr	4 Whitleys	EH 158	
30/1 Oct.	Hamburg Bremen	4 Whitleys	EH 158	1 a/c crashed at Bolton on return.
<u>OCTOBER</u>				
1/2	Berlin	4 Whitleys	EH 158	1 a/c missing over the North Sea.
15/16	Berlin	2 Whitleys	EH 290	1 a/c missing.
18/19	Hamburg Bremen Hanover	4 Whitleys	EH 290	1 a/c crashed at Glissy.

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
<u>OCTOBER</u>				
24/25	Magdeburg Hamburg Berlin	3 Whitleys	EH 290 and EH 293	
27/28	Stuttgart Munich Frankfurt	4 Whitleys	EH 290	2 a/c crashed on return
<u>NOVEMBER</u>				
10/11	Mannheim Stuttgart Nuremburg Frankfurt	4 Whitleys	EH 288	1 a/c crashed S. of Nancy.
20/21	Bremen Hamburg	2 Whitleys	EH WB 1 and EH 288	
21/22	Frankfurt Stuttgart	2 Whitleys	EH WB 1	
24	Wilhelmshaven Brunsbüttel	4 Whitleys	EH 288	
27	Wilhelmshaven Cuxhaven	6 Whitleys	EH 288	
<u>DECEMBER</u>				
6	Hamburg Bremen	2 Whitleys	EH WB 2	
23	Hamburg Bremen	4 Whitleys	EH WB 3 and EH 262	
1940				
<u>JANUARY</u>				
4	Hamburg Bremen	2 Whitleys	EH 271, EH WB 3 and EH 264	
5	Hamburg Bremen	2 Whitleys	EH WB 4 and EH 264	
11	Hamburg Bremen	2 Hampdens 2 Wellingtons	EH WB 4 and EH 223	
12	Dusseldorf Frankfurt Prague Vienna Kiel	2 Whitleys 1 Whitley 2 Whitleys 1 Hampden	EH WB 4 EH 267 EH 260 EH WB 4 and EH 288	
	Hamburg Bremen	2 Wellingtons	EH WB 4 and 225 Gp.	
18	Hamburg Bremen Hanover Brunswick	2 Wellingtons 4 Hampdens	EH WB 5, EH WB 4 and EH 298	

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
19	Hamburg Hanover Brunswick	1 Wellington	EH WB 5, EH 298 and EH 263	
<u>FEBRUARY</u>				
17/18	Hamburg	1 Wellington	EH WB 5, EH 263 and EH 298.	
22/23	Vienna	2 Witleys	EH WB 6	
23/24	Prague Bremen Kiel Hamburg	2 Witleys 1 Hampden 2 Wellingtons	EH 267-EH301 EH 263-EH 298 EH WB 5, EH 254 and 225 Gp.	
24/25	Hamburg Bremen	2 Hampdens	EH WB 5 and EH 263- 298	
26/27	Hamburg Kiel Cologne Ruhr Dortmund Berlin	1 Hampden 1 Hampden 3 Witleys	EH 304 EH WB 5 EH WB 5	
29/28	Berlin Hanover  Kiel and Cuxhaven	1 Witley 1 Hampden 1 Hampden	EH WB 5 EH WB 5 and EH 263- 298 EH 288 and EH 263- 298	
<u>MARCH</u>				
7/8	Kreuz-Czarnkow Czarnkow-Posen Dusseldorf Cologne Rheine Osnabruck Bielefeld Dusseldorf	2 Witleys 1 Witley 1 Witley 1 Witley	EH 303 EH WB 7 EH WB 7 EH WB 7	
9/10	Prague Vienna Munchen-Gladbach	2 Witleys 1 Witley 1 Blenheim	EH LZ 1 EH WB 8 EH WB 4	
11/12	Eschweiler-Duren	1 Blenheim	EH WB 4	
15/16	Hamburg Cuxhaven Brunsbuttel Wesermunde Bremervorde Cuxhaven Bremen Warsaw Munster Ruhr Coblenz	2 Wellingtons 1 Wellington   1 Wellington 2 Witleys 1 Witley 2 Witleys 1 Witley	EH WB 9 EH WB 9   EH WB 9 EH 303 EH WB 7 EH WB 7 EH WB 9	

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
MARCH 16/17	Xanten } Wesel }	1 Whitley	EH WB 9	
	Rheine	1 Whitley	EH WB 9	
	15 m. S.W. of Bonn	1 Whitley	EH WB 9	
	Cologne	1 Whitley	EH WB 9	
	Ruhr	2 Whitleys	EH WB 9	
	20 m. N.W. Prague	2 Whitleys	EH 323	
	Hamburg }	8 Wellingtons	EH WB 10 EH 306	
	Bremen }	"	EH 309 EH 307	
	Wilhelmshaven }	"	"	
	Cuxhaven }			
	Schwerin }	2 Hampdens	EH 306 and	
	Hamburg }		EH WB 7	
21/22	Hamburg }	11 Wellingtons	EH 306 WB 10	
	Hanover }		and H. Gp.	
	Bremen }			
	Gluckstadt }			
21/22	Bremen-Hanover }	11 Wellingtons	EH 306, WB 10	
	Wilhelmshaven }	(as previous	and H. Gp.	
	Verden }	page).		
	Luneburg }			
17/18	Kaiserslautern }	3 Battles	D.K.	
	Stromberg }			
	Kirschwaller }			
	Speyer }	2 Battles	D.K.	B.A.F.F.
	Birkenfeld }			
	Oberstein }			
22/23	Ruhr }	5 Whitleys	EH WB 10 and	
	Marburg }		EH WB 7	
17/18	Mannheim }	2 Battles	D.K.	A.A.S.F.
	Mainz }			
21/22	Mainz }	3 Battles	D.K.	"
22/23	Hamburg }	2 Hampdens	EH WB 10 and	
	Westerhever }		EH 306	
	Coblenz }	2 Battles	D.K.	B.A.F.F.
	Wiesbaden }			
23/24	Wesermunde }	20 Wellingtons	H Gp. and	
	Hanover }		EH 306	
	Dorum-Bremen }			
	Hamburg }			
	Bremen }			
	Minden }			
	Cuxhaven }			2 a/c missing.
	Oldenburg }			
	Rotenburg }			
	Bremenhaven }			
	Brunswick }			
	Coblenz }	3 Battles	D.K.	
	Wiesbaden }			
	Oppenheim }			B.A.F.F.

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
MARCH				
24/25	Rostock	3 Hampdens	H Group	B.A.F.F.
	Eutin			
	Gustrow			
	Morbach	3 Hampdens	D.K.	
	Frankfurt			
	Wiesbaden			
	Coblenz	4 Battles	D.K.	
	Mannheim	4 Battles	D.K.	
	Karlsruhe	1 Battle	C. Group	
	Darmstadt			
Gan Odernheim	1 Battle	C. Group		
25/26	Bremen	1 Wellington	EH 307 R Group	
	Ruhr	2 Whitleys	C Group H Group	
	Elberfeld	2 Hampdens	and EH WB10	
	Cuxhaven			
27/28	Frisian Islands	1 Wellington	H Group	
	Wilhelmshaven			
	Bremen			
	Hamburg	12 Wellingtons	H Gp. EH 307	
	Cuxhaven			
	Brunswick	6 Whitleys	EH 306 and WB10	
	Sylt			
	Neuminster			
	Bremerworde			
	Wittenburg			
	Wesermunde			
	Bremen			
	Oldenburg			
	Ruhr			
MARCH 31/APRIL 1.				
	Hamburg	7 Wellingtons	EH 306, 307 WB10 and H Group	
	Bremen			
APRIL				
1/2	Cuxhaven	6 Hampdens	K Group EH 306, WB10 EH WB7 and EH 307	
	Kiel			
6/7	Hamburg	8 Wellingtons		1 Whitley crashed at Fairfield
	Lubeck			
	Soltau			
	Verden			
	Cuxhaven			
	Minden	5 Whitleys	H Gp. R Gp. WB10 EH 306, WB7, and EH 307	
	Recklinghausen			
	Min-Bremen			
	Wilhelmshaven			
	Oldenburg			
Kiel	12 Hampdens	- do -		
Meldorf				
Wilhelmshaven				
Zinnowitz				
Neuminster				
20/21	Karlsruhe	9 Battles	C Group and EH 366	A.A.S.F.
	Mainz		- do -	
	Mainz	3 Battles	C Group and EH 366 and R Group.	

DATE	TARGET	AIRCRAFT	NICKEL NO.	REMARKS
<u>APRIL</u>				
20/21	Bad Kreuznach	2 Battles	- do -	A.A.S.F.
	Darmstadt	1 Battle	- do -	
	Frankfurt	4 Battles	- do -	
	Bonn	3 Battles	W, c, and RGps.	1 a/c missing.
	Coblenz	5 Battles	W, B Gp and EH 366	
	Lahnstein	1 Battle	W and R Gps.	
21/22	Worms	2 Battles	C Group	A.A.S.F.
	Mannheim	2 Battles	C Group	
	Heidelberg	3 Battles	C Group	
	Speyer	1 Battle	C Group	
	Andernach	3 Battles	EH 372 and W Gp.	
	Bonn	1 Battle	EH 372	
	Coblenz	2 Battles	C and W Gps.	
	Koln	1 Battle	W Group	
	Lahnstein	2 Battles	W Group	
22/23	Mannheim	8 Battles	C Gp. and EH372	A.A.S.F.
	Bad Kreuznach	2 Battles	EH 372	
	Mainz	3 Battles	EH 372	
	Darmstadt	2 Battles	EH 372	
	Frankfurt	4 Battles	EH 372	



## NICKELS - TABLE OF OPERATIONS TO APRIL 1940

No.1 "M" Balloon Unit

<u>Date</u>	<u>Index No.</u>	<u>No. Dropped</u>	<u>Estimated destination</u>
<u>1939</u>			
Oct. 1/2	(EH158	123,000	-
	(EH280	57,000	-
Nov. 4	EH288	180,000	Berlin
5	EH288	180,000	Gorlitz
6	"	129,000	Magdeburg
7	"	207,000	"
8	"	216,000	Dresden
9	"	99,000	Gorlitz
11	"	156,000	Munster
13	"	114,000	Nurnberg
14	"	105,000	Pilsen
24	EH/WB1	124,500	Chemnitz
Dec. 2	"	(127,500	Brunn
	EH225	(45,000	"
3	(EHWB2	72,000	Augsburg
"	(EH225	236,000	"
4	"	96,000	Tabor
5	"	96,000	Prague
10	( "	72,000	(Bayreuth
	(EH/WB2	76,500	"
<u>1940</u>			
Jan. 30	EH/WB3	90,000	Nurnberg
31	"	90,000	Weiden
Feb. 1	"	67,500	(Magdeburg
	EH/WB4	3,000	( "
2	"	67,500	Munchen
7	"	(28,500	(Nurnberg
	EH225	(78,000	( "
8	"	96,000	Bayreuth
22	"	198,000	Mannheim
23	EH300/302	120,000	Minden
24	"	132,000	Munchen
27	EH225	216,000	Halberstadt
29	"	(46,500	Torgau
	D.K.	(7,750	"
Mar. 11/12	(EH225	4,500	(Nurnburg
	(EH/WB7	16,500	( "
	(D.K.	21,750	( "
	(EH288	126,000	( "
12/13	EH/WB7	3,000	Pardubitz
13/14	"	124,000	Pilsen & Oppeln
18/19	(EH288	18,000	Regensburg & Budovice
	(EH/WB7	87,000	"
	(D.K.	38,000	"
26/27	EH/WB7 )	31,500	Kassel & Munster
	D.K. )	29,500	"
April 18/19	EH366	243,000	Breslau

MONTHLY SUMMARY OF NICKEL OPERATIONS SEPT. 1939 TO APRIL 1940.

September.

No. of sorties = 61  
 No. of casualties = 6  
 No. of nickels dropped = 20,683,000  
 No. of nights on ops = 11

October.

No. of sorties = 17  
 No. of casualties = 4  
 No. of nickels dropped = 3,492,000  
 No. of nights on ops = 5

November.

No. of sorties = 12  
 No. of casualties = 1  
 No. of nickels dropped = 2,385,000 (of which  
 495,000 were double sheets)  
 No. of nights on ops. = 5

December.

No. of sorties = 6  
 No. of casualties = Nil  
 No. of nickels dropped = 1,440,000  
 No. of nights on ops = 2

January.

No. of sorties = 23  
 No. of casualties = Nil  
 No. of nickels dropped = 5,198,250  
 No. of nights on ops = 6

February.

No. of sorties = 21  
 No. of casualties = 1  
 No. of nickels dropped = 4,601,000  
 No. of nights on ops = 6

March.

No. of sorties = 142  
 No. of casualties = 9  
 No. of nickels dropped = 19,146,000  
 No. of nights on ops. = 19

April.

No. of sorties = 74  
 No. of casualties = 1  
 No. of nickels dropped = 4,417,500  
 No. of nights on ops = 5

SUMMARY OF OPERATIONS AGAINST NAVAL TARGETS, SEPTEMBER 1939  
TO APRIL 1940

<u>Date</u>	<u>Target or Purpose</u>	<u>Aircraft No. and Type</u>	<u>Bombs Dropped</u>	<u>Hits Claimed</u>	<u>Aircraft Lost</u>	<u>Enemy A/Q Claimed</u>	<u>Observations or Photographs</u>
<u>1939</u>							
<u>SEPTEMBER</u>							
3	Recco.	1 Blenheim	-	-	-	-	Yes
3	German Fleet	18 Hampdens	Nil	Nil	Nil	Nil	No
		9 Wellingtons	Nil	Nil	Nil	Nil	No
4	Recco.	1 Blenheim	-	-	-	-	Yes
4	Wilhelmshaven	15 Blenheims	8	1	5	-	Yes
	Brunsbüttel	14 Wellingtons	8	Nil	2	Nil	Yes
5	Recco.	1 Blenheim	-	-	-	-	No
6	Recco.	1 Blenheim	-	-	-	-	Yes
20	Recco.	2 Blenheims	-	-	-	-	Yes
26	Recco.in Force	12 Hampdens	Nil	Nil	Nil	Nil	Yes
29	Recco.in Force	11 Hampdens	7(?)	Nil	5	Nil	Yes
<u>OCTOBER</u>							
8	German Fleet	12 Wellingtons	Nil	Nil	Nil	Nil	Yes
30	Destroyers	18 Wellingtons	Nil	Nil	Nil	Nil	No
<u>NOVEMBER</u>							
10	Sweep.	6 Wellingtons	Nil	Nil	Nil	Nil	No
11	Recco.	3 Blenheims	Nil	Nil	2	Nil	No
15	Sweep.	4 Wellingtons	Nil	Nil	Nil	Nil	No
17	Sweep.	6 Wellingtons	Nil	Nil	Nil	Nil	No
17	Recco.	4 Blenheims	Nil	Nil	Nil	Nil	Yes
20	Sweep	3 Hampdens	Nil	Nil	Nil	Nil	No
24/25	Night Recco.	4 Whitleys	Nil	Nil	Nil	Nil	Yes
25	Sweep	6 Wellingtons	Nil	Nil	Nil	Nil	No
25	Recco.	4 Blenheims	Nil	Nil	Nil	Nil	Yes
27/28	Night Recco.	6 Whitleys	Nil	Nil	Nil	Nil	No
<u>DECEMBER</u>							
1	Sweep	3 Wellingtons	Nil	Nil	Nil	Nil	Yes
2	Sweep	3 Hampdens	Nil	Nil	Nil	Nil	No
3	Warships at Heligoland	24 Wellingtons	63	2	Nil	1 *1	Yes
3	Sweep	3 Wellingtons	Nil	Nil	Nil	Nil	No
4	Sweep	3 Hampdens	Nil	Nil	Nil	Nil	No
9	Sweep	3 Wellingtons	Nil	Nil	Nil	Nil	No
10/11	Sweep	3 Whitleys	Nil	Nil	Nil	Nil	No
11/12	Sweep	3 Whitleys	Nil	Nil	Nil	Nil	No
14	Sweep	23 Hampdens	Nil	Nil	Nil	Nil	No
14	Sweep	12 Wellingtons	Nil	Nil	5	2 *1	Yes
15	Sweep	5 Blenheims	Nil	Nil	Nil	Nil	Yes
16/17	Sweep	3 Whitleys	6	Nil	Nil	Nil	Yes
17	Sweep	6 Blenheims	Nil	Nil	Nil	Nil	No
18	Sweep	3 Wellingtons	Nil	Nil	Nil	Nil	No
18	Naval Forces	24 Wellingtons	Nil	Nil	12	12 *4	Yes
20	Sweep	12 Blenheims	10	Nil	Nil	Nil	Yes
21	Deutschland	24 Hampdens	Nil	Nil	2	Nil	No
21	Sweep	18 Wellingtons	Nil	Nil	Nil	Nil	No
23/24	Sweep	2 Whitleys	Nil	Nil	Nil	Nil	No
24	Recco.	2 Blenheims	Nil	Nil	Nil	Nil	No
24	Sweep	17 Wellingtons	8	Nil	Nil	Nil	Yes
25	Sweep	11 Hampdens	Nil	Nil	Nil	Nil	Yes
26	Sweep	5 Blenheims	Nil	Nil	Nil	Nil	No
26/27	Sweep	4 Whitleys	Nil	Nil	Nil	Nil	No
27	Recco.	2 Blenheims	-	-	1	Nil	Yes
29	Sweep	11 Blenheims	Nil	Nil	Nil	Nil	No
29/30	Sweep	4 Whitleys	Nil	Nil	Nil	Nil	No
<u>1940</u>							
<u>JANUARY</u>							
1	Sweep	9 Blenheims	-	-	-	-	-
2	Sweep	17 Wellingtons	-	-	2	1 *2	-
2	Wilhelmshaven	1 Blenheim	-	-	-	-	Yes
	Photo! recco.						
5	Sweep	18 Wellingtons	-	-	-	-	-
10	Sweep	21 Blenheims	-	-	1	2	-
10/11	Sweep	4 Whitleys	-	-	-	-	-
12	Sweep	18 Hampdens	-	-	-	-	-
13	Sweep	24 Blenheims	-	-	-	-	-
20	Sweep	17 Wellingtons	-	-	-	-	-
23	Sweep	6 Wellingtons	-	-	-	-	-
25	Sweep	18 Blenheims	-	-	-	-	-
26	Sweep	9 Wellingtons	-	-	-	-	-

Date	Target or Purpose	Aircraft No. and Type	Bombs Dropped	Hits Claimed	Aircraft Lost	Enemy A/C Claimed	Observations or Photographs
<u>1940</u>							
<u>FEBRUARY</u>							
1	Sweep	6 Wellingtons	-	-	-	-	-
11	Sweep	18 Wellingtons	-	-	-	-	-
13	Sweep	12 Wellingtons	-	-	-	-	-
14	Sweep	15 Blenheims	-	-	-	-	-
16	Recco. Heligoland	1 Blenheim	-	-	1	-	-
17	- do -	1 Blenheim	-	-	1	-	-
17/18	- do -	1 Whitley	-	-	-	-	Yes
19/20	Night recco. Heligoland	2 Whitleys	-	-	-	-	Yes
20/21	- do -	2 Wellingtons	3	-	1	-	Yes
	- do -	18 Wellingtons	-	-	-	-	Yes
21	Recco. Heligoland	2 Blenheims	-	-	-	-	-
23	Recco. Anchorage	2 Blenheims	-	-	-	-	-
24	N.W. Germany	2 Blenheims	-	-	-	-	-
26	- do -	2 Blenheims	-	-	1	-	-
27	- do -	2 Blenheims	-	-	-	-	-
28	- do -	2 Blenheims	-	-	-	-	-
<u>MARCH</u>							
2	Recco.	6 Blenheims	-	-	-	-	Yes
4	Recco.	2 Blenheims	4	1	-	-	-
6	Recco.	2 Blenheims	-	-	-	-	-
7	Recco.	2 Blenheims	-	-	-	-	-
9	Recco.	2 Blenheims	-	-	-	-	Yes
11	Recco.	2 Blenheims	4	1	-	-	Yes
12	Recco.	2 Blenheims	1	-	-	-	-
13	Recco.	2 Blenheims	-	-	-	-	-
15	Sweep	6 Wellingtons	-	-	-	-	-
15	Sweep	6 Hampdens	-	-	-	-	-
16	Recco.	12 Blenheims	Yes	-	-	-	Yes
19	Heligoland	6 Blenheims	4	-	-	-	Yes
20	Sweep	7 Blenheims	3+	-	-	-	-
21	Sweep	8 Blenheims	Yes	-	-	-	Yes
24	Sweep	8 Blenheims	4	-	-	-	-
25	Sweep	9 Blenheims	-	-	-	-	Yes
27	Sweep	7 Blenheims	Yes	-	1	-	-
27	Sweep	14 Blenheims	-	-	-	-	Yes
28	Sweep	15 Blenheims	-	-	-	-	-
29	Sweep	15 Blenheims	-	-	-	-	-
30	Sweep	6 Blenheims	-	-	-	-	Yes
30	Horns Rev.	9 Blenheims	4	-	-	-	-
31	Sweep	6 Blenheims	-	-	-	-	-
31	Danish Coast	9 Blenheims	-	-	-	-	-
<u>APRIL</u>							
1	Horns Rev.	9 Blenheims	4	-	-	-	Yes
4	Wilhelmshaven and estuaries	2 Blenheims	-	-	-	-	Yes
4	Wilhelmshaven and estuaries	6 Blenheims	5	-	-	-	-
5	Jade and Wilhelmshaven	9 Blenheims	-	-	-	-	-
6	Sweep	2 Blenheims	-	-	-	-	Yes
7	Attack naval force	18 Blenheims	45	-	-	-	-
8	Sweep	2 Blenheims	-	-	-	-	Yes
8	Heligoland and Horns Rev.	6 Blenheims	4	-	-	-	-
9	Sweep	2 Blenheims	-	-	-	-	Yes
9	Heligoland	6 Blenheims	-	-	-	-	Yes
9	Bergen	12 Hampdens	Yes	1	-	-	-
10	Recco.	2 Blenheims	-	-	-	-	Yes
11	Sweep	2 Blenheims	4	-	-	-	-
11	Kristiansand	6 Hampdens	abandoned	-	-	-	Yes
11/12	Oslo-Kiel	(23 Whitleys 20 Hampdens)	Yes yes	1	1	-	Yes Yes
12	Sweep	23 Blenheims 24 Hampdens 36 Wellingtons	- Yes Yes	- - -	6 3	2	Yes Yes Yes
13	Sweep	9 Blenheims	Yes	-	-	-	Yes
14	Recco.	8 Blenheims	abandoned	-	-	-	Yes
15	Recco.	2 Blenheims	Yes	-	-	-	Yes
16	Recco.	2 Blenheims	-	-	-	-	-
18/19	Oslo Fjord	6 Whitleys	-	abandoned	1	-	-
18/19	Trondhjem	3 Whitleys	-	-	-	-	-
20/12	Trondhjem	3 Whitleys	-	-	-	-	-
20/21	Oslo fjord	9 Whitleys	-	-	-	-	Yes
23/24	Oslo fjord	4 Whitleys	Yes	-	-	1	Yes
25	Hardanger etc.	6 Blenheims	Yes	-	-	-	Yes
25/26	Oslo fjord	6 Whitleys	Yes	-	-	-	-

APPENDIX J1

SUMMARY OF ATTACKS AGAINST GERMAN SEAPLANE BASES, DECEMBER 1939  
TO APRIL 1940

<u>Date</u> <u>(Night</u> <u>or)</u>	<u>Target</u>	<u>A/C No.</u> <u>&amp; Type</u>	<u>Bombs</u> <u>Drop-</u>	<u>Hits</u> <u>Claim-</u>	<u>Air-</u> <u>craft</u>	<u>Enemy</u> <u>A/C</u>	<u>Observation</u> <u>or</u> <u>Photographs</u>
Dec.12	Sylt, Borkum & Norderney	8 Witleys	10	-	NIL	NIL	Yes
Dec.13	Sylt, Borkum & Norderney	6 Witleys	2	-	-	NIL	Yes
Dec.14	Reece of Borkum (Day)	2 Blenheims	-	-	-	-	Yes
	Juist, Norderney, Baltrum, Sylt & Amrun.						
"	Borkum & Sylt	7 Witleys	5	-	-	-	NIL
Dec.16	Borkum, Sylt & Norderney	2 Witleys	1	-	-	-	Yes
"	"	6 Witleys	6	-	-	-	Yes
Dec.17	Borkum	6 Witleys	-	-	-	-	NIL
Dec.18	Sylt, Borkum & Norderney	8 Witleys	13	-	-	-	Yes
Dec.19	Sylt, Borkum	4 Witleys	-	-	-	-	NIL
Dec.20	Sylt, Borkum	4 Witleys	12	-	-	-	Yes
Dec.31	Reece. of Sylt & Amrun	2 Blenheims	-	-	-	-	Yes
"	Borkum & Sylt	4 Witleys	1	-	-	-	Yes
1940							
Jan. 5	Borkum & Sylt	1 Witley	-	-	-	-	NIL
Jan. 9	"	4 Witleys	3	3	-	-	Yes
Jan.11	Borkum, Norderney Sylt	3 Witleys	6	-	-	-	NIL
Jan.12	Patrols of: "	4 Witleys	-	-	-	-	Yes
Jan.13	" " "	1 Witley	-	-	-	-	-
Jan.14	" " "	3 Witleys	-	-	-	-	-
Jan.19	" " "	1 Witley	-	-	-	-	-
Jan.20	" " "	1 Witley	-	-	-	-	-
Feb.23	" " "	1 Witley	-	-	-	-	-
Feb.24	" " "	3 Witleys	-	-	-	-	-
Feb.26	Patrol of Sylt & Frisian Islands	2 Hampdens	-	-	-	-	-
Feb.28	"	3 Hampdens	-	-	-	-	Yes
Mar.1	Patrol of Borkum Sylt & Norderney	5 Hampdens	-	-	-	-	-
Mar.2	Patrol of Borkum, Sylt & Norderney	4 Hampdens	6	-	-	-	-
Mar.4	"	2 Hampdens	-	-	-	-	-
Mar.5	Patrol of Frisians	3 Hampdens	-	-	-	-	-
Mar.6	Patrol of Borkum, Norderney & Sylt	2 Hampdens	-	-	-	-	-
Mar.7	"	2 Hampdens	4	-	1	-	-
Mar.12	"	1 Hampden	-	-	-	-	-
Mar.15	"	4 Hampdens	-	-	-	-	-
Mar.19	Hornum	30 Witleys 20 Hampdens	84) 60	Numerous hits	1 claimed	-	Yes
Mar.20	Patrol of Sylt & Frisian Isles	4 Hampdens	-	-	-	-	-
Mar.24	Patrol of Borkum, Norderney & Sylt	3 Hampdens	-	-	-	-	-
Mar.25	"	3 Hampdens	-	-	-	-	-
Mar.27	"	2 Hampdens	-	-	-	-	-
Mar.30	"	2 Hampdens	-	-	-	-	-
Apr. 1	"	4 Hampdens	-	-	-	-	-
Apr. 5	"	4 Hampdens	-	-	-	-	-
Apr. 6	"	6 Hampdens	-	-	1	-	Yes
Apr.8	"	3 Hampdens	-	-	-	-	-
Apr.10	Reece. of Heligoland Bight and Kattegat.	6 Hampdens	-	-	-	-	Yes

## MONTHLY SUMMARY OF MINES LAID BY BOMBER COMMAND BY AREAS, APRIL 1940 to MAY 1941

APPENDIX J2

AREA MONTH	Artichokes	Asparagus	Beech	Broccoli	Carrots	Cinnamon	Daffodil	Deodar	Eglantine	Endives	Forget-me-not	Gorse	Hollyhook	Jasmine	Jellyfish	Krauts	Lettuces	Melon	Nasturtiums	Nectarines	Onions	Prawns	Pumpkins	Quinces	Radishes	Sweetpeas	Tomato	Undergrowth	Verbena	Wallflower	Willow	Yams	Yew Tree	Free Area	TOTAL	CASUALTIES		
1940																																						
April		16		19	10		31		17		3		3	4	3			4																		110	7	
May		1							5		20		4	2			6		10		15		3	3					2							71	-	
June									17	5	6						5							17	16					12		11				89	2	
July							29		14	10	9		16		9				10				9	20	4	4		4	3			9				150	4	
August	19		13		12				7		17		6		31	5			6						13			2	5		3					139	1	
September	8		4			3		12	20																								3			50	2	
October	16		2					6	7		15				5										5											56	3	
November	6		3						4		4				12											2										31	-	
December	6		2					3	2		11				17		6																			47	2	
TOTAL	55	17	24	19	22	3	60	21	93	15	85		29	6	65	17	17	4	26		15		12	58	22	4	2	9	5	15		20	3		703	21		
1941																																						
January	15		4						11		3				9											3											45	1
February	3		4					10	5						43																				1		66	2
March	10		8					5							41											4									2		70	2
April	5		4		18	4						1			63	6				21		4														126	9	
May			29								3	7			55																						123	3
TOTAL	33		49			18	4	15	16		6	8			211	6			50		4				7										3	430	17	
GRAND TOTAL FOR PERIOD	88	17	73	19	22	21	64	36	109	15	91	8	29	6	276	23	17	4	26	50	15	4	12	58	29	4	2	9	5	15		20	3	3	1133	38		

APPENDIX J2

MINELAYING CODE AND AREAS.

ANTWERP	JUNIPER	ANEMONES	LE HAVRE
ARCONA TO R.DIEVENOW	WILLOW	ARTICHOKES	LORIENT
BAYONNE	ELDERBERRY	ASPARAGUS	GREAT BELT
BORDEAUX	DEODAR	BARNACLE	ZEEBRUGGE
BOULOGNE	DEWBERRY	BEECH	ST. NAZAIRE
BREST	JELLYFISH	BOTTLE	HAUGESUND
CALAIS	PRAWNS	BROCCOLI	GREAT BELT
CHERBOURG	GREENGAGE	CARROTS	LITTLE BELT
COPENHAGEN(APPROACH)	VERBENA	CINNAMON	LA ROCHELLE
DANZIG	PRIVET	CYPRESS	DUNKIRK
DEN HELDER	LIMPETS	DAFFODIL	THE SOUND
DIEPPE	VINE LEAVES	DEODAR	BORDEAUX
DUNKIRK	CYPRESS	DEWBERRY	BOULOGNE
ESBJERG (APPROACH)	HAWTHORNE	EGLANTINE	HELIGOLAND (APPROACH)
FRISIAN ISLANDS	NECTARINES	ELDERBERRY	BAYONNE
GREAT BELT	QUINCES	ENDIVES	LITTLE BELT
GREAT BELT	BROCCOLI	FLOUNDER	MAAS & E. SCHELDT
GREAT BELT	PUMPKINS	FORGET-ME-NOTS	KIEL CANAL
GREAT BELT	ASPARAGUS	FURZE	ST. JEAN DE LUZ
HAUGESUND	BOTTLE	GERANIUM	SWINEMUNDE
HELIGOLAND	ROSEMARY	GORSE	QIBERON
HELIGOLAND (APPROACH)	EGLANTINE	GREENGAGE	CHERBOURG
DO.	YAMS	HAWTHORNE	ESBJERG (APPROACH)
KATTEGAT	UNDERGROWTH,		
	YEW TREE	HOLLYHOCK	TRAVEMUNDE
KATTEGAT AREAS	SILVERTHORNE	HYACINTH	ST. MALO.
KIEL CANAL	LETTUCES	JASMINE	WARNEMUNDE
KIEL CANAL	MELON	JELLYFISH	BREST
KIEL CANAL	FORGET-ME-NOTS	JUNIPER	ANTWERP
KIEL BAY	WALLFLOWERS	KRAUTS	LIM FJORD
KIEL BAY	QUINCES	LETTUCES	KIEL CANAL
KIEL BAY	RADISHES	LIMPETS	DEN HELDER
LA ROCHELLE	CINNAMON	MELON	KIEL CANAL
LE HAVRE	ANEMONES	MULLET	SPEZIA
LIM FJORD	KRAUTS	MUSSELS	TERSCHELLING GAT
LITTLE BELT	CARROTS	NASTURTIUMS	THE SOUND
LITTLE BELT	ENDIVES	NECTARINES	FRISIAN ISLANDS
LORIENT	ARTICHOKES		
MAAS & SCHELDT	NEWT	NEWT	MAAS & SCHELDT
DO.	FLOUNDER	ONIONS	OSLO
OSLO	ONIONS	OYSTERS	ROTTERDAM
OSLO FJORD APPROACH	TOMATO	PRAWNS	CALAIS
OSTEND	TURBOT	PRIVET	DANZIG
PILLAU	TANGERINE	PUMPKIN	GREAT BELT
QIBERON	GORSE	QUINCE	KIEL BAY
RIVER JADE	ZINNEAS	QUINCE	GREAT BELT
RIVER JADE	XERANTHEMUMS	RADISHES	KIEL BAY
ROSTOCK &	SWEET PEAS	ROSEMARY	HELIGOLAND
ARCONA LIGHT			
ROTTERDAM	OYSTERS	SCALLOPS	ROUEN
ROUEN	SCALLOPS	SILVERTHORNE	KATTEGAT (AREAS)
ST. JEAN DE LUZ	FURZE	SWEET PEAS	ROSTOCK & ARCONA LIGHT
ST. MALO	HYACINTH	TANGERINE	PILLAU
ST. NAZAIRE	BEECH	TOMATO	OSLO FJORD (APPROACHES)
SPEZIA	MULLET	TREFOILS	TEXEL (SOUTH)
SWINEMUNDE	GERANIUM	TURBOT	OSTEND
TERSCHELLING GAT	MUSSELS	UNDERGROWTH	KATTEGAT
TEXEL (SOUTH)	TREFOILS	VERBENA	COPENHAGEN (APPROACHES)
THE SOUND	NASTURTIUMS	VINE LEAVES	DIEPPE
THE SOUND	DAFFODIL	WALL FLOWERS	KIEL BAY
TRAVEMUNDE	HOLLYHOCK	WHELKS	ZUIDER ZEE
WARNEMUNDE	JASMINE	WILLOW	ARCONA TO R.DIEVENOR
ZEEBRUGGE	BARNACLE	XERANTHEMUMS	R. JADE
ZUIDER ZEE	WHELKS	YAMS	HELIGOLAND APPROACHES
		YEW TREE	KATTEGAT
		ZINNEAS	R. JADE. (HUBERTGAT)

## SUMMARY OF OPERATIONS - NORWEGIAN CAMPAIGN, APRIL 9 - MAY 9

Date	Place	Objective	No.	Aircraft	Losses	Remarks
APR 9	Bergen	Cruisers	12	Hampdens	-	-
" 9/10	"	"	12	Wellingtons	-	-
" 10/11	Kristiansand	" (Gneisenau)	6	"	-	Recalled
" "	"	"	6	Hampdens	-	-
" 11/12	Stavanger	Aerodrome	6	Wellingtons	1	-
" "	Oslo	Shipping	23	Whitleys	1	-
" "	Oslo area	"	19	Hampdens	-	-
" "	Bergen area	Cruisers	12	Wellingtons	-	-
" 12	Stavanger area	Warships	23	Blenheims	-	-
" 12	Stavanger	"	36	Wellingtons	3	-
" 12/13	Bergen area	Cruisers	6	Wellingtons	1	-
" 14	Stavanger	Aerodrome	2	"	-	-
" 15	"	"	11	Blenheims	-	-
" 15/16	"	"	12	Whitleys	-	-
" 16	"	"	6	Blenheims	-	-
" 16/17	"	"	12	Wellingtons	-	No attack
" "	Vaernes	Aerodrome	5	Whitleys	-	-
" "		(Trondheim)				
" "	Kjeller }	Aerodrome (Oslo)	3	" }	-	Targets not
" "	Fornebu }	" "			-	located
" 17	Stavanger	Aerodrome	12	Blenheims	2	-
" 17/18	"	"	12	Wellingtons	1	-
" 18/19	Trondheim	Shipping	13	Whitleys	1	-
" "	Oslo Fjord	"	6	"	-	Task abandoned
" 19	Stavanger	Aerodrome	6	Blenheims	-	" "
" 20	"	"	3	"	-	" "
" 20/21	Kristiansand	"	6	Wellingtons	-	-
" "	Aalborg	"	3	"	-	-
" "	"	"	3	Hampdens	-	-
" "	Stavanger	"	12	Wellingtons	-	-
" "	Trondheim					
" "	fjord	Shipping	3	Whitleys	-	-
" "	Oslo fjord	"	12	"	-	Task abandoned
" 21	Stavanger	Aerodrome	12	Blenheims	-	" "
" 21/22	Aalborg	"	6	Wellingtons	1	-
" 22/23	Aalborg	"	6	Whitleys	1	-
" "	Lake Jansvannet	-	2	"	-	Task abandoned
" "	Oslo	Aerodrome	2	"	-	-
" 23/24	Westerland	"	12	Wellingtons	-	-
" 23/24	Lake Jansvannet	-	6	Whitleys	-	Task abandoned
" "	Aalborg	Aerodrome	6	"	1	-
" "	Oslo fjord	Shipping	4	"	-	-
" "	Stavanger	Aerodrome	6	Blenheims	1	-
" 24	"	"	6	"	-	Task abandoned
" "	Aalborg	" (recce.)	1	"	-	" "
" 25	Stavanger	" "	1	"	-	" "
" "	Hardanger &					
" "	(Gransvins)	Fjords	6	"	1	-
" 25/26	Stavanger	Aerodrome	12	Wellingtons	-	-
" "	Oslo fjord	Shipping	6	Whitleys	-	-
" "	Aalborg	Aerodrome				
" "		(recce.)	2	"	1	-
" 26	Stavanger	Met. recce.	1	Blenheim	-	-
" 26/27	"	" "	1	Wellington	-	-
" 27	"	Aerodrome	12	Blenheims	-	Task abandoned
" 29	"	Met. recce.	1	"	-	-
" "	Rye & Aalborg	Recce.	2	"	-	Task abandoned
" 29/30	Oslo (Fornebu)	Aerodrome	6	Whitleys	1	-
" 30	Aalborg	Recce. Aerodrome	1	Blenheim	-	Task abandoned
" 30	Rye	Recce.	2	"	-	-



APPENDIX K1 (Contd.)

Date	Place	Objective	No	Aircraft	Losses	Remarks
APR 30	Stavanger	Aerodrome	6	Blenheims	2	-
APR 30/						
MAY 1	Stavanger	"	16	Wellingtons	4	-
"	"	"	12	Whitleys	1	-
"	Fornebu	(Oslo) Aerodrome	12	"	1	-
"	"	" "	5	Hampdens	-	-
"	Aalborg	" "	5	"	1	-
MAY 1	Stavanger	Aerodrome	12	Blenheims	-	-
"	Aalborg	"	5	Hampdens	-	-
" 1/2	Stavanger	"	6	Whitleys	-	-
" "	Fornebu (Oslo)	"	6	"	-	-
" 2	Stavanger	"	6	Blenheims	-	-
" "	Rye	"	6	"	-	-
" 2/3	"	"	12	Wellingtons	-	-
" "	Fornebu (Oslo)	"	6	Whitleys	1	-
" "	Stavanger	"	6	Whitleys	-	-
" 7/8	"	"	9	Wellingtons	-	-
" 9/10	"	"	9	Whitleys	-	Task abandoned

APPENDIX K2

SUMMARY OF OPERATIONS - DIRECT SUPPORT - MAY 10th - JUNE 18th, 1940.

Date	Aircraft	Losses	Area	Primary Target	Other Targets Attacked
May 10	9 Blenheims	-	Waalhaven Airfield	Aircraft on Airfield	-
" "	12 "	3	Yperling	" " "	-
" 10/11	36 Wellingtons	-	Waalhaven "	Aircraft and Installations	-
" "	12 Blenheims	-	North of the Hague	Aircraft on Beach	-
" "	9 Whitleys	-	Cleves Area	Railway Bridges	Enemy motor-column near Aldekirk.
May 11	23 Blenheims	2	Maastricht	Bridges	Mechanised troops.
May 12	24 Blenheims	9	"	Road and Rail Bridges	-
" "	9 "	-	Hasselt.	Bridges and Roads.	-
" "	9 "	-	Tongres.	" "	-
May 13/14	6 Whitleys	-	Maastricht and Maeseyk.	Disorganising Bridge repairs.	-
May 14	6 Blenheims	-	Breda	Road junctions	-
" "	28 "	6	Buillon and Givonne.	M.T., A.F.V. and Troop movements.	-
" "	6 Wellingtons	-	Maastricht	Columns on bridges	-
May 14/15	12 Hampdens	2	Breda, Rosendaal	Roads and Road-junctions.	Railway-line, in Deventer area.
May 15	12 Blenheims	2	Dinant.	Town and Roads to East of Town.	-
" "	" "	-	Monthermé.	Town.	-
May 15/16	6 Whitleys	-	Dinant.	Town	Road junction East of Dinant.
May 17	12 Blenheims	11	Gembloux	Forces on surrounding roads	-
" 17/18	6 Hampdens	-	Yvoir-Anhée	Town	-
" 17/18	46 Wellingtons	1	Gembloux, Namur etc.	Road, rail and river crossings.	-
May 18	13 Blenheims	3	Le Gateau	Roads East of the Town.	-
May 18/19	12 Hampdens	-	Givet, Dinant	Town and roads at exits	-
" "	12 Wellingtons	-	Gembloux, Namur	" " " " "	Bridges, railways and Columns.
May 19/20	18 Wellingtons	-	Hal, Givet, Geselies	Bridges, Road and Rail Crossings	-
" "	12 Wellingtons	-	Ardenes	Forests in Givet-Piston area	-
May 20	24 Blenheims	-	Arras-Cambrai area	Column on road	-
" "	23 "	-	Arras-Bapaume	" " "	M.T. and Road-rail crossing.
" 20/21	24 Whitleys	3	Cambrai-Le Gateau area.	Bridges over Oise.	Railway junction near Guise.
" "	18 Hampdens	-	" " " "	" " "	-
" "	31 Wellingtons	1	" " " "	Enemy concentrations	Battery; Machine-Gun post; Stationary convoy; road, rail Road and Rail Bridge.
" "	18 Blenheims	-	Audenarde area	A.F.V. Columns.	-
May 21	11 Blenheims	-	Abbeville	Enemy Columns	-
" "	9 "	1	Boulogne-Etaple	Columns	M.T. and A.F.V.'s.
" "	23 "	-	Boulogne-Montreuil	Tanks and Infantry	-
" "	14 "	-	Boulogne-Etaples.	Enemy Columns.	-
" 21/22	47 Wellingtons	3	Meuse	Road Crossings	Bridges, Road and rail crossings.
May 22	12 Blenheims	2	Abbeville	Enemy Columns	A.A. Batteries.
" "	46 "	1	Abbeville area.	Columns and A.F.V.	M.T. and tanks.
" 22/23	11 Wellingtons	-	Gembloux-Yvoir, Namur etc.	Road crossings over Meuse.	Searchlight.
" "	24 Whitleys	-	Hirson, Givet.	Town	Convoy, Road and Rail junctions.
" "	12 Hampdens	-	Binche, Meuse-Rhine.	Town, and derail trains.	Railway centres, marshalling yards, factories.
May 23	24 Blenheims	3	Forêt de Boulogne	Columns advancing on Arras	-
" "	3 "	-	Fort de la Creche area	Tank inside fort.	-
" 23/24	48 Wellingtons	-	Gembloux area	Towns	(Troops. S/Ls. Guns, Railways, Brussels Aerodrome.
" "	23 Whitleys	1	Avesnes-Mauberges	Towns	(Cross-roads, railways, bridge at Namur.
" "	50 Hampdens	2	" "	Derail trains	Railway centres, Marshalling yards, Factory.
May 24	9 Blenheims	-	St. Inglevert-Calais road,	Transports and A.F.Vs	-

Date	Aircraft	Losses	Area	Primary Target	Other Targets attacked
MAY 24	12 Blenheims	-	N. of St. Ingelvert airfield	Stationary A.F.Vs.	-
" "	12 "	-	St. Ingelvert-Coquelles.	A.F.Vs and Transport	(A.A.Batteries and Forêt de Boulogne.
" "	12 "	1	Wissant-Calais Road	Column of Tanks.	A.F.Vs and M.T.
" "	24 "	-	Calais-Gravelines	Tanks	(Canal bridge at Marck. and
" 24/25	12 Wellingtons	-	Anderghen, Louvain Dinant, Givet etc.	Transport A.F.Vs.	(A.F.Vs Road and Rail bridges, Trains, Flushing and Malines airfields.
" "	14 Whitleys	-	Avesnes, Aulnoye etc.	Roads and Towns.	-
" "	18 Hampdens	-	Recogne.	Ammo.Dump, Railway	A.F.Vs. Tunnel, Flushing airfield.
May 25	6 Blenheims	-	Pas de Calais area	A.F.Vs.	Canal and river crossings.
" "	12 "	2	Nety-guise road.	M.T. Column.	-
" "	24 Blenheims	1	River Lys	Pontoon bridges.	-
May 25/36	18 Whitleys	-	Bapaume	Town	Roads, Railway Cutting.
" "	28 Hampdens	2	Verviers etc.	Trains	Tunnel, Enemy Column
" "	38 Wellingtons	1	Avesnes etc.	(Columns, River Crossings, Dump at Treton	(Gun and S/L positions. Railways, Road bridges.
May 26	18 Blenheims	-	Laure-Beverin	Troops & Transport at river crossings.	Railway, Pontoon bridges.
" "	18 "	-	St. Pol Area	Aerodrome. Oil.	M.T.
May 26/27	21 Hampdens	-	Yvoir, Namur, Dinant.	Rail traffic, River crossings.	Bridge. Flushing aerodrome, also Venlo.
" "	22 Wellingtons	-	Antwerp & Brussels airfields and Brussels area.	Troops, Trains, Aerodromes.	-
May 27	12 Blenheims	-	Courtrai.	Western Exits of Town	Rly. bridges over Lys.
" "	6 "	-	Nordanesques, La Payellette	Columns	-
" "	6 "	-	Belle and Houillefort	Enemy H.Q.	-
" "	18 "	2	Nordanesques & La Payellette	Troops.	-
" "	6 "	-	South of Dunkirk	Enemy Columns	-
May 27/28	35 Wellingtons	-	S. Courtrai area.	Columns & Canal Bridges	Flushing airfield.
" "	25 Hampdens	-	Givet, Dinant, Namur.	Towns. Railways, Ammo.Dump.	Airfields and seaplane bases.
May 28	48 Blenheims	1	St. Omer, Courtrai etc.	Enemy Columns & A.F.Vs.	-
May 28/29	34 Wellingtons	-	Courtrai area.	Towns.	Railway sidings at Roulers
" "	13 Whitleys	1	Givet, Guise etc.	Towns.	-
May 29	18 Blenheims	-	Ochtezeole, Thourout	Recce.	A.F.Vs. Canal Bridge.
" "	18 "	-	Peruyse, Furnes.	Enemy Columns.	-
" "	6 "	-	Forêt de Ham.	A.F.Vs. & M.T.	-
" "	9 "	-	Thourout, Nieuport	Columns	-
May 29/30	15 Wellingtons	-	Roulers, Thourout.	Troops.	(Factor at Aire, Marshalling yards at Hazebrouke.
May 30	11 Blenheims	-	Nieuport, Dixmude	Forces on Roads	-
" "	48 "	-	Plassendaele.	" " "	-
" "	9 "	-	Soex. St. Omer. Cassel.	Enemy Columns.	-
May 30/31	28 Wellingtons	1	Dixmude, Ypres, etc.	Towns.	-
May 31	8 Blenheims	-	Nieuport, Dixmude	M.T. on roads.	-
" "	12 "	-	Elverdinghe area	Enemy Columns.	-
" "	12 Blenheims	-	S. & S.E. Furnes	Enemy Columns	-
" "	9 Blenheims	-	Bergues. St. Omer	" "	-
" "	18 "	-	Nieuport area	Canal Bridges	-
" "	24 "	-	" "	N.E. of Nieuport	-
" 31/ June.1	33 Wellingtons	2	Nieuport	Form	Docks at Ostend.
JUNE					
Jun.1	12 Blenheims	-	Bergues area	Roads and Town	-
" "	12 "	-	Furnes area	" " "	-
" "	12 "	-	Bergues area	M.T. and A.F.V.	-
" "	18 "	-	Hondschoote	Troops	-
Jun 1/2	16 Wellingtons	-	Soex area	Towns	-

G.197929/JW/7/48

Date	Aircraft	Losses	Area	Primary Target	Other Targets Attacked
June 2	24 Blenheims	-	Dunkerque area	Battery commanding Dunkerque	-
" "	16 Wellingtons	-	Scax area	Towns	-
June 3	18 Blenheims	-	Gravelines	Battery	-
" 3/4	12 Wellingtons	-	Bergues	Town	Battery at Gravelines
June 5/6	22 Whitleys	-	Bapaume, Doullens.	Town	(M.T. moving North from Albert
" "	23 Blenheims	-	Albert, Bapaume, Peronne.	Columns	-
" "	26 Wellingtons	-	Cambrai, Le Cateau.	Town	-
June 6	12 Blenheims	5	Auxi Le Chateau area	Columns	-
" "	24 "	-	Abbeville. La Treport	Columns	Bridges and St. Valery
June 6/7	5 Whitleys	-	Abbeville-Amiens road	Troops	-
" "	12 Wellingtons	-	Abbeville-Amiens road	Troops	Viaduct, St.Valery and aerodrome west of St.Valery.
" "	12 "	-	Hirson-Avesnes.	Railhead	-
June 7	36 Blenheims	-	Abbeville area.	A.F.V. and M.T.	-
" "	18 "	-	" "	Locate and attack columns.	-
June 7/8	6 Whitleys	-	Hirson	Railhead	-
" "	3 Wellingtons	-	Somme area.	Troops and river	-
" "	6 "	-	(Bois de Bourlers Bois de Bailleux	crossings Woods	-
June 8	6 Blenheims	1	Flessial (Bois Watte)	Petrol Dump	-
" "	36 "	2	Poix area	A.F.V. and concentrations	-
" "	17 "	1	" "	" " "	-
June 8/9	18 "	3	Horney-Forges area	A.F.V. and concentrations	-
" "	45 Whitleys	-	Bois de Bailleux etc.	Forests and Railways	Aerodromes
" "	35 Wellingtons	-	St. Valery. Abbeville	Towns and Columns	Fires in woods
June 9	30 Blenheims	-	Horney-Forges area	A.F.Vs and Columns	-
" 9/10	30 Wellingtons	-	Fumay, Hirson	Woods containing dumps & depots	-
" "	42 Whitleys	-	Somme and Meuse	River crossings	-
June 10	12 Blenheims	-	Forges-Formerie area	A.F.Vs and Concentrations	-
" "	32 "	-	Rouen- Les Andelys	A.F.Vs and M.T.	-
June 10/11	18 Wellingtons	1	Soissons. Laon. Le Fere.	Town	A.F.V. and Douai and Bethune.
" "	27 Hampdens.	-	Charleville area	Railways and River Crossings	Aerodromes.
" "	18 Whitleys	-	Amiens. Forges, etc.	Road and Rail junctions.	-
June 11	33 Blenheims	3	La Mare area	Troops in wood	Tanks and A.A.
" "	9 "	3	" "	" " "	" " "
" "	9 "	-	Etretat, Le Havre	A.F.Vs Columns	-
" 11/12	10 Whitleys	-	Fleury-Abbeville-Amiens	Road and Rail Crossings	-
" "	31 Hampdens	1	La Fere area	Roads and Railways	Ammo.dump-Recogne.
June 12	18 Blenheims	1	La Mare	Concentrations in wood	-
" "	12 "	2	St. Valery area	Battery	M.T.
" "	15 "	-	Seine and La Mare	Concentrations	-
June 12/13	18 Whitleys	-	Aulnoye and Amiens	Road and Rail crossings	-
" "	29 Hampdens	1	Hirson etc.	Roads and railways	-
June 13	15 Blenheims	-	Louviers area	A.F.V. and concentrations	-
" "	18 "	1	Vernon area.	River crossings	-
" "	15 "	4	Forêt de Gault	Tanks	-
June 13/14	65 Wellingtons	1	Vernon area	Lines of Communications)	-
" "	34 Whitleys	-	Charleville area	and forests.	-
" "	64 Hampdens	-	Hirson etc.	Road and Rail centres	-
June 14	18 Blenheims	-	Vernon	River crossings	-
" "	18 "	2	Vernon area	Town	-
" "	24 "	1	Merville	Enemy concentrations	-
" 14/15	43 Whitleys	-	Vernon area	Aerodrome	-
June 18	6 Blenheims	-	Cherbourg	Railways & Marshalling Yards	-
				A.F.V. and M.T.	-

## SUMMARY OF OPERATIONS - GERMANY AND ITALY

APPENDIX K3

MAY 10th to JUNE 18th 1940

MAY

Date	Aircraft	Losses	Area	Primary Target	Other Targets Attacked
May 11/12	18 Whitleys 18 Hampdens	1 -	Munchen-Gladbach Gladbach, Rheydt	Road and Rail junctions Crossroads	- -
May 12/13	6 Whitleys 6 Wellingtons 6 Hampdens	- - -	Wesel Krefeld, Uerdingen Aachen	Road Bridge over Rhine Town Western exits	Road Junctions -
May 14/15	12 Whitleys 12 Wellingtons	- -	Munchen-Gladbach Aachen	Town Town & N.E. Approaches	Maesoyk and Breda Breda
May 15/16	33 Wellingtons	1	Gelsenkirchen, Hamburg) Sterkrade-Holten	War industries and communications	Reisholz.
" "	24 Whitleys	-	Bottrop Wedau, Wanne-Eickel, Gelsenkirchen	Marshalling yards	-
" "	36 Hampdens	-	Reisholz, Dusseldorf		
" "	6 Wellingtons 6 Wellingtons	- -	Castrop Rauxel, Koln, Dortmund, Vohwinkel	Towns and communications	-
" "	6 Wellingtons 6 Wellingtons	- -	Kamen Aachen, Turnout Bottrop, Gelsenkirchen	Towns "	- -
May 16/17	6 Hampdens	-	Wanne-Eickel		
" "	9 Whitleys	-	Castrop-Rauxel Maastricht, Aachen, Munchen-Gladbach	Towns "	Eupen and Breda
May 17/18	6 Wellingtons	-	Koln-Eiffeltor Wedau	Primary not attacked	Hamburg and Duisburg.
" "	24 Whitleys	-	Vohwinkel	Town	-
" "	47 Hampdens	-	Bremen Hamburg	Oil refineries	-
May 18/19	12 Wellingtons	-	Koln-Eiffeltor Wedau	Security patrols Marshalling yards	Dusseldorf
" "	24 Whitleys	1	Vohwinkel Hanover	Oil refinery	-
May 19/20	12 "	2	Gelsenkirchen	Synthetic Oil Plant	Duffen, Wesel, Recklinghausen
" "	36 Hampdens	-	Salzgorgen	Oil refinery	Hamburg, Shipping off Borkum
May 21/22	24 "	1	Aachen, Duren Munchen area	Derailing trains	-
" "	52 Whitleys	1	Euskirchen, Julich Rheydt	Rail centres	-
May 22/23	1 Hampden	-	Marseburg	Synthetic Oil Plant	35 detailed and recalled.
May 24/25	15 Whitleys	-	Cologne, Leverkusen etc.	Marshalling yards and ammo. dumps.	-
May 25/26	18 "	-	Emmerich, Monheim, Reisholz, Wedau etc.	Oil refineries, Marshalling yards	Airfields and blast furnaces
May 27/28	36 Whitleys 24 Hampdens	- -	Neuss, Dusseldorf etc. Hamburg, Bremen	Marshalling yards Oil refineries	Airfields -
May 30/31	18 Hampdens	-	Hamburg, Krefeld etc.	Oil refinery and Rail centres	Road and Rail targets, airfields and seaplane bases
JUNE					
Jun 1/2	28 Whitleys	-	Hamburg, Hamm, Soest, Osnabruck	Oil Plant, Marshalling yards	-
" "	37 Hampdens	-	Hamburg, Rheydt, Krefeld	Oil refinery Marshalling yards	-

G.197929/IF/7/48

APPENDIX K3  
SECRET

Date	Aircraft	Losses	Area	Primary Target	Other Targets Attacked
June 2/3	6 Hampdens	-	Koblenz, Rheydt,	Marshalling yards,	-
" "	24 Whitleys	-	Krefeld, Duren,	and rail centres	-
			Frankfurt, Hamm,	Petrol receiving depot,	Aerodromes and Bridges
			Soest, etc.	marshalling yards, Railway centres.	
June 3/4	36 Wellingtons	-	Monheim, Reisholz	Oil refineries	Koln, Marshalling yards.
" "	46 Whitleys	1	Gelsenkirchen,	Synthetic oil plants	Factories, Marshalling yards and airfields.
" "	48 Hampdens	2	Kamen, Hamburg	Oil refineries,	-
			Dusseldorf,	Petrol receiving depots.	
June 4/5	17 Wellingtons	-	Essenrich, Frankfurt	Oil refineries	Koln, Marshalling yards
" "	17 Whitleys	1	Monheim, Reisholz	Synthetic oil plants.	Dusseldorf, Marshalling yards.
" "			Gelsenkirchen		
			Hamburg, Kamen		
" "	23 Hampdens	-	Frankfurt, Mannheim	Petroleum receiving depots	-
June 5/6	8 Wellingtons	1	Wedau, Rheydt,	Marshalling yards and railways.	-
" "	36 Hampdens	-	Euskirchen,	Oil refinery and Electric Power station.	-
			Duren		
June 6/7	18 Hampdens	-	Schulau	Oil refinery	-
June 7/8	24 Hampdens	-	Hamburg	Town	-
June 9/10	36 Hampdens	1	Hannover	Railway targets	-
June 11/12	36 Whitleys	-	Aachen, Duren etc.	Pist engine works.	Genoa.
June 15/16	8 Wellingtons	-	Turin	Various	-
June 16/17	9 Wellingtons	-	Genoa	Works, foundries and aircraft factories.	-
June 17/18	49 Wellingtons	-	Genoa and Milan	Various	Airfields and Marshalling yards.
" "			Homburg, Wanne	"	Marshalling yards.
			Bickel		
June 18/19	51 Whitleys	2	Gelsenkirchen	Various	Airfields and Marshalling yards.
" "	44 Hampdens	-	Dollbergen & Hamburg	"	Trains and marshalling yards.
" "	38 Whitleys	2	Castrop, Frankfurt, etc.	"	Mine dump at Barge.
" "	26 Wellingtons	1	Hamburg, Bremen, Norderney	Railway	Factory at Dusseldorf.
" "	5 Hampdens	-	Wesel, Hamm, Coblenz, Duren		

SECRET

APPENDIX L1

AIRCRAFT OBJECTIVES

JUNE 20th 1940.

ALUMINA AND ALUMINIUM PLANTS INVOLVING LESS THAN 250  
MILES PENETRATION INTO GERMANY

Order of Priority	PLACE	Operational Number	REMARKS
1	KOLN	L.84	Production 140,000 tons per annum
2	LUNEN	L.85	Production 80,000 " "
3	LUDWIGSHAFEN MUNDENHEIM	L.100	Production 80,000 " "
4	GREVENBROICH	L.82	Aluminium producing and casting foundry, making carbon electrodes for electrolysis process.

Airframe Assembly Factories involving less than 250  
miles penetration into Germany.

5	WISMAR	F.74	Output 45 He. 111 p.m.
6	WENZENDORF	F.49	" 20 DO. 17 "
7	BREMEN	F.1	" { 10 Me. 110 " { 10 F.W.189 " { 2 Condor { 20 F.W.58
8	DEICHSHAUSEN	F.8	" 40 Ju. 52 "
9	GOTHA	F.18	" { 20 Me. 110 " { 15 F.W. 58
10	KASSEL	F.19	" { 30.Me.109 " { 20 Trainers "

LIST II

Air Stores Parks and Depots in Western Germany

1	ROTENBURG	H. 200
2	PADERBORN	H.176
3	GOTTINGEN	H.80
4	ESCHWEGE	H.57



## OIL PLANTS

JUNE 20th, 1940

(a) Order of Priority of Attack	(b) Target No.	(c) Locality	(d) Type of Plant /	(e) Quarterly Output Capacity '000 tons	(f) Storage Capacity '000 tons	(g) Remarks
<b>Group I - Chief Synthetic Oil Plants.</b>						
1	A.70	GEISENKRICHEN *	H	75	25	) These plants are exceptionally vulnerable ) to air attack. A dozen direct hits with ) 250 lb. or 500 lb. bombs should put them ) out of action for months. (40 lb. bombs ) might also be effective).
2	A.77	LEUNA	H	100	33	
3	A.71	GEISENKRICHEN *	H	50	17	
4	A.104	POELITZ	H&R	50	17	
5	A.78	MAGDEBURG	H	44	(plus) 14	
6	A.76	BOHLEN	H	44	14	
7	A.97	ZEITZ	H	44	14	
8	A.91	RUHLAND	F.T.	50	17	
9	A.74	LUTZKENDORF	F.T.	37	12	
<b>Group II - Chief refineries producing high-grade lubricants.</b>						
10	A.17	MISBURG I *	R	30	97	) The primary target at these refineries is ) the refining plant itself. A heavy weight ) of attack will be necessary to make certain ) of hitting the plant which is only about ) 20 yards square.
	(two targets)	" II		42		
11	A.2.	BREMEN *	R	45	60	
12	A.10	HAMBURG *	R	100 +	133 +	
<b>Group III - Danubian refineries and storages.</b>						
13	A.42	VIENNA	R	45(?)	50	) The primary targets at these refineries ) are the stocks and tankage coupled with ) interference with distribution and moral ) effect on the pilots of the oil barges. ) (40 lb. bombs to start leaks in the tanks ) followed by incendiaries, might cause ) widespread fires and be more effective ) than 250 lb. bombs)
14	A.40	"	R	45(?)	50	
15	A.37	"	R	40(?)	50	
16	A.39	"	R	25(?)	35	
17	A.38	"	R	25(?)	35	
18	A.34) 35)	REGENBURG	R&S	10	13	
<b>Group IV - Synthetic Oil Plants</b>						
19	A.79	STERKRADE HOLZEN *	F.T.	20	7	) See remarks under Group I.
20	A.80	WANNE BICKEL *	F.T.	15	5	
21	A.73	HOMBERG *	F.T.	20	7	
22	A.75	KAMEN *	F.T.	15	5	
23	A.108	DORTMUND *	F.T.	15	4	
24	A.69	BOTTROP *	F.T.	13	4	
25	A.66	CASTROP RAUXEL *	F.T.	10	3	
Approximate Totals				950	640	= 1,590,000 tons (stocks plus quarterly output).

/ R = Refinery, H = Hydrogenation plant, F.T. = Fischer Tropsch plant,  
S = Storage.

+ Working to (say)  $\frac{1}{2}$  capacity.

\* Plants within 150 miles of German's Western Frontier.

/Group V



(a)	(b)	(c)	(d)	(e)	(f)	(g)
Group V - Refining-plants and Storage about which information is less definite.						
26	A.21	SAIBERGEN #	R	25	35	High-grade lubricants.
27	A.3	DOLLBERGEN #	R	10	60	There may be larger storage here.
28	A.5	HAMBURG #	R	96+	128+	Plant of Euro-tank only.
29	A.8	HAMBURG #	R	135+	180+	High-grade lubricants (?)
30	A.7	HAMBURG #	R	30+	40+	
31	A.167}	STETTIN	S	-	65	{ Four targets. All believed full of high-grade petrol. An important power station B.127 here.
	A.168}					
	A.169}					
	A.170}					
32	SD17	LYNBORG # (Denmark)	S	-	74	Active stocks on 15th June, believed to be 25,000 tons.
33	A.22	SCHULAU #	R	10+	40+	Re-running plant.
34	A.161	FRANKFURT #	S	-	40	
35	A.160	MAGDEBURG	S	-	40	
36	A.27	MONHEIM #	R	25+	33+	
37	A.19	OSTERMOOR #	R	35+	46+	Scattered target. Mainly black oil.
38	A.28	REISHOLZ #	R	16+	21+	
39	A.25	EMMERICH #	R	12+	17+	
40	A.155}	BERLIN	S	-	30	Two targets
	A.156}					
41	A.165	MANNHEIM #	S	-	20	
42	A.163}	LUDWIGSHAFEN #	S	-	15	Two targets.
	A.164}					
43	SD7	FREDERICIA # (Denmark)	S	-	44	Actual stocks on 15th June, believed to be 15,000 tons.
44	A.139	NORDENHAM	S			

# Plants within 150 miles of Germany's western frontier.

APPENDIX MTARGETS July 13th, 1940.1.

OP. NO.	PLACE	CATEGORY
F.1	BREMEN	AIRFRAME ASSEMBLY
F.49	WENZENDORF	FACTORY
F.74	WISMAR	"
F.19	KASSEL	"
F.18	GOTHA	"

2.

K.56	ROTENBURG	AIRCRAFT DEPOT
K.52	GOTTINGEN	"
H.57	ESCHWEGE	"
K.3	DIEPHOLZ	"
K.9	PADERBORN	"

3.

A.70	GELSENKIRCHEN	HYDROGENATION PLANT
A.71	GELSENKIRCHEN	" "
A.17	HANNOVER (MISBURG)	REFINERY
A.2	BREMEN	"
A.10	HAMBURG	"

4.

Z.159	DONGES	REFINERY and STORAGE
Z.160	NANTES	Several installations on north bank of river between DONGES and NANTES. 13,000 tons of aviation spirit here.
Z.162	CHERBOURG	5 above ground tanks near HENNEVILLE.

APPENDIX N

Targets July 24th 1940

AIRCRAFT INDUSTRY

AIRCRAFT DEPOTS

K.56 ROTENBURG

K.52 GOTTINGEN

K.62 ESCHWEGE

K.3 DIEPHOLZ

K.9 PADERBORN

K.54 KOLLEDA

AIRCRAFT ASSEMBLY FACTORIES

F.1 BREMEN

F.49 WENZENDORF

F.74 WISMAR

F.19 KASSEL

F.18 GOTHA

F.52 AUGSBERG

ALUMINA AND ALUMINIUM FACTORIES

L. 85 LUNEN

L. 82 GREVENBROICH

L. 84 KOLN

L. 100 LUDWIGSHAFEN

L. 83 HERRINGEN

ELECTRIC POWERJuly 30th 1940

## (i) Central Power Plants

<u>Area.</u>	<u>Target No.</u>	<u>Place</u>
Rhur and Westphalia	B.47	KOLN (Goldernburg)
"	B.46	" (Quadrath. Fortuna I and II)
"	B.40	HATTINGEN
"	B.19	BORKEN
"	B.53	STOCKUM (Gersteinwerk)
"	B.28	HERDECKE (Koepchenwerk)
"	B.54	WALDECK
"	B.51	REISHOLZ
Central Germany	B.81	GOLPA ZSHORNEWITZ
"	B.129	TRATTENDORF
"	B.124	LAUTA
"	B.120	FINKENHEERD
"	B.122	HIRSCHFELD
"	B.63	BOHLEN
"	B.56	BERLIN (West)
"	B.57	BERLIN (Klingenberg)
"	B.69	HARBKE
"	B.78	NIEDERWARTHA (Nr. Dresden)
North-West Germany	B.8	HAMBURG (Neuhof)
"	B.9	" (Tiefstack)
"	B.1	AHLEM
South-West Germany	B.101	MANNHEIM
"	B.113	WALCHENSEEWEK
"	B.104	NURNBERG
"	B.91	GERSTHOVEN
"	B.107	SCHWANDORF

## (ii) Important Switching and Transformer Stations.

Ruhr and Westphalia	B.173	BRAUWEILER
Central Area	B.179	FORDERSTEDT
North-West Germany	B.172	LEHRTE
South-West Germany	B.196	KELSTERBACH
"	B.202	RHEINAU
"	B.187	ASCHAFFENBURG
"	B.200	MEITINGEN

July 30th 1940PRINCIPAL GASWORKS IN GERMANY

Serial	Area	Operational No.	Place	Remarks
1	S.W. Area	A.402	FRANKFURT	
2	-do-	A.407	MANNHEIM	
3	-do-	A.412	STUTTGART	Has gas-tower with capacity of 300,000 cbm
4	-do-	A.409	NURNBERG	
5	-do-	A.408	MUNCHEN	
6	N.W. Area	A.365	HAMBURG	
7	Central	A.398	MAGDEBURG-ROTHENSEE	Gasholder of 100,000 cmb bottom used to store Tar (3,500 tons), benzol factory and tar distillation plant.

July 30th, 1940

PRINCIPAL COKING PLANTS.AREA "A" - RUHR WESTPHALIA

Order of Intrinsic Industrial Importance	Operational Number	Place
1	A. 267	HAMBORN
2	{ A. 268 A. 379	HAMBORN Both targets to be attacked.
3	A. 336	BOTTROP
4	A. 259	GELSENKIRCHEN
5	A. 260	GELSENKIRCHEN
6	A. 238	DORTMUND
7	A. 248	ESSEN
8	A. 265	GELSENKIRCHEN
9	A. 246	DUISBURG
10	A. 266	GELSENKIRCHEN
11	A. 230	CASTROP RAUXEL
12	A. 269	HAMM
13	A. 276	HOMBERG
14	A. 292	RECKLINGHAUSEN

July 30th, 1940AREA B - WEST GERMANY SOUTH OF RUHR.

Order of Intrinsic Industrial Importance	Operational Number	Place
1	A.402	FRANKFURT
2	A.407	MANNHEIM
3	A.412	STUTTGART
4	A.409	NURNBURG
5	A.408	MUNCHEN
<u>AREA C - NORTH-WEST GERMANY</u>		
	A.365	HAMBURG
<u>AREA D - CENTRAL GERMANY</u>		
	A.398	MAGDEBURG

ARMAMENT WORKSJuly 30th, 1940.

<u>Serial No.</u>	<u>Target No.</u>	<u>Plant</u>	<u>Place</u>
1	L 14 E 8 D 60	Krupp Works	ESSEN x
2	E 14 F 117	Henschel Works	KASSEL
3	E 10 E 12	Humboldt Deutz Works	KOLN
4	E 22 D 59 F 136 G 192	Humboldt Deutz Works	FRANKFURT
5	G 165	Bosch Works	STUTTGART x
6	G 52 G 53	Kannomag	HANOVER
7	E 4, 5 & 6	Rheinmetall	DUSSELDORF x
8	D 59	Daimler Benz	STUTTGART
9	E 21 G 191	Opel	RUSSELSHEIM x
10	L 6 B 1179 E 3 A 226	Bochumer Verein	BOCHUM
11	L 7 A 242 B 359	Hoesch	DORTMUND
12	L 23 G 25	Krefelder Stahlwerk	KREFELD x
13	L 27 L 28 A 285	Thyssen Ver. Stahlwerke	MULHEIM
14	G 55	Bochumer Verein	BOCHUM x
15	G 56	Eisen and Huttenwerke	BOCHUM
16	G 66	Ruhrstahl A.G.	WITTEN x
17	L 64	Heinrichshutte	HATTINGEN

x Objectives of primary importance.



APPENDIX 05

CHEMICAL WORKS

July 30th 1940

<u>Serial</u> <u>No.</u>	<u>Target</u> <u>No.</u>	<u>Plant</u>	<u>Place</u>
1	C 39	I.G. Farben Works	HOCHST *
2	C 37	- do -	LEVERKUSEN
3	C 38	- do -	GRIESHEIM
4	C 88	- do -	OPPAU
5	C 8, 9 & 10 (one target)	Explosives Factory	TROISDORF (Koln) *
6	C 121	- do -	BOMLITZ *
7	C 124	- do -	TROISDORF (Koln) *
8	C 13	- do -	SCHLEBUSCH *
9	C 29	- do -	MANNHEIM *
10	C 143	Chemicals	KREFELD
11	C 43	Shell filling	BREMEN
12	C 75	A.G. FUR STICKSTOFFDUNGER Carbide and ferro- alloys.	KNAPSACK *

\* Objectives of primary importance

## APPENDIX P

## INDUSTRIAL TARGETS IN ITALY

August 4th 1940.

(a) Order of Priority	(b) Target Number	(c) Place	(d) Type of Works	(e) Remarks
1	T. 64	TURIN	Fiat aero-engine and motors.	Produces 90% of Italy's motor-cars and about 40% of her aero-engines. Employs 30,000 workers. Concrete building 6-7 stories high. Covers area of 1 sq. mile.
2	T. 12	SESTO SAN GIOVANNI (Milan)	Breda Airframe and components.	Inflammable wooden buildings.
3	X. 80	GENOA (Cornigliano)	Ansaldo, Piaggio.	Propellers, engine parts, metal frameworks, tubes, etc. The following important industrial plants are adjacent to the target R.30, V.34, X.10, O.211.
4	O. 4	PORTO MARGHERA (Venice)	Oil refinery.	Congested industrial area at port of Venice. The target is an important oil refinery and storage centre. Other important industrial plants in the vicinity are:- X.127, S.14, O.65, O.22, Q.153.
5	T. 14	TURIN	Fiat Airframes	
6	U.214	SESTO SAN GIOVANNI (Milan)	Marelli	Produces 90% of magnetos, other targets in vicinity, X.26, X.28, S.17, P.186, W.1.
7	T. 13	MILAN	Caproni Airframes	Inflammable wooden buildings and aircraft.
8	T. 11	VERGIATE (Nr.Sesto Calende-Lade Maggiore)	Savoia Marchetti Airframes.	
9	R. 1	SESTRI FURIENTE (Genoa)	-	Alluminium castings radiators, gear-cases, etc. Close to U.36.
10	O.130) O.131) O.157)	VADO	Oil refinery	Capacity - 130,000 tons (Stocks)

(a)	(b)	(c)	(d)	(e)
Order of Priority	Target Number	Place	Type of Works	Remarks
11	0.11) 0.12) 0.145) 0.146) 0.147)	NAPLES	Oil refinery	150,000 tons (Stocks)
12	0.7	TRIESTE	Oil refinery	125,000 tons (Annual output plus stocks)
13	0.156	SAVONA	Oil refinery	120,000 tons (Stocks)
14	0.10	BARI	Oil refinery	100,000 tons (Annual output plus stocks)
15	0.8	LEGHORN	Oil refinery	100,000 (ditto)
16	0.158	LEGHORN	Oil refinery	33,000 tons.
17	S.4.	BRESCIA	Armament works	
18	T.63	REGGIO (Emilia)	Reggiane aero-engine.	
19	Y.219	BOLOGNA (Beverara)	Rly. Junc. & Marsh'g. Yd.	

TARGETS, SEPTEMBER 21ST, 1940

1 AIRCRAFT INDUSTRY COMPONENT FACTORIES

<u>Order of Priority</u>	<u>Place</u>	<u>Remarks</u>	<u>Target Number</u>
1	HANAU	VACUUM SCHMELZE Nickel and other high-grade alloys	L.230
2	STUTTGART (Feuerbach)	BOSH Ignition System Generators	G.165
3	AALEN	ALFING-KESSLER Crankshafts	G.21
4	STUTTGART (Zufenhausen)	WIRTH MOTOREN Crankshafts Spin Gearing	G.20
5	FRANKFURT (Hoddenheim)	DEUTSCHE METALLWERKE Metal Airscrews.	G.82

A P P E N D I X Q

2 SUBMARINE BUILDING YARDS

<u>Order of Priority</u>			<u>Target Number</u>
1	Krupp Germania' Werft	KIEL	D.4.
2	Deschimag	BREMEN	D.1.
3	Deutsche Werke	KIEL	D.3.
4	Blohm and Voss	HAMBURG	D.2.
5	Marinewerft	WILHELMSHAVEN	D.5.
6	Oder Werke	STETTIN	D.6.
7	Vulcan Werke	BREMEN	D.258

LIST II  
(Alternative Targets)

1	Akkumulatoren Fabric	HAGEN	D.31
2	Flender Werke	LUBECK	D.14
3	Vulcan Werke	HAMBURG	D.19
4	Training Establishment	NEUSTADT	D.144

MARSHALLING YARDSOrder of  
Priority

1	HLMM	M 434
2	MANHEIM	M 482
3	EHRANG	M 480
4	OSNABRUCK	M 431
5	KOLN-GREMBERG	M 465
6	KOLN-EIFELTOR	M 464
7	STRASBOURG	
8	SOEST	M 116
9	KOBLENZ	M 469
10	STUTTGART (Kornwesthain)	M 486
11	SCHWERTE	M 461
12	HENGSTEY	M 460
13	OFFENBURG	M 484
14	KARLSRUHE	M 483
15	KOLN-KALK-NORD	M 466
16	KREFELD	M 472

APPENDIX Q4BERLIN AREA - PRIORITY LIST OF PUBLIC UTILITY TARGETS.

Order of Priority	Target Number	Target	Remarks	Other Targets in Vicinity.
1	B. 56	Berlin, West. Power Station	Capacity 228,000 k.w.	D.39 G.225 G.161
2	B. 57	Klingenberg. Power Station	Capacity over 200,000 k.w.	M.498 A.387
3	B.180	Friedrichsfeld	Important transformer and switching station.	
4	B.162	Allgemeine Elektri- zitate Ges. A.E.F. (Hennigsdorf).	Electric cables and repair equipment (Highly inflammable)	G.222
5	A.385	Berlin-Charlottenberg	Coal gas works	D.65
6	A.386	Berlin-Danziger Strasse	- do -	
7	A.387	Berlin-Lichtenberg	- do -	B.57 M.498
8	B. 58	Charlottenberg	Capacity over 100,000 k.w.	D.65 A.385
9	B. 59	Moabit	Capacity 50-100,000 k.w.	M.75 M.501
10	A.388	Moabit-Neukoln	Coal gas works	
11	A.389	Berlin Town Gas works Tegel.	- do -	D.35 E.15 L.38
12	B. 60	Wilmerdorf		
13	B. 61	Rummelsburg		M.498

APPENDIX ROctober 30th, 1940.TOWN TARGETS.

<u>Town</u>	<u>Population</u>	<u>Identification</u> <u>By day or night</u>
BERLIN	4,200,000	Day or Night
BRAUNSCHWEIG	167,000	Day or Moonlit Night
BREMEN	326,000	Day or Night
DARMSTADT	93,000	Day or Moonlit Night
DUSSELDORF	507,000	Day or Night
ESSEN	666,000	Day or Moonlit Night ?
FRANKFURT	555,000	Day or Night
HAMBURG	1,125,000	Day or Night
HANOVER	444,000	Day or Night
KASSEL	177,000	Day or Night
KIEL	222,000	Day or Night
KOBLENZ	65,000	Day or Night
KOLN	761,000	Day or Night
LEIPZIG	712,000	Day or Moonlit Night
MAGDEBURG	310,000	Day or Night
MAINZ	142,000	Day or Night
MUNCHEN	742,000	Day or Moonlit Night
MUNSTER	127,000	Day or Moonlit Night
NURNBERG	410,000	Day
STUTTGART	426,000	Day or Moonlit Night

APPENDIX S

PRINCIPAL OIL TARGETS,

January 15th 1941.

(a) Order of Priority	(b) Target No.	(c) Locality	+(d) Type of Plant	(e) Estimated out-put for the 6 months 1.1.41 - 30.6.41. ,000 tons	(f) Estimated quantity of oil in pro- cess or held as refined stock. ,000 tons	(g) Remarks
1	A.77	LEUNA	H	200	40	It will be observed that the output of the first nine plants is nearly 5 times greater than the output of the remaining 7 plants
2	A.104	POELITZ	H	150	30	
3	A.71	GELSEN- KIRCHEN (RUHR)	H	125	25	
4	A.97	ZEITZ	H	120	25	
5	A.70	GELSEN- KIRCHEN (RUHR)	H	100	20	
6	A.91	RUHLAND	F.T.	100	20	
7	A.76	BOHLEN	H	90	20	
8	A.78	MAGDEBURG	H	75	20	
9	A.74	LUTZKENDORF	F.T.	75	20	
		TOTAL		1,035	220	
10	A.79	STERKRADE HOLTEN (RUHR)	F.T.	40	10	Coming into production early 1941.
11	A.73	HOMBERG (RUHR)	F.T.	40	10	
12	A.75	KAMEN (RUHR)	F.T.	38	10	
13	A.60	WANNE EICKEL (RUHR)	F.T.	30	5	
14	A.69	BOETROP (RUHR)	H	25	5	
15	A.108	DORTMUND (RUHR)	F.T.	25	5	
16	A.66	CASTROP RAUXEL (RUHR)	F.T.	20	5	
17	A.116	BRUX	H	75	20	
		GRAND TOTAL		293	70	
				1,328	290	

+H - Hydrogenation Plant

F.T. - Fischer Tropsch Plant.



ANTI-BLOCKADE TARGETS,March 9th 1941

<u>Place</u>	<u>Description</u>	<u>Target No.</u>
KIEL	(i) Germania werft, probably 12 submarines building, also makes submarine engines.	GR 3589
	(ii) Deutsche Werke, probably 10 submarines building.	GR 3588
	(iii) Howaldtswerke Dockyard, probably 3 submarines building.	GR 3594
BREMEN	(i) Deschimag, probably 10 submarines building.	GR 3586
	(ii) Focke Wulf Factory (assembly)	GY 4772
VEGESACK	Vulcan Werke, probably 8 submarines building.	GR 3603
HAMBURG	(i) Blohm & Voss, probably 9 submarines building.	GR 3587 and GY 4761
	(ii) Howaldts, probably 7 submarines building (Deutsch Schippe)	GR 3584
MANNHEIM	Diesel Engine factory.	GR 3665
LORIENT ST. NAZAIRE BORDEAUX	Submarine bases in occupied territory.	
BORDEAUX-MERIGNAC	Focke Wulf aerodrome	Z 202
KOLN	(i) S/M Battery and Acc. works	GR 3672
	(ii) Diesel engines for S/Ms.	{ GN 3816 GR 3658
HAGEN	Most important S/M Battery Factory	GR 3683
STUTTGART	(i) Diesel engines for S/Ms	GR 3669 & GY 4654
	(ii) Bosch Ignition Factory	GB 3280
	(iii) Bosch Ignition Factory	GB 3282

MONTHLY SUMMARY OF BOMBER COMMAND OPERATIONS,  
BY TYPE OF OPERATION; JUNE 1940 TO MAY 1941.

- 1 Sorties
- 2 Casualties
- 3 Tonnage (of H.E. Bombs Dropped).

<u>Code Letters</u>	<u>Type of Operation or Target</u>
A or GQ	Fuel
B or GO	Power
C or GS	Chemicals and Explosives
D or GR	Naval targets and Naval Armaments
E or GN	Land Armaments
F or GY	Air Armaments
G or GL	Aircraft Components
H or GU	Aerodromes (Germany)
K or GV	Aircraft Stores
L or GF	Mining and Metallurgy
M or GH	Transportation
N or GK	Foodstuffs
P )	
S )	Targets in Italy
T )	
Z	Aerodromes and Special Targets (Occupied Territory)
CC - Fringe	Coastal Targets (Occupied Territory)
GARDENING	Minelaying (See Appendix J3)
NICKELLING	Leaflet-dropping
B and S	Barges and Shipping
SD	Targets in Denmark
F.R.	Fire raising.

for Fish Code Names, See Appendix V.

Code letters are those in use at the time. 'A' to 'N', later changed to 'G' —, were all German targets, 'P' to 'T' were Italian, S.D. Danish, and S.N. Norwegian. Full lists of target codes may be found in "Operational Numbers of Bomb Targets," IIG/44-66 in A.H.B. library.

MAY 15 - 31 1940

SORTIES

Groups	A	C	M	Close Support	Fire Raising
2 (Night)				18	
3	42	6	18	44.2	12
4	96		100	14.6	
5	205		25	195	
TOTAL	343	6	143	801	12

2 Group Daylight Sorties:- Recco: and Close Support  
581

CASUALTIES

Groups	A	M	Close Support
2 (Night)			-
3	1		6
4	3	1	1
5		1	4
TOTAL	4	2	11

2 Group Daylight Casualties:- Close Support  
25

TONNAGE

	A	B	C	L	Aerodromes	Close Support	M	Miscellaneous
Total for All Groups	218.7	3.1	5.3	8.6	38.3	548.6	207.8	14.5

2 Group Daylight Tonnage:- Close Support  
27.1

JUNE, 1940

SORTIES

Groups	A	B	C	F	H	K	L	M	Fire Raising	Close Support	Gardening	S.D.	T	Z
2 (Night)														18
3	136	4	28	53	45	14	38	85	29	328			21	
4	187		60	2			74	176		179			36	
5	226		40	63	24	12	6	176		203	115	12		
TOTAL	549	4	128	118	187	26	118	437	29	710	115	12	57	18

2 Group Daylight Sorties:- A M Z Close Support  
22 16 118 604

CASUALTIES

Groups	A	C	H	K	M	Close Support	Gardening	T
2 (Night)								
3	1	2		1	1	1		1
4	4	2			2	1		
5	1	1	2		3	3	3	
TOTAL	6	5	2	1	6	5	3	1

2 Group Daylight Casualties:- A M Z Close Support  
2 3 5 22

## TONNAGE

Group	A	B	C	D	F	H	K	L	Z	M	Fire Raising	Close Support	T	SD	Misc
2 (Night)									4						
3	90.7	2.1	13.3	23.4	33.3	47.4	66.6	5.4		101.3	2.4	297.	7.5		16.7
4	182.4		38.1		2.1	29.1		47.7		224.7		232.9	12.5		
5	104.4		12.2		25.1	40.5	2.6	4.1		128.6		81.2		9.5	15.2
TOTAL	377.5	2.1	63.6	23.4	60.5	117.	69.2	57.2	4	454.6	2.4	611.1	20.	9.5	36.3

2 Group Daylight Tonnage:-

A	L	M	Z	Close Support
2.6	.5	1.2	31.1	102.8

JULY, 1940

## SORTIES

Groups	A	C	D	E	F	H	K	L	M	Z	Fire Raising	Gardening	Nickelling
1										36			
2 (Night)										63			
3	204		76		126		53		146		24		
4	88	8	78		95		33	38	55	24			
5	156	11	91	14	73	38	25		64	34		202	
6													14
TOTAL	468	19	245	14	294	38	111	38	265	94	24	202	14

2 Group Daylight Sorties:-

Aerodromes	Shipping and Barges	Ruhr	Recce	G.C.
289	48	166	33	43

## CASUALTIES

Groups	A	B	C	D	F	H	K	M	Z	Gardening
1										
2 (Night)						4				
3	1			2	1		3	4		
4	2			3	1		1	1		
5	2		1	2				9	1	4
6										
TOTAL	5		1	7	2	4	4	14	1	4

2 Group Daylight Casualties:-

Recce	Aerodromes	Ruhr	Shipping and Barges	G.C.
3	26	7	1	1

## TONNAGE

Groups	A	C	D	E	F	H	K	L	M	Z	Gardening	Misc.
1												.2
2 (Night)										3.5		
3										8.6		
4	73.1		41.6		56.8	40.2	25.1	2.2	106.8	65.7		25.9
5	160.2	51.	61.8		68.5	26.6	36.5	7.7	75.6	15.7		6.5
6	55.2	.9	54.6	4.7	20.1	27.9	7.5	.9	25	44.8	11.2	22.5
										.4		
TOTAL	288.5	51.9	158	4.7	145.4	94.7	69.1	10.8	207.4	138.7	11.2	55.1

2 Group Daylight Tonnage:-

Aerodromes	Shipping and Barges	Ruhr	M	A	K
16.3	23.3	2.2	3.1	2.3	.7

AUGUST, 1940

## SORTIES

Groups	A	B	C	D	E	F	G	H	K	L	M	T	Z	Gardening
1														
2 (Night)	See Below													
3	260	39	9	88		34		68		29	54	119	34	
4	108	17	8	15	10	39		23			49	6	22	
5	273	34		58	20	36		54	24			62	47	199
TOTAL	641	90	17	161	30	109	145	24	29	103	187	67	103	199

2 Group (Night):-

Aerodromes	Guns and S/Ls.	Recce	Shipping		
241	38	2	30		

2 Group (Daylight):-


CASUALTIES

Groups	A	B	D	F	G	K	M	T	Z	Gardening	Aerodromes
2 (Night)											11
3	3	1	1		1	1	1		2		
4	4	2	1	1				5			
5	10	5	1	1	1		1		1	2	
TOTAL	17	8	3	2	2	1	2	5	3	2	11

TONNAGE

Groups	A	B	C	D	E	F	G	H	K	L	M	T	Z	Misc.	Gardening
3	88	19.5	8.2	35.7	2.7	11.6	27.4	22.9	10.8	35.2	85.1		184.8	30.6	
4	87.1	23.1	11.4	12.7	9	26.2	6.6	18.8		26.9	11.1	45.7	19	17.2	
5	92	20.9	2.2	24.5	12.3	7.6	15.6	38.5		.9	23.5		40.9		13.7
6													.2		
TOTAL	267.1	63.5	21.8	72.9	24.	45.4	49.6	80.2	10.8	63.	119.7	45.7	244.9	47.8	13.7
2 Group (Night)			Barges		Z		Shipping				Guns and S/Ls.				
			-		41		9.8				6.9				
2 Group (Daylight)			.4		27		25.7				-				

SEPTEMBER, 1940

SORTIES

Group	A	B	C	D	F	G	H	L	M	P and T	Z	Gardening	Guns C.C. and S/Ls.	B and S.	F.R.
1															
2 (Night)	15		12	2					4		152		64	56	653
3	76	27		31	13			43	140		54		68		157
4	59	77		86	5		10	9	54	14	41		65		59
5	81	74		100		24			69		37	56	165		172
TOTAL	231	178	12	219	18	24	10	52	267	14	284	56	362	56	1126
2 Group (Daylight)			Aerodromes			Ruhr		Reece.		B and S.					
			30			14		117		131					

CASUALTIES

Group	A	B	D	G	L	M	Z	Gardening	C.C.	Guns and S/Ls.	B and S.
1											
2 (Night)							6		1		1
3	2	1			3	5			3		6
4	2	3	1			3	1				2
5	6	2	4	1		1	1	2	2		2
TOTAL	10	6	5	1	3	9	8	2	6		11

2 Group (Daylight) Shipping  
1

Reece  
1

TONNAGE

Group	A	B	C	D	E	F	G	H	L	M	T	Z	Gardening	C.C. Misc.	Guns and S/Ls.	B and S.
1																
2 (Night)	2.5		1.3	.2						.2				30.2	1.3	9.9
3	17.7	10.8	1.2	15.5		3.2	1.6	52	22.1	90.7		18.2		118.3	17	26
4	38	22.1	.2	58.8		80.8	40.2	25.7	8.4	82	13.6	66		413.3	10	98.2
5	30.7	19.2		102.7	.4	.9	8.9	14.6	.9	52.1		20.1	1.7	119.9	32.2	
TOTAL	88.9	52.1	2.7	177.2	.4	84.9	50.7	92.3	31.4	224.8	13.6	145.1	1.7	790.7	54.9	263.7
2 Group (Daylight)			C.C.		B and S.		Z									
			17.8		17.9		1.8									

OCTOBER, 1940

SORTIES

APPENDIX U - contd.

Groups	A	B	D	E	F	G	H	L	M	T	Z	CC	Gardening	A.A.	Nickelling
1												48			
2 (Night)	47							17	113		59	217		18	
3	242	58	234			6	15	69	44		24	58			
4	195	7	18		19	4	22	14	9	12	29	13			
5	188	18	146	30		5	38	18	47			12	101		
6															11
7															4
TOTAL	672	83	398	30	19	15	75	118	213	12	112	348	101	18	15

2 Group (Daylight)	A	D	L	M	Z	CC	Sweep	Reece
	48	19	14	22	17	42	23	16

CASUALTIES

Groups	A	B	D	F	G	H	L	M	CC.	Gardening	Nickel
1									1		
2 (Night)	1							2	1		
3	3	2	4		1	1	2				
4	3	1	1	1	1		2		1		
5	5		2			5		1	4	3	
6											
7											
TOTAL	12	3	7	1	2	6	4	3	7	3	

2 Group (Daylight)	A	CC
	1	1

TONNAGE

Groups	A	B	C	D	E	F	G	H	K	L	M	T	Z	CC.	Misc.	Gard.	Guns & S/Ls.	S&R	Nickel
1																			
2 (Night)	7.2	2.7	1.3		.8					2.2	22.8		23.7	24.9	88	4.8	23	1.5	
3	141.9	26.9	2.2	159.1	7.7		3	31.9		44.8	53.2		61.3	95.1	43.7				
4	80.1	1		30	4.9	3	1	37.4		6	21.7	5	27.7	44.9	23.4				
5	67.6	6.1		86.1	11.1	5	2	36.3	.7	4.5	44.0		24.3	7	35.5	7.6			
6																			2
7																			.2
TOTAL	296.8	36.7	3.5	275.2	24.5	8	6	105.6	.7	57.5	141.7	5	137	259.9	107.4	7.6	23	1.5	2.2

2 Group (Daylight)	A	M	Z	CC.	Misc.	B & S.
	.6	2.0	6.4	8	1.8	14

NOVEMBER, 1940

SORTIES

Groups	A	B	C	D	E	F	G	H	M	Gardening	T	Z	CC	Nickelling
1														
2 (Night)	122	7	17	18	15				115			171	55	
3	117	31		95	27			13	181			48	34	
4	188			35			6		44		48	15	24	
5	110	57	24	46	40	8			121	43		14	14	
6														8
7														4
TOTAL	537	95	41	194	82	8	6	13	561	43	48	248	127	12

2 Group (Daylight)	A	D	L	M	Z	CC	Sweep	Misc.
	35	14	1	6	30	28	4	25

CASUALTIES

Groups	A	B	D	M	T	Z	CC	Gardening	Sweep	A
2 (Night)	3	1	1	5		2				
3		1	2	3						
4	5			7	2		2			
5	3	7	4	3				2		
TOTAL	11	9	7	18	2	2	2	2		

2 Group (Daylight) 1 1  
Nos. 1, 6 and 7 Groups Casualties = NIL

TONNAGE

Groups	A	B	C	D	E	F	G	H	L	M	T.etc.	Z	CC	Misc. Gardening	Nickel
1															
2 (Night)	22.8	4.2		5.6	5.6			1.8		34		4.8	30.2	9.4	
3	44	12.3	2	46.3	28.9	1.5	23.9	22.6	8.1	152.9		65	41.2	21.3	
4	87.3				26.2	.9	1.3	7.8	.9	26.3	16.8	6.9	31.1	18	
5	31.2	22.8	1.8	19.4	24.3	1.1	3.6	7.8		67.2		11.3	17.6	42.6	1.5
6															1.3
7															.2
TOTAL	185.3	39.3	3.8	71.3	85	3.5	28.8	40	9	280.4	16.8	88.0	120.1	91.3	1.5

2 Group (Daylight)    A    D    M    Z    Misc.    Shipping  
                              .9    -    .9    4.9    1.3    9.0

DECEMBER, 1940

SORTIES

Groups	A	B	D	E	F	G	H	L	M	N	T	Z	Gardening	Nickel	CC	Individual Towns
1												18			6	
2 (Night)	49	8		23	20			12	39			113			21	9
3	31		20			14	15	20	47	19	30	34			116	99
4	19	38	24			11		8	21			9			75	62
5	40	79	10	10			15	16	39			36	56		15	29
6														3		
7														3		
TOTAL	139	125	54	33	20	25	30	56	146	19	30	210	56	6	233	199

2 Group (Daylight)    A    D    M    N    Z    CC  
                              27    5    5    4    17    15

CASUALTIES

Groups	D	E	G	L	M	T. etc.	Z	CC	Gardening	Individual Towns
1										
2 (Night)		2			1		4	2		3
3				3	3	1				1
4	1	4	1				1	2		1
5		1		1			4	1	1	2
6					-- Nil --					
7										
TOTAL	1	7	1	4	4	1	9	5	1	7

2 Group (Daylight)    Z  
                              2

TONNAGE

Groups	A	B	D	E	F	G	H	L	M	N	T	Z	Gardening	Nickel	CC	Towns	Misc.
1																	
2 (Night)	15.8			1.8	1.8		1.7	3.9	8.8			14.7			7.8		2.7
3	8.4	7.8	7.6	.9		4.2	8.9	18.6	34.4	3.7	15.2	21.5			21.5	1.3	12.6
4	4.3	6.1	22.8	5.3		4.6	2.7	.9	22.8			22.8			109.8	54.2	20.2
5	32.3											8.6			366.4	24.8	31
6		13	4.2	1.8			9	9.3	26.2			10.3	3.9		13.1	26	56.7
7																	
TOTAL	60.8	26.9	53.1	9.8	1.8	9	22.3	32.7	92.2	3.7	15.2	77.9	3.9	.4	448.6	87.8	103.2

2 Group (Daylight)    A    M    N    Z    CC    Miscellaneous    Shipping  
                              .4    1.1    -    2.3    .9    .9    1.6

/JANUARY, 1941



APPENDIX U - contd.

JANUARY, 1941

SORTIES

Groups	A	D	M	N	T etc.	Z	CC.	Gardening	Nickelling	'Jane'	Kipper	Perch	Eel
1	10	12				5				6	10		
2 (Night)	59		16			23	7			12	36	12	
3	54	83	9	45	20	28				17	60	28	7
4	19	45					63			21	39		10
5	40	60		10			46	50		15			
6									13				
7													
TOTAL	182	200	25	55	56	56	116	50	13	71	169	40	17

2 Group (Daylight)

A	H	M	Z	CC
7	5	3	66	14

CASUALTIES

Groups	A	D	L	T	Gardening	Jane	Kipper	Perch
1		1						
2 (Night)								1
3		1		1			2	
4	1	1				1	3	
5		1			1		1	
6								
7								
TOTAL	1	4		1	1	1	6	1

2 Group (Daylight)

H	Z
1	2

TONNAGE

Groups	A	D	E	F	H	L	M	N	T	Z	CC	Gardening	Jane	Kipper	Perch	Eel	Misc.
1	7						1.3			5.1			1.8	2.2			3.8
2 (Night)	12	.2	1.3		.3	.5	6.8			4.2	5.9		2.2	6.4	1.8		5.4
3	26	55.7			1.1		2.9	19.8	8.6	32.1	11.2		15.6	39	12.4	3.8	8.8
4	7.8	22.1		.7	.9	1.1	4.4	1.3		2.2	42.8		12.	20.6		6.7	8
5	23.4	31.4	1.1	1.8	3.5		8.2	8		.4	32.4	3.5	5.8	6.2			16
TOTAL	76.2	109.4	2.4	2.5	5.8	1.6	23.6	29.1	8.6	44	92.3	3.5	37.4	74.4	14.2	10.5	42

2 Group (Daylight)

CC	Z	Misc.	Shipping
1.5	3.3	.5	2.5

FEBRUARY, 1941

SORTIES

Groups	A	D	F	Z	Nickels	Gardening	Salmon	Perch	CC	Kipper	Trout	Eel
1												
2 (Night)	59			49				12	14	11	9	10
3	90	30	35	19				31	58	34	19	34
4	27		5	27			19	22	234	34	50	119
5	55	23	10			78	10	52	68	14	15	30
6					7				87	23	33	56
7												
TOTAL	231	53	50	95	7	78	29	117	461	120	126	249

2 Group (Daylight)

A	D	H	CC	Z	G.U.
6	1	4	69	50	1

CASUALTIES

Groups	A	CC	Gardening	Nickelling	Kipper	Perch	Eel	Trout
1								
2 (Night)		2			1	1	1	2 Group (Daylight)
3		3			2	1	3	
4	1							A
5			1		1	1	2	1
6								Z
7								1
TOTAL	1	5	1		4	3	7	3



TONNAGE

Groups	A	B	D	E	F	H	M	Z	CC.	Misc.	Gardening	Salmon	Kipper	Trout	Perch	Eel
1							1.3		15.4	1.5			.6	5.8	7.3	4.8
2 (Night)	15.9		1.3			1.7		9.2	19.9	3.8			3.8	3.5	2	5.2
3	44.3	29.2	33.6	1.1	10.4	6.1	19.6	32.1	228.8	37		11.8	17.2	38	32.6	33.1
4	7.6	3.6	5.3		.9	.9	2.8	27.1	37.7	15.3		8.5	8.9	5.4	15	17.2
5	22.3		15		2.7	12.3	17		56.4	40	2.5	6.4		26	44.5	42.8
6																
7																
	Nil															
TOTAL	70.1	32.8	65.2	1.1	14	21	30.7	38.4	358.2	97.6	2.5	26.7	35.9	78.7	101.4	103.1

2 Group (Day Tonnage) H 2 CC Shipping Misc  
.4 5.6 16.9 1.1 .4

MARCH, 1941

SORTIES

Groups	GQ & A	GR & D	GY & F	Z	Fringe	CC.	Nickel	Gardening	Salmon	Trout	Kipper	Perch	Dace	Whitebait	Minnow	Herring	Chub	Eel
1	14	7		7	39					10			16	4				
2 (Night)				38	51				59	2							23	26
3	47	50	54	23	163				39	126			46	95	34	6		
4	19	58		10	95					38		13		42	23			
5	42	102			53			91		63		47		30	73			
6							8											
7																		
TOTAL	122	217	54	78	401		8	91	98	239		60	62	171	130	6	23	26

2 Group (Daylight) Shipping Beats CC. 2 Recce  
143 33 2 3

CASUALTIES

Groups	GQ & A	GR & D	GY & F	Fringe	CC.	Z	Shipping	Gardening	Salmon	Perch	Trout	Dace	Whitebait	Minnow	Eel
1				2											
2 (Night)						2	4		1						2
3	1		1	5					1		1	3	1		
4		2		2						1	4		2		
5		2		2				2		1	7		2	1	
6															
7															
	Nil														
TOTAL	1	4	1	11		2	4	2	2	2	12	3	5	1	2

2 Group (Daylight) Nil.

TONNAGE

Groups	GQ & A	GR & D	GN & E	GY & F	GU & H	Fringe	CC.	GH & M	Z	Gardening	Misc.	Perch	Minnow	Whitebait	Trout	Dace	Herring	Salmon	Eel
1	9.8	6.9				70.5		6.9			6.9			2	7.9	15.4			
2 (Night)		4.2				1.8		8.9			.3	4.9				3.7			
3	50.1	77	3.4	52.2	10.6	190.6		3.4	39.5		29.5	4.6	13.8	19.3	160.9	27.1	.7	6.5	5
4	13.5	59.8			1.8	110.9		5.3	10.2		10.9	8.3	13.1	21.8	16.9		4.1		
5	12.9	72.8			3.5	47.1		12.2	2	5.4	13.1	33.2	44.6	15.7	44.5		1.7		
6																			
7																			
	Nil																		
TOTAL	86.3	220.7	3.4	52.2	15.9	420.9		20.9	65.5	5.4	60.7	51.	71.5	58.8	230.2	46.2	6.6	6.5	5

2 Group (Daylight) Fringe Shipping Z  
22.4 17 4.8

APRIL, 1941

SORTIES

Groups	GR	GO	Fringe	Z	Gardening	Nickel	Kipper	Minnow	Perch	Whitebait	Dace	Herring	Trout	Roach	Salmon	Chub
1			66	21			4	79		17		4	9		11	17
2 (Night)		11	34	13								4		46		
3	98		347	47			28	245		86	22	13	39			
4	93		94	43			5	84	24	45		6	12	5	24	15
5	142		63	17	156			33	29	63	28		1			14
6						10										
7																
TOTAL	333	11	604	141	156	10	37	441	53	211	50	27	61	51	35	46

2 Group (Daylight) Shipping Fringe Z Herring Misc GO 5 Group (Daylight) CC Z GH  
533 168 17 8 8 23 54 3 1

### CASUALTIES

Groups	GR	Fringe	Gardening	Perch	Minnow	Whitebait	Dace	Trout	Herring	Chub	Z
1									1		
2 (Night)											
3	2	3			5	6		4	1	1	2
4	2	5			1	4			1		
5	2	2	6	5	1	2	2	1			
6					Nil						
7											
TOTAL	6	10	6	5	7	12	2	5	3	1	2

2 Group (Daylight) - Shipping Beats 13 Fringe 7  
5 " " - - " 2

**TONNAGE**

Groups	GH	GR	GO	GU	Gardening	Z	Misc.	Fringe	Nickel	Perch	Chub	Whitebait	Minnow	Dace	Trout	Herring	Eel	Kipper	Roach	Salmon	GY	GF							
1				1.8		19	2.5	69.9			10.7	10.2	60		8	2.7	.6	5.1		8									
2 (Night)			.9	.2		1.1		6.2								.9		.2											
3		80.6		9.4		58.6	27	330		1.1	23.2	58.6	182.8	25.3	27	21.1	.3	5.7		8	.9	.7							
4	3	78		7.7		40.8	28.1	100.2		11.4	12	21.4	61.4	4.7	5.1	3.8		6.7	2.9	18									
5		1.3	101.1	7.5	6	9.1	19.1	76.8		13.7	11.3	34.8	21.4	16.5	4.1	.9	.9												
6									Nil																				
7																													
TOTAL	4.3	259.7	.9	26.6	6	128.6	76.7	586.1		26.2	57.2	125	325.6	46.5	44.2	29.4	1.8	17.7	2.9	34	.9	.7							

2	Group (Daylight)	<u>Fringe</u>	51.4	<u>Shipping</u>	65.4	<u>Z</u>	5.8		
5	"	"	5.0	"	-	-	-	Herring	4.1
3	"	"	-	"	3.0				

MAY, 1941

## SORTIES

Groups	GR	GS	GH	Fringe	Z	Trout	Dace	Salmon	Bel	Whitebait	Chub	Herring	Shipping	Gardening	G.O	Minnow	Nickel
1				68	1	57	70	49	12		62	18					
2(Night)	12		11	30									29				
3	269			148	9	98	42	3	35	19	119	8					
4	115	49		76	5	139	44	48	27		54	9				43	
5	75	24		39		100	116		27	16	78			162	36		
6																	23
7																	
TOTAL	481	73	11	361	15	394	272	100	101	35	313	35	29	162	36	43	23

2	Group (Daylight)	Herring	-	GH	3	Rudd	-	Shipping	257	Fringe	115	Reece	1	Z	9
5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
3	"	"	1	"	"	1	"	"	65	"	"	"	"	"	"

## CASUALTIES

Groups	GR	Herring	Salmon	Dace	Eel	Fringe	GB	GS	Trout	Minnow	Whitebait	Gardening	Shipping	Chub
1		1	3	1	1	3								
2 (Night)													1	
3	5										3			1
4	2			1			1	2	1	1				
5	1			3	1						2	1		
6							Nil							
7														
TOTAL	8	1	3	5	2	3	1	2	1	1	5	1	1	1

2 Group (Daylight)	Shipping	10	Fringe	8	3 Group (Daylight)	Shipping	Nil
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## TONNAGE

Groups	GS	GR	GH	GO	GU	Fringe	Z	Misc.Nickel	Gardening	Trout	Herring	Dace	Roach	Perch	Salmon	Chub	Whitebait	Eel	Minnow	Sole	Shipping	
1			2.4			73.3	7.1	12.8		95.7	11.4	49.1			46.5	38.5		5.4		1.4		
2(Night)						13.6															12.5	
3			6.8		7	8.1	212.8	40.5	27.2	137	15.3	68.9	1.5		10.3	112.8	24.8	39.	.6	8.1		
4	34	216.4			8	82.3	5.8	29.1		89	11	51.2		2.8	43.9	46		23.4	25			
5		47.8																				
6		56.1	9.3	36.	6.8	43.6	4.5	19.4		4.7	74.8	104.8				84.2	12.1	20.8				
7										Nil												
TOTAL	34	320.3	18.5	36.7	22.9	425.6	57.9	88.5		4.7	396.5	37.7	274.	1.5	2.8	100.7	231.5	36.9	88.6	25.6	9.5	12.5

2	Group (Daylight)	Shipping	37.1	Fringe	18.5	Z	3.5
3	"	"	9				

APPENDIX V

FISH CODE-NAMES OF TARGETS

<u>TOWN</u>	<u>CODE NAME</u>	<u>TOWN</u>	<u>CODE NAME</u>
AACHEN	ELVER	GOTHA	ANCHOVY
ASCHERSLEBEN	REDFIN	STUTTGART	BARBEL
AUGSBURG	WHITLING	BIELEFELD	BASS
BERLIN	WHITEBAIT	CHEMNITZ	BLACKFIN
BERNBURG	TUNA	WURZBURG	BLEAK
BIELEFELD	BASS	KONIGSBERG	BLENNY
BOCHUM	QUINNAT	BRESLAU	BLOATER
BREMEN	SALMON	LEVERKUSEN	BLUEFIN
BREMERHAVEN	ROACH	KASSEL	BREAM
BRESLAU	BLOATER	ESSEN	BULLHEAD
BRUNSWICK	SKATE	ROSTOCK	CARP
CHEMNITZ	BLACKFIN	MUNICH	CATFISH
COLOGNE	TROUT	TURIN	CHAR
DANZIG	KELT	REMSCHIED	CHAVENDER
DARMSTADT	LUCE	DRESDEN	CHEVIN
DRESSAU	SHAD	MANNHEIM	CHUB
DORTMUND	SPRAT	DUISBURG	COD
DRESDEN	CHEVIN	HAMBURG	DACE
DUISBURG	COD	KOBLENZ	DOGFISH
DUSSELDORF	PERCH	HANNOVER	EEL
EMDEN	HERRING	AACHEN	ELVER
ESSEN	BULLHEAD	GELSENKIRCHEN	FEROX
FRANKFURT A.M.	SOLE	HILDESHEIM	FINNOCK
FREIBURG	TIGERFISH	OBERHAUSEN	GILLAROO
GELSENKIRCHEN	FEROX	REGENSBURG	GOLDFISH
GOTHA	ANCHOVY	NURNBURG	GRAYLING
HAGEN	RAINBOW	MAGDEBURG	GRILSE
HALBERSTADT	SARDINE	MILAN	GUDGEON
HALLE	PICKEREL	LEIPZIG	HADDOCK
HAMBURG	DACE	EMDEN	HERRING
HANNOVER	EEL	MUNCHEN GLADBACH	JACK
HILDESHEIM	FINNOCK	DANZIG	KELT
KARLSRUHE	PIKE	KAISERSLAUTERN	KINGFISH
KASSEL	BREAM	WILHELMSHAVEN	KIPPER
KAISERSLAUTERN	KINGFISH	DARMSTADT	LUCE
KIEL	MINNOW	LUBECK	MACKEREL
KOBLENZ	DOGFISH	KREFELD	MAHSEER
KONIGSBERG	BLENNY	KIEL	MINNOW
KREFELD	MAHSEER	MAINZ	PARR
LEIPZIG	HADDOCK	SAARBRUCKEN	PEAL
LEVERKUSEN	BLUEFIN	DUSSELDORF	PERCH
LUBECK	MACKEREL	HALLE	PICKEREL
MAGDEBURG	GRILSE	KARLSRUHE	PIKE
MAINZ	PARR	SCHWEINFURT	POLLAN
MANNHEIM	CHUBB	ZWICKAU	POUT
MULHEIM	STEELHEAD	BOCHUM	QUINNAT
MUNCHEN GLADBACH	JACK	HAGEN	RAINBOW
MUNICH	CATFISH	ASCHERSLEBEN	REDFIN
MUNSTER	RUDD	BREMERHAVEN	ROACH
NURNBURG	GRAYLING	MUNSTER	RUDD
OBERHAUSEN	GILLAROO	BREMEN	SALMON
OSNABRUCK	SMOLT	HALBERSTADT	SARDINE
REGENSBURG	GOLDFISH	STETTIN	SEWIN
REMSCHIED	CHAVENDER	DESAU	SHAD
ROSTOCK	CARP	GENOA	SHARK
SAARERUCKEN	PEAL	BRUNSWICK	SKATE
SCHWEINFURT	POLLAN	OSNABRUCK	SMOLT
SOLINGEN	TRUFF	FRANKFURT A.M.	SOLE
STETTIN	SEWIN	DORTMUND	SPRAT
STUTTGART	BARBEL	WUPPERTAL	SPROD
TRIER	SUNFISH	MULHEIM	STEELHEAD
WIESBADEN	TOPE	TRIER	SUNFISH
WILHELMSHAVEN	KIPPER	FREIBURG	TIGERFISH

APPENDIX V

-2-

WUPPERTAL	SPROD	WIESBADEN	TOPE
WURZBURG	BLEAK	COLOGNE	TROUT
ZWICKAU	POUT	SOLINGEN	TRUFF
GENOA	SHARK	BERNBURG	TUNA
MILAN	GUDGEON	BERLIN	WHITEBAIT
TURIN	CHAR	AUGSBURG	WHITLING

MARSHALLING YARDS

HAMM	POODLE	PEKE	SOEST
SOEST	PEKE	POM	OSNABRUK
SCHWERTE	PUG	FOODLE	HAMM
OSNABRUCK	POM	PUG	SCHWERTE

MISCELLANEOUSSUBMARINES AT:-

LORIENT	POLECAT	BORDEAUX	RATS
ST. NAZAIRE	WEASEL		

BATTLE CRUISERS AT:-

BREST	TOADS
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HIPPER CLASS CRUISERS AT:-

BREST	SKUNK
-------	-------

HERMAN GORING WORKS AT

BRUNSWICK (GF.2250)	SWINE
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NAVAL CONSTRUCTION & INDUSTRIAL TARGETS

BREMEN (DESCHIMAG)	(GR.3586)	MAMBA	ADDER	KIEL (HOWALDTS WERKE)
BREMEN (FLUGHAFEN)	(GY.4772)	COBRA	ALLIGATOR	STUTTGART (FEUERBACH)
ESSEN (KRUPPS)	(GN.3814)	STOAT	ANT	KIEL (DEUTSCHE WORKS)
HAGEN (AKUMUL.FABRIK)	(GR.3683)	LIZARD	ASP	VEGESACK (VULCAN)
HAMBURG (OSTHALLE)	(GY.4761)	VIPER	CENTIPEDE	KOLN (HUMBOLDT DEUTZ)
HAMBURG (VULCAN)	(GR.3587)	KRAIT, OR MANTIS	COBRA	BREMEN (FLUGHAFEN)
KIEL (GERMANIA)	(GR.3589)	PYTHON	GRUB	STUTTGART (DAIMLER)
KIEL (DEUTSCHE)	(GR.3588)	ANT	LIZARD	HAGEN (AKUM.FABRIK)
KIEL (HOWALDTS)	(GR.3594)	ADDER	MAMBA	BREMEN (DESCHIMAG)
KOLN (GOTTFRIED)	(GR.3672)	SPIDER	MANTIS	HAMBURG (VULCAN)
KOLN (HUMBOLDT)	(GR.3658)	CENTIPEDE	OCTOPUS	STUTTGART (DAIMLER)
MANNHEIM (MOTORWORKS)	(GR.3665)	SCORPION	PYTHON	KIEL (GERMANIA)
STUTTGART (DAIMLER)	(GR.3669)	GRUB	SCORPION	MANNHEIM (MOTORWORKS)
STUTTGART (DAIMLER)	(GY.4654)	OCTOPUS	SPIDER	KOLN (GOTTFRIED)
STUTTGART (FEUERBACH)	(GB.3280)	ALLIGATOR	SQUID	STUTTGART (BOSCH)
STUTTGART (BOSCH)	(GB.3282)	SQUID	STOAT A	ESSEN (KRUPPS)
VEGESACK (VULCAN)	(GR.3603)	ASP	VIPER	HAMBURG (OSTHALLE)

APPENDIX W.

DISTRIBUTION OF BOMBS IN SOUTH-WEST GERMANY

From German Statistics of L.G.K.XII/XIII including Mannheim, Cologne, Frankfurt, Nuremburg etc.

<u>Month</u> <u>1940.</u>	<u>Open</u> <u>Country.</u> %	<u>Communi-</u> <u>cations</u> %	<u>Residential</u> <u>Areas</u> %	<u>Industrial</u> <u>Objectives</u> %	<u>Military</u> <u>Objectives</u> %	<u>Aerodromes</u>  %	<u>Harbours</u> <u>and</u> <u>Waterways</u> %	<u>Other</u> <u>Objectives</u> %	<u>Total Bombs</u>		<u>Casualties</u>	
									<u>H.E.</u>	<u>Incend.</u>	<u>Killed</u>	<u>Wounded</u>
May	60	25	5	2	5	3	-	-	276	454	1	7
June	70	3	18	3.5	.5	1	2	2	1284	1194	26	48
July	70	6	16	2	2	2	1	1	248	643	6	15
August	65	10	12.5	2	2.5	2	3	3	639	1543	3	22
September	69	5.7	14.5	3.1	.6	2.5	.6	4	604	1640	7	14
October	38	13	11.5	14.5	11.5	-	5	6.5	229	524	6	9
November	65	9	10.5	8	6	-	-	1.5	144	662	-	32
December	33.5	20	29.5	8	2	-	1	6	577	6403	74	97
<u>1941</u>												
January	-	-	66.5	33.5	-	-	-	-	8	78	-	-
February	46	15.5	15.5	-	7.5	-	-	15.5	28	495	-	-
March	22	22	22	22	-	12	-	-	31	135	13	11
April	50	10.5	20	4.5	-	-	1.5	13.5	279	4141	5	7
May	52.5	6.5	18.5	3	6	1.5	.5	11.5	1256	12977	77	181
<b>TOTAL</b>	<b>49.3</b>	<b>11.2</b>	<b>20</b>	<b>8.2</b>	<b>3.4</b>	<b>1.8</b>	<b>1.1</b>	<b>5</b>	<b>5705</b>	<b>30889</b>	<b>218</b>	<b>443</b>

APPENDIX W

SPECIMEN ASSESSMENT OF MINING RESULTS.

N.I.D. 1/15

SUMMARY OF LOSSES IN RIVER  
ESTUARIES, KATTEGAT, BELTS AND SOUND

(Gardening)

NOTE: The reports from which these summaries are made up are received from various sources, many of which are foreign press announcements. The dates and exact position are therefore open to doubt. It is not suggested that these are the only losses incurred.

Abstract of Previous  
Reports

<u>Area</u>	<u>German</u>	<u>Other Nationalities</u>	<u>Tonnage</u>
F.D. 5 and 6	1	1	28,200
F.D. 7	4	6	15,500
F.D. 11		1	1,800
F.D. 14	1		1,400
F.D. 15 or 19		2	1,170
Wilfred			1,590
			<u>49,660</u>
Asparagus or Broccoli	3		3,000
Bottle	1		20,000
Carrot, Endive or Wallflower		1	1,400
Daffodil	5	2	25,700
Deodar		1	8,500
Endive		3	1,500
Forget-me-not		3	4,000
Hollyhock		1	2,120
Kraut		3	1,500
Mussel		1	840
Nasturtium	3	3	8,000
Onions	4		12,000
Pumpkin	1	1	4,000
Sweet Pea	1		800
Tomatoes	2		3,000
Verbena	1	1	2,000
Xeranthemum	4	1	4,500
			<u>102,860</u>

Reports received 5.12.40 - 3.1.41

<u>Date</u>	<u>Area</u>	<u>Casualty or Remarks</u>
November	Willow?	It is common for Sassnitz to be closed for 2 days a week on account of suspected mining.
15th November	Willow?	German merchant vessel of 3,000 tons sunk outside Sassnitz.
November	Daffodil or Verbena?	Merchant vessel possibly <u>GLENGARY</u> , 7,100 tons, sunk on passage Copenhagen to Germany.
Before 26th November	F.D. 24 or 27	3 steam trawlers and a German merchant ship sunk.
25th November	Artichoke	Armed merchant vessel sunk.
20th December	Lettuce	Finnish <u>INGA</u> , 2,000 tons. Possibly sunk by mine.

APPENDIX X2

GERMAN SHIPPING SUNK BY MINES AND AIRCRAFT (ACCORDING  
TO GERMAN RECORDS) APRIL, 1940 TO MAY, 1941

(NOT YET COMPLETE)

(N.I.D. 24/235/46)

A. MERCHANT VESSELS

DATE	AREA	SHIP	TONNAGE		
			MINED	BOMBED	UNKNOWN
1940					
April 9	Christiansand	Seattle		7369	
" 11	Bergen	Cremon	268		
" 14	" (HBR)	Baerengels		7569	
" 23	Hubertgat	Sayn	2321		
" 24	The Sound	Cronshagen	1787		
" 24	?	Otto Cords	905		
May 6	Kiel Bay	Brage	5954		
" 6	Aslesund	Ruhrort		1080	
" 6	Skaggerak	Vogesen	4240		
" 10	The Sound	Campinas	4541		
" 10	Lister	Rhein	736		
" 12	Lubeck Bay	Kate Jurgens	346		
" 22	Hubertgat	Helene	2160		
" 23	Kiel Bay	Franz Haniel	2188		
" 29	The Sound	Finkenau	916		
June 9	Bornholm	Dokenhuden			216
" 30	Elbe	Adrianaet Hernia	997		
July 15	Terschelling	Jason	1025		
" 26	Hubertgat	Montan	1275		
Aug. 26	Kiel Bay	Liesabet Cords	907		
Sept. 2	Skaggerak	Pionier			3285
Nov. 12	Laagoe	St. Jurgen	640		
Dec. 8	Dutch Coast	Paranagua	6062		
1941					
Jan. 12	Malmo	Brechsee	688		
" 18	Kattegat	Gottfried	4665		
" 31	Heligoland	Beuren			
		Koenigsberg	2530		
		Preussen			
Feb. 12	?	Askari		590	
" 28	Ems Estuary ?	Adele Ohlrogge	1371		
April 24	North Sea	Lavinia	?		
May 4	Brest	J.T.Essberger			?
" 22	Oster Ems	Kathe	5088		
		Grammersdorf			
" 25	Texel	Sylvia		1049	
" 25	"	Trione		1599	
TOTALS			51,610	19,256	3,501

LIST OF MAPS

I. (a) Aerodromes in the British Isles, July 1939.

(b) Bomber Command Aerodromes, May 1941.

II. North Sea and Norway

III. Western Battle Area, May-June 1940.

IV. Target Map, Western Europe, May 1940 - May 1941.