

# **Air Power Review**

**Special Edition**

Spring 2013

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**Father of the Royal Air Force**

**Birth of British Military Aviation**

**Pre-War Developments**

**Development of Air Power in  
World War 1**

**Formation of The Royal Air Force**

**The Independent Force**

**The Royal Air Force Post  
World War 1**

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## **Air Power Review**

is the professional  
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THE PRIME MINISTER

As you celebrate the anniversary of the formation of the Royal Air Force, the world's first independent Air Force, I send you my heartfelt congratulations and pass on the gratitude of the Government and the nation for the vital role you have played in maintaining global security over the last 95 years.

Since its inception, the RAF has developed into an agile, highly capable and world leading force. Recent operations in Afghanistan, Libya and Mali serve to highlight the enduring qualities and professionalism of your Airmen and Airwomen, both regular and reserves, and I salute their contribution both at home and abroad. They are an iconic part of our nation's character and reputation across the world. They are outstanding, whether deployed on operations, or as vividly demonstrated last year, participating in Her Majesty the Queen's wonderful Diamond Jubilee celebrations and in the security, both in the air and on the ground, of the 2012 London Olympic Games.

We all look forward to sharing in the national celebrations of your historic centenary in 2018 and to another hundred years of Royal Air Force excellence.

A handwritten signature in blue ink, reading "David Cameron".

April 2013

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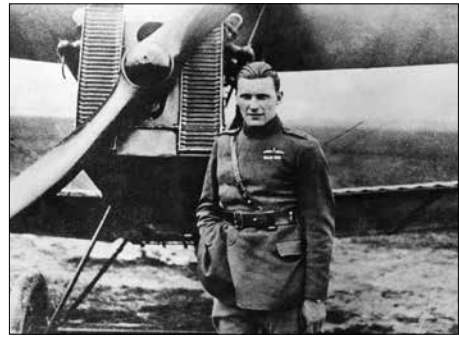
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Air Chief Marshal Sir Sholto Douglas KCB MC DFC, Commander-in-Chief Coastal Command, pictured beside his SE5a aircraft during World War I. At the time, he was a pilot with the rank of 2nd Lieutenant



Flight Cadets at the RAF Cadet College Cranwell in 1923. Left to right they are: F/C RJA Ford, F/C PRG Bernard (later Air Chf Mshl The Earl of Bandon), F/C AHWJ Cocks and F/C GR Beamish



Captain JM Robb setting the sights on his 92 Squadron SE5a at Tangmere in June 1918, before crossing the Channel for Bray-Dunes on the Western Front

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## Contents

4

### Foreword by the Chief of the Air Staff

8

### Father of the Royal Air Force

- Obituary for Sir David Henderson
- A Letter to Lady Henderson
- Sir David Henderson: Forgotten Father of British Air Power?

22

### Birth of British Military Aviation

- Naval and Military Aeronautics - House of Commons debate
- The Haldane Report

64

### Pre-War Developments

- The Royal Warrant for the Royal Flying Corps
- Biography of Sir Frederick Sykes
- Military Aviation - by Major F H Sykes
- Organisation of Royal Naval Air Service

98

### Development of Air Power in World War 1

- A Letter from Field-Marshal French to the War Office
- A Letter from Major-General Henderson
- Colonel Trenchard's comments on the Organisation of the Royal Flying Corps
- Biography of Viscount Trenchard
- Training Manual RFC, part II, chap II
- Future Policy in the Air
- Air Service in the War, Supplementary paper by Lord Curzon of Kedleston
- Lt William Leefe-Robinson VC
- Memorandum on the Organization of the Air Services
- The Smuts Report

152

### Formation of the Royal Air Force

- The Air Force Bill – House of Commons Debate
- The Air Force Act
- A Review of Air Situation and Strategy
- Major Mannock VC, No. 85 Squadron
- Synopsis of British Air Effort during the War 1914-1918
- Experiences In The War, 1914-1918 by Squadron Leader K R Park, MC, DFC

226

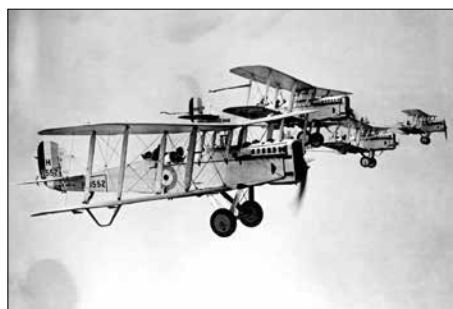
### The Independent Force

- Air Council Memorandum for 'The Independent Force'
- Independent Bombing Command – Minute for the Prime Minister
- London Gazette Supplement Report by Major General Trenchard

246

### The Royal Air Force Post World War 1

- Z Force in Somaliland
- Operations of the Royal Air Force against Afghanistan
- Command Paper 467 – "The Trenchard Memorandum"
- The Part of the Air Force of the Future Imperial Defence
- Comment from Air Marshal Trenchard on Mr Balfour's Cabinet Paper
- Aspects of Service Aviation
- Mr. Chamberlain's announcement to the House of Commons on 16<sup>th</sup> March 1922
- The Salisbury Report



Airco DH9A bombers rehearsing for the 1923 RAF Display at Hendon

# Foreword



**By Chief of the Air Staff**

**Air Chief Marshal Sir Stephen Dalton**

GCB ADC LLD(Hon) BSc FRAeS CCMi RAF

This special Edition of Air Power Review marks the 95<sup>th</sup> Anniversary of the Royal Air Force and recounts some of the major events and decisions that led to the creation of the world's first independent air force. The story of the birth of the Royal Air Force is described in this Journal using predominantly primary source material, some of it digitised for the first time, from original records at the Royal Air Force Museum, the Air Historical Branch, the Defence Academy Library and the National Archives. I would like to take this opportunity to record my personal thanks to all those organisations and their staff for such outstanding support to the compilation of this Journal and in particular Dr David Jordan of King's College London.

The story of British military air power, specifically the use of aeroplanes, most obviously begins with a 1909 debate in the House of Commons during which Viscount Haldane, the Secretary of State for War, first proposed the purchase of aeroplanes to allow the military to experiment with their potential. A full transcript of the subsequent 'Haldane Report' of 1912 is included in this Journal, which marks the clear acceptance by the British government of the need for military air power. This anniversary edition opens, however, by first recognizing the man to whom the epithet 'Father of the Royal Air Force' most appropriately belongs, Sir David Henderson. Viscount Trenchard, to whom the title has often been applied, was clear in his dislike of the label, attributing it himself to Sir David Henderson. This is reflected in Sir David's obituary in the Times and Viscount Trenchard's unrelated letter to Lady Henderson, both of which are reproduced in this Journal.

The early orders and flying badges of both the Royal Flying Corps and the Royal Naval Air Service recognise the creation of the two air services that would later be combined to form the Royal Air Force. However, it is perhaps the 1913 paper 'Military Aviation' by Major F H Sykes, who would go on to become only the second Chief of the Air Staff, that most neatly encapsulates the development of air power in those early days. Even in 1913 it was already clear that Sykes was one of the foremost air power thinkers of his generation.

Air power's development was never more rapid than during the First World War, as has been clearly shown by a variety of material from that era. Field Marshal French's 1914 request for more aircraft due to their essential contribution to the war is as robust as the then Colonel Trenchard's opinions on an early re-organisation of the Royal Flying Corps. In contrast, the award of a VC to Lt William Leefe-Robinson for the first successful destruction of a German Zeppelin over London also reminds us of the impact felt by a civilian population when they are unprotected against attack from the air. Whilst the pace of development of air power was unwavering during the war, extracts from the first Royal Flying Corps Flying Manual demonstrate how many of the principles developed in those early days still apply today. Additionally, a variety of sources from that period also demonstrate that the Royal Flying Corps and Royal Naval Air Service would be more effective if they combined and the government of the day recognized that only a fully independent air force could ensure that Britain's national interests were best served and that air power was most effectively and efficiently employed in the service of the nation. This is encapsulated in Lord Curzon's paper 'Air Service in the War' and, of course, in the second of General Smuts' reports for the government.

Although the House of Commons debate on the Air Force Bill was robust and forthright, the Air Force Act was passed on 29 November 1917, leading to Royal Assent to the formation of the Royal Air Force on 1 April 1918. Key documents relating to this event are included in this publication, as well as the Air Ministry Orders outlining the new Service's rank structure and uniform. An early disagreement, however, between the first Minister for Air, Lord Rothenham, and the first Chief of the Air Staff, Major General Trenchard, was followed in short order by the resignation of both. Major General Sykes assumed the position of Chief of the Air Staff and published a paper outlining his vision for the Royal Air Force, 'A Review of Air Situation and Strategy'. However, Winston Churchill, the new Secretary of State for Air, faced with implementing deep austerity measures after the war, considered Sykes's proposals unrealistic, although they differed little in substance to Trenchard's. This section on the early Royal Air Force which concludes with the formal report summarising the British Air Effort during the First World War, clearly demonstrates the remarkable impact of air power on war, even in its very early years. An essay by the then Squadron Leader Keith Park submitted to the Royal Air Force Staff College at Andover provides a personal perspective on air power during the First World War and is an excellent counter-point to the more formal report.

Stepping back briefly into the First World War, it is important to recognize that in the final six months of the war, a separate 'Independent Force' was established under Trenchard's command, with the purpose of striking factories, airfields and other war enabling infrastructure. This rarely publicised break in Trenchard's tenure as Chief of the Air Staff provided an opportunity to test his theories on the role of offensive bombing as the principal way to conduct warfare and, in so doing, underpinned the thinking behind the long-range bombing used so effectively in the Second World War. A brief summary written by Trenchard for the London Gazette describes the results of his Independent Force. More compelling, perhaps, are the pictures of a Handley Page V/1500 and the 1650lb bomb, which show the size of

the aircraft and weapons being used by the Force, even at such an early stage of military aviation's development.

The final section of this anniversary Journal explores the impact on the development of air power of post-war austerity and the often bitter inter-service rivalry that it engendered. In 1919, Trenchard published his seminal work Command Paper 467 *aka* "The Trenchard Memorandum" describing his vision for the Royal Air Force; particularly noteworthy is the great emphasis he placed upon the importance of training. During those difficult early years, the Royal Air Force also ventured to many points of the globe to conduct air policing of the Empire *inter alia*: British Somaliland, in 1920, under the auspices of 'Z Force' seeking to quell Dervish State uprisings; to Iraq where, following the 1921 Cairo Conference, the Royal Air Force was made responsible for both internal and external security; and also in Afghanistan and the North West Frontier in support of the political officers. These early examples of expeditionary operations where air power was used to police large ungoverned spaces and support the political process in a cost effective manner have clear resonance for contemporary operations. Then, as now, exploitation of air power's agility, adaptability, reach and responsiveness permitted the deployment of much smaller ground forces to achieve the same political ends. This expeditionary mindset and an ability to influence events from the tactical to the strategic underpin the use of air power in warfare. The means by which air power is applied has changed considerably through the exploitation of technology and our investment in research and development, but the fundamental tenets remain largely unchanged.

The Journal closes by reproducing some of the key documents which contributed to the debate as the compelling case for a fully independent air force was repeatedly articulated. Mr Chamberlain attempted to lay the debate to rest in the House of Commons on 16 March 1922, but it was the publication, in 1923, of the Report by the Sub-Committee of the Committee of Imperial Defence on National and Imperial Defence, 'The Salisbury Report', which finally confirmed that an independent air force was here to stay.

While this 95<sup>th</sup> Anniversary Special Edition only scratches the surface of the Royal Air Force's rich history it does act as a primer for our centenary in 2018. Over the next five years much more primary source material relating to the history and experiences of the Service will be made more widely available by the Royal Air Force Centre for Air Power Studies in order to facilitate the study of air power and to recognise the central role that the Royal Air Force has played in its development and delivery.

Like my predecessors, I recognise that the true essence of air power lies within its airmen and women and I strongly believe that, it is my responsibility, as the Chief of the Air Staff, to promote the intellectual development of current and future generations of air warriors. As a Service and as a nation we owe much to the early visionaries, military, politician and industrialist, who saw the potential of air power and strove unwaveringly to see it realised. In many ways, this Journal is their story as much as it is the Royal Air Force's and I commend it to you.





# Father of the Royal Air Force

## **Sir David Henderson, Father of the Royal Air Force**

By H.A.Jones, M.C.

Sir DAVID HENDERSON, who has been described by Lord Trenchard as the Father of the Royal Air Force, was born at Glasgow on the 11<sup>th</sup> of August, 1862.

Henderson went to Clifton Bank School, St. Andrews, where one of his contemporaries was Sir Douglas Haig. From Clifton Bank, he went to Glasgow University and studied engineering under Lord Kelvin who recognized the promise in him and gave him special facilities. The technical knowledge which Henderson absorbed from Lord Kelvin was to bear fruit in later years.

He passed through Sandhurst and was gazetted, in 1883, to the Argyll and Sutherland Highlanders. He joined his regiment at Capetown and it was not long before he was on active service. In the spring of 1884, unrest in Zululand came to a head with an attack on the native police at Etchowe. The Argylls were promptly ordered up-country. In a fort in the Zulu hills Henderson's career nearly came to a premature end. He was resting in his tent one afternoon when a bullet passed a few inches above his head. It had been fired from a neighbouring tent by a servant who was cleaning a revolver.

In September, 1884, Henderson took part in the march on M'Kondo, the fastness of the Usutus, and he was present when the rebel leaders tendered their submission. With the end of the unrest in Zululand, the Argylls went to Ceylon, where they remained three years. For much of the time while his regiment was in Ceylon, Henderson was attached to the Royal Engineers to help in the building of bridges and forts. The Engineers reported on the high qualities of his technical knowledge and they pleaded for the retention of his services when the time came for the Argylls to leave the island. He was allowed to stay on for six months, after which he rejoined his regiment at Hong-Kong. He was given a great welcome on his return, which can be understood from the description of him, by his Commanding Officer, as "the life and soul of the battalion".

Early in 1892, the Argylls finished their tour of foreign service and returned home to Edinburgh Castle. Henderson had been away nearly nine years. He was hardened by his service abroad, his character had acquired poise, and he had absorbed much diverse experience. He was in fact, ready to benefit to the full from a course at the Staff College.

He graduated from Camberley in 1896 and was at once given a staff appointment at the War Office. He joined the newly formed Mobilization Section which dealt with the multitudinous details connected with the rapid movement of troops on a declaration of war. The officers in the Section had to survey the whole British Army and to know the strength and war requirements of every unit, and it is significant that most of the officers who passed through the Section, in its early days, achieved high command. They included Sir John Cowans, Sir

Gerald Ellison, Sir John Clawson, Sir James Wolfe-Murray, and Sir Edward Codrington. In 1898 there came a request for reinforcements for the Sudan, where General Kitchener was moving towards the Battle of Omdurman. A second brigade was made up to take part in this battle, and the command of it was given to Brigadier-General Neville Lyttleton, who was Henderson's chief in the mobilization section. General Lyttleton was anxious to give his subordinate further opportunity of active service and took Henderson with him as his aide-de-camp. On the 1<sup>st</sup> of September, 1898, the troops were within sight of Omdurman and next morning the dervishes made their attack. "They came on," said Henderson in a letter, "about 6.30 and our artillery opened at 6.45. Then followed the most awful massacre of these gallant fellows. They came on in excellent order, about 40,000 of them, and were mowed down in heaps by our fire....."

The remnants of the dervishes were left to the cavalry, and the troops marched in to Omdurman. By November, Henderson was back at the War Office and was promoted to brevet-major. In the early summer of the following year, 1899, he was away again on a special intelligence mission to South Africa and he moved freely about the country before October, when the Boer War began.

He was then appointed Intelligence Officer on the staff of Sir George White, the Commander-in-Chief in Natal, and he was one of the besieged garrison in Ladysmith. But he would not lightly accept enforced inactivity and he organized a band of adventurers into a corps of guides. He sent his men out for days at a time to watch and report on the enemy dispositions, and he himself accompanied them on their more hazardous enterprises.

He was appointed brevet Lieutenant-Colonel and, as head of the Intelligence on Kitchener's head-quarters staff, became the right-hand man of the Commander-in-Chief. He entirely reorganized the Army intelligence system, on a centralizing basis, and the intelligence organization of 1914 was the natural development of the scheme which he initiated in South Africa.

After articles of peace were signed, in May 1902, Henderson stayed behind to help Lord Milner, who became Governor of Transvaal. In May, 1903, he was back at the War Office and at once set about incorporating the lessons of his intelligence experiences in South Africa in a text-book. This book, *Field Intelligence*, published officially in 1904, greatly increased his military reputation. By the time it appeared, he had been given an appointment on the staff of the First Corps and he continued to fill various staff appointments until 1907, when he became staff officer to Sir John French, the Inspector-General of the Forces. He had just consolidated his military reputation by producing his book on *The Art of Reconnaissance*, which came into wide use in the Army for Infantry training.

In 1909 he accompanied Sir John French on a tour of inspection to India and the outskirts of the Empire. In the spring of 1910, he was home again, but went away almost at once on another tour through Canada.

Early in 1911, when he was back in England, the wound he had received at Ladysmith began to bother him. An operation was performed and he went to Harrogate to recuperate, and his stay there probably changed the course of his life. One day, an aeroplane, competing in the round-Britain air race, was forced down in a field near the hotel in which Henderson was staying. He walked across and had a long talk with the pilot, and there is little doubt that from this conversation grew his resolve that he would learn to fly. Reconnaissance was his pet subject and he must then have realized, if he had not done so already, that the aeroplane had profoundly changed the science of military intelligence. And there was the added lure that flying in those days was an adventure of the kind which he loved. So when he was fit again, he enrolled as a student at the Bristol Flying School at Brooklands. So that he should get no special treatment he gave his name as Henry Davidson, and because work had accumulated at the War Office he robbed his sleeping hours and was ready at the aerodrome before dawn each morning. He was taught by Mr. Howard Pixton, described by his instructor as a born flyer.

When it became known in the Army that David Henderson had qualified as a pilot, the news came like a tonic draught to those Army officers who were taking an interest in aviation. In this same year, 1911, the Air Battalion of the Royal Engineers was formed. The object was to create a body of expert airmen for duty with the Army, but the Government soon realized that something bigger was needed, and they decided to explore the possibilities of a special aviation service. A sub-committee of the Committee of Imperial Defence was entrusted with the investigation, under the Chairmanship of Colonel the Right Hon. J.E.B. Seely. The scheme by which the Royal Flying Corps was formed was actually drawn up by three members of the sub-committee, Brigadier-General Henderson, Major D.S. Innes, and Captain F.H. Sykes. Henderson, as was his nature, put his whole heart into the work. He travelled the length of England to inspect every civilian aerodrome and flying school, and he explored Salisbury Plain until he had chosen what seemed to him the best site for the proposed military school – afterwards known as the Central Flying School.

The sub-committee report, ready in February, 1912, was approved, and the Royal Flying Corps came into being on the 13<sup>th</sup> of May, 1912.

Henderson went back to the War Office and, on the 1<sup>st</sup> of July, was given a brilliant appointment. He was made Director of Military Training and thus became responsible for the Army's training at a critical period. The new branch of aeronautics came under his supervision and he specially watched and fostered the development of the service which he had done so much to create. He was a member of the Air Committee, a consultative body charged with the duty of co-ordinating the air policies of the Navy and of the Army. The importance of service aviation grew so rapidly that, in August, 1913, the Government decided to create a new branch at the War Office to handle the whole business of military flying. This branch was called the Military Aeronautics Directorate, and, to mark the status of the new department, Henderson was transferred from Military Training and became Director-General of Military

Aeronautics. The new branch had in it the germs of the eventual Air Ministry, for it acquired, for aircraft, all the powers normally divided between various War Office departments.

When war came, Sir David Henderson (now a Brigadier-General and a K.C.B.), went to France in command of the Royal Flying Corps in the Field. It is not difficult to imagine the quality of his thoughts. He had been responsible for the intelligence side of the army's activities in the later stages of the South African campaign. For many years since he had studied the art of reconnaissance. He was now going into a European war in command of a new and untried force on which might depend, so far as any man could foresee, the fortunes of the campaign. The work of the Royal Flying Corps in those early days is sufficiently set out in the first volume of the official history, *The War in the Air*. In the anxious and strenuous days which followed the German attack at Mons, the Royal Flying Corps officers kept watch on the attempted enveloping movements of General von Kluck. As they landed with their reports, Henderson telephoned the information to General Headquarters. When he judged the news to be vital, he would make a personal visit to headquarters to impress its importance on the General Staff. The value of this early work is now a matter of history and the testimonies of Marshal Joffre and of Sir John French are on record. Looking back, with full knowledge of the later war developments of the Air Service, it can be definitely stated that the Royal Flying Corps reconnaissance reports brought back during the retreat from Mons reached a very high standard. They give the impression that they were written by officers who had a lively appreciation of the tactical situation and, as a whole, are eloquent of the careful and well-directed training which the pre-war squadrons received.

Towards the end of 1914, the War Office made a tentative proposal which, had it been accepted by Sir John French, would have reduced the status of the Royal Flying Corps and must, almost certainly, have retarded its growth. This proposal, arising out of demands by Sir John for extra squadrons, was that Wings, grouping three or four squadrons, should be allocated direct to army commands in the same way as army or divisional troops. Under such an arrangement a Royal Flying Corps Headquarters would be unnecessary and could be disbanded. All that would be needed would be a senior officer on the Staff of the Commander-in-Chief responsible only for the maintenance of the Air Service. Sir David Henderson foresaw what the effects of such a re-organization would be, and he used all of his great influence with Sir John French to resist it. He won the Commander-in-Chief's support but, although the proposal was not put into effect, the War Office expressed their doubt whether, when the Wings had got to work, there would be room for a General Officer Commanding the Royal Flying Corps.

Henderson had been promoted a Major-General on October 26<sup>th</sup>, 1914. The War Office view seemed to be that the Command of the Flying Corps was not big enough for an officer of his seniority and achievement. On November 22<sup>nd</sup>, therefore, Sir John French appointed him to the command of the 1st Division. But the War Office had, apparently, reckoned without Lord Kitchener. When the Secretary of State for War came to hear of Henderson's departure,

he refused to accept it as fact. "I want Henderson in command of the Flying Corps" he told Colonel Branker, "and if he thinks it isn't big enough, you can tell him I'm going to have a lot of generals in it before I'm finished." Lord Kitchener continued to act as though Sir David Henderson still occupied his old position, and in the end Kitchener had his way. Henderson was relieved of his infantry command on December 21<sup>st</sup>, 1914, and returned to the Air Service with the title of General Officer Commanding the Royal Flying Corps, and all idea of curtailing the duties or status of the R.F.C. headquarters was abandoned.

The next eight months of his command in France was a time of wide-spread growth in the activities of the squadrons. He encouraged his officers to experiment in everything likely to be of help to the army, and he used his influence with senior army officers to convince them of the many directions in which the Royal Flying Corps could be of use. By August 1915, many future needs of the air service had been defined. Air photography and wireless co-operation with the artillery had got beyond the experimental stage; air fighting had begun, and the need for squadrons equipped with fast fighters, fore-shadowed; the supply of bombs and special bombing aircraft must be pressed forward; and, finally, wide problems of recruitment and training had been opened up by the expansion of the Service. Sir David Henderson judged the time had come when he must give up the command in France and go to the War Office to take full control of the development of the service. He was reinforced in his decision by the knowledge that in Brigadier-General Trenchard the Flying Corps in France would have a chief endowed with rare and outstanding qualities of leadership. On August 19<sup>th</sup>, therefore, he resumed his War Office appointment as Director-General of Military Aeronautics.

The difficulties which he had to face during the next two years cannot be set out in the space of a brief article. The problems must often have appeared insuperable and must have crushed a lesser man than Sir David Henderson. He worked long hours. He had the sensitiveness of a fine nature, and his single-hearted devotion to his task, during these anxious years, undoubtedly undermined his strength. "His counsels on the first Air Board under Lord Curzon in 1916" said Sir Sefron Branker, who worked with him at this time, "and the Second Air Board under Lord Cowdrey in 1917 were of infinite value, and were a potent factor in the steady development towards the creation of the Royal Air Force under an independent Air Ministry. By the frankness of his statements and his almost furious opposition to the machinations of self-seekers and self-advertisers, he earned for himself a not inconsiderable group of enemies and detractors, by whose instigation various criticisms were levelled against him in Parliament, in the Press, and in private. They carried no weight, however, with those who really knew him, and in the Pemberton-Billing enquiry, held by the Government in 1916, he vindicated his policy on every debatable point, and established a reputation for clear-mindedness and ability in legal debate such as has seldom been attained before by a simple soldier."<sup>i</sup>

An example of the unfairness of the attacks made on him may be quoted. By his direction, and in accordance with British Military traditions, the crews of Zeppelins destroyed over

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<sup>i</sup> The Aeronautical Journal, September, 1921.

England were buried with formal military honours. For this act of simple decency he was assailed in many quarters, and he was the recipient of anonymous letters of abuse.

In the summer of 1917, public opinion was strongly in favour of a separate air service. The two Air Boards, more particularly the second, had done much to solve the problems of aircraft supply, but the instructed public were not satisfied. Dissatisfaction came to a head as a result of the daylight aeroplane attacks on London in June and July, 1917. Sir David Henderson had never ceased to be aware of the evils of divided control. The original conception of a Flying Corps common to the Navy and the Army, and divided into naval and military wings, was his. In July, 1917, after the second daylight attack on the capital, the Prime Minister (Mr. Lloyd George) and General J.C. Smuts began an exhaustive examination of the whole air organization. The judgement and influence of Sir David Henderson at this critical time are clear. In a masterly paper, dated July 17<sup>th</sup>, 1917, he reviewed the problem in great details and marshalled the arguments for the formation of a complete united air service, "dealing with all operations in the air, and with all the necessary services which that expression implies."

In the middle of August, 1917, General Smuts made his report, in which he advocated the amalgamation of the two air services. The proposal was accepted, in principle, by the Government, and an Air Organisation Committee was set up, under the Chairmanship of General Smuts, to work out the plans. Sir David Henderson was relieved of his appointment at the War Office so that he might give the whole of his time and thought to the creation of the Royal Air Force. Many of those who recognised the need of a separate service, believed that such a revolutionary step could not be carried through in a time of war. It was said that Sir David Henderson had under-rated the difficulties. The event was to prove that he recognized them, measured himself against them, and knew in his heart that he could meet and overcome them. So with a great faith he went ahead. He spent himself in committee for long hours and continued his hard work into the night in the quiet of his home. It may be that his labours at this time, quiet and non-spectacular as they were, represent his outstanding claim to the gratitude<sup>ii</sup> of his countrymen.

The plans were ready before the end of October, 1917, and the Bill creating the Royal Air Force was passed by Parliament in the following month. The first Air Council was formed on the 3<sup>rd</sup> January, 1918, with Sir David Henderson as Vice-President and Sir Hugh Trenchard as Chief of the Air Staff. The Secretary of State for Air and the President of the Air Council was Lord Rothermere. So well had the Air Organization committee worked, and so wisely were the processes of amalgamation directed, that the Royal Air Force came into being on the 1<sup>st</sup> April, 1918, quietly and without any of those dislocating effects on operations which had been so freely predicted.

But on the Air Council itself there were difficulties. Differences of opinion arose between the Chief of the Air Staff and Lord Rothermere. General Trenchard resigned and Sir David

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<sup>ii</sup> "Gratitude" – La Rochefoucauld's definition of "gratitude" – "It is a lively sense of favours to come"



Henderson shortly did the same. It was not long before Lord Rothermere himself resigned but by that time Henderson had gone, and the air service knew him no more. There is tragedy in his departure, at that time, and in those circumstances, from the service to which he had devoted the best and ripest years of his life. He left his friends and went out into the wilderness, where he was to receive a crushing blow. In June, 1918, his only son, Captain Ian Henderson, who had won honours as a fighting pilot in France, was killed in a flying accident at Turnberry.

The War Office welcomed his services once more. During the peace negotiation, he served as a Military Counsellor in Paris.

In June, 1919, he was given a task after his own heart. An American, Mr H.P. Davidson, had conceived the idea of grouping all the various Red Cross Societies for a world campaign against disease. The League of Red Cross Societies was founded at Geneva and Sir David Henderson was appointed Director-General. Thuswise did he consecrate his last days to his fellow-men. At Geneva, in August, 1921, he died.

The reputation of Sir David Henderson will increase with the passage of time. His qualities were of the knightly kind that may well set up a legend. He was a natural soldier, a good friend, and an unflinching but chivalrous enemy. He was greatly ambitious, not for himself, but for his service. He was a master of a wit so subtle and profound as to be kin to wisdom, and the clarity of his vision was such that trials and difficulties by the way left him unperturbed. Something of his personality is impressed on the structure and on the traditions of the Royal Air Force, and it is well and just that he should be remembered.

Transcribed by RAF CAPS from original held in the Henderson Papers, RAF Museum, Hendon.

An electronic version of this document is available at:

<http://www.airpowerstudies.co.uk/apps/documents/>

Kensington 3362

141 Cranmer Court,  
Sloane Avenue,  
London SW3

7<sup>th</sup> October 1954

Dear Lady Henderson,

It is a long time since I wrote to you, but I was rather perturbed the other day when I saw the obituary notices for Sir Frederick Sykes, and I talked to several people about them.

The obituary notice in The Times read as though he was the 'Father of the R.F.C.' and took it to France in 1914, whereas he was, as you know, a junior Staff Officer to Sir David Henderson.

Sir David was the man whose influence at the War Office, and his great strength of character, made him the power in Air matters that he was.

I saw Sir Edward Ellington and he agreed with me about Sir David's part in the formation of the Royal Air Force, and he wrote the attached letter to The Times, with which I am in complete agreement. I thought you might like to see it, and he is willing that you should, as The Times so far has not published it.

Unfortunately, I cannot see to read or write now, so you must excuse a dictated letter.

With all good wishes to you.

Yours sincerely,

TRENCHARD





Lieutenant General Sir David Henderson

## Lieutenant-General Sir David Henderson: Forgotten Father of British Air Power?

By Doctor David Jordan

Sir David Henderson's name is not widely-known, yet, there is good reason to suggest that he deserves much greater prominence, since he might reasonably lay claim to being the 'father of the RAF' (as Viscount Trenchard argued, disclaiming that description for himself) and possibly even the man who did most of the work that led to the birth of British military aviation. Dr John Bourne, the former Director of the Centre for War Studies at the University of Birmingham, described him as 'one of the most under-estimated British soldiers of the Great War.'<sup>1</sup>

Henderson was born in Glasgow in 1862, the son of a prominent Clydeside ship-builder. A talented child, Henderson went to Edinburgh University aged only 15, but did not graduate, instead choosing to go to Sandhurst rather than complete his degree in engineering. He commissioned into the Argyll and Sutherland Highlanders in 1882, but carved out a notable career in the field of intelligence. He served as Staff Captain (Intelligence) in the Sudan between 1897 and 1898, and then served as Lord Kitchener's Director of Military Intelligence during the Boer War. Henderson reflected upon his profession and wrote two books which, although largely forgotten today, confirmed his reputation as the most notable expert on tactical intelligence within the Army.<sup>2</sup> The first of these books, *Field Intelligence: Its Principles and Practice* (1904) was followed by *The Art of Reconnaissance* in 1907. In the first edition of the latter book Henderson observed that developments in aviation might be of value for the gathering of information; by the time of the third edition (1914), Henderson had expanded the book to include a speculative chapter on aerial reconnaissance, noting in the preface:

A book on reconnaissance, in which the possibility of aerial scouting are not considered, must be classed as obsolete; and yet, in this new field, experience is so limited and progress is so rapid, that any dogmatic pronouncement on military aeronautics would, at this stage, have no permanence and little value'<sup>3</sup>

By the time that he wrote this, Henderson's interest in aeronautics had seen him learn to fly in 1911 - at the age of 49, he was then the world's oldest pilot. He had also served on the sub-committee of the Committee of Imperial Defence which had laid the ground for the formation of the Royal Flying Corps (in its original state as what we would now term a joint organisation, with military and naval wings designed to meet the aeronautical needs of the Army and Royal Navy respectively), and in 1913, was appointed as the Director General of Military Aeronautics. Although it was not intended that Henderson should command the RFC Military Wing in war, he led the formation to France in 1914. This left handling aeronautical matters to Major William Sefton Brancker, who found himself all-too frequently ignored when arguing the RFC's case. He urged Henderson to return to London, but it soon appeared that Henderson would be lost

to the service entirely, when he was given command of 1st Division. This brought promotion to Major-General, but the appointment was overturned by Field Marshal Lord Kitchener, who considered Henderson too valuable to the RFC. Henderson continued a peripatetic existence between France and London, attempting to assuage Branker's concerns by frequent visits to the War Office. Henderson's health was not improved by this, and he was frequently unwell during 1915. He finally succumbed to the need to base himself permanently in London, and in August 1915 command of the RFC in France passed to Brigadier-General (later Marshal of the Royal Air Force) Hugh Trenchard. Henderson then fought the RFC's corner in London, becoming increasingly frustrated with the inability of the army and navy to cooperate over seemingly any aspect of air power, and the failure of half-hearted attempts by the government to impose some semblance of order over the two warring parties.

Henderson was thus in prime position to influence General Smuts when he was commissioned to conduct his investigation into the organisation of British air power. Henderson's advice played a considerable part in Smuts' decision to recommend the creation of an independent air service, but he was not to play a major part in the body he had done so much to help create. Although appointed as Vice-President of the Air Council in January 1918, he resigned following the appointment of Sir Frederick Sykes as the Chief of the Air Staff in the aftermath of Trenchard's resignation from that post when it became clear that he could not work with the new Secretary of State for Air, Viscount Rothermere. Returning to the Army, Henderson became an area commandant, before leaving military service to take charge of organising the League of Red Cross Societies, based in Geneva. He died suddenly in August 1921. Henderson's obituaries pointed towards the regard in which he was held, but his contributions to the development of British air power have tended to be overshadowed by the work of Trenchard and Sir Frederick Sykes, leaving him as something of a forgotten man, a rather undeserved fate for someone who was so closely involved with the early years of British military aviation.<sup>4</sup>

## Notes

<sup>1</sup> <http://www.birmingham.ac.uk/research/activity/warstudies/research/projects/lionsdonkeys/d.aspx>

<sup>2</sup> Alfred Gollin, *The Impact of Air Power on the British People and their Government 1909-1914* (London: Macmillan, 1989), pp.197-198.

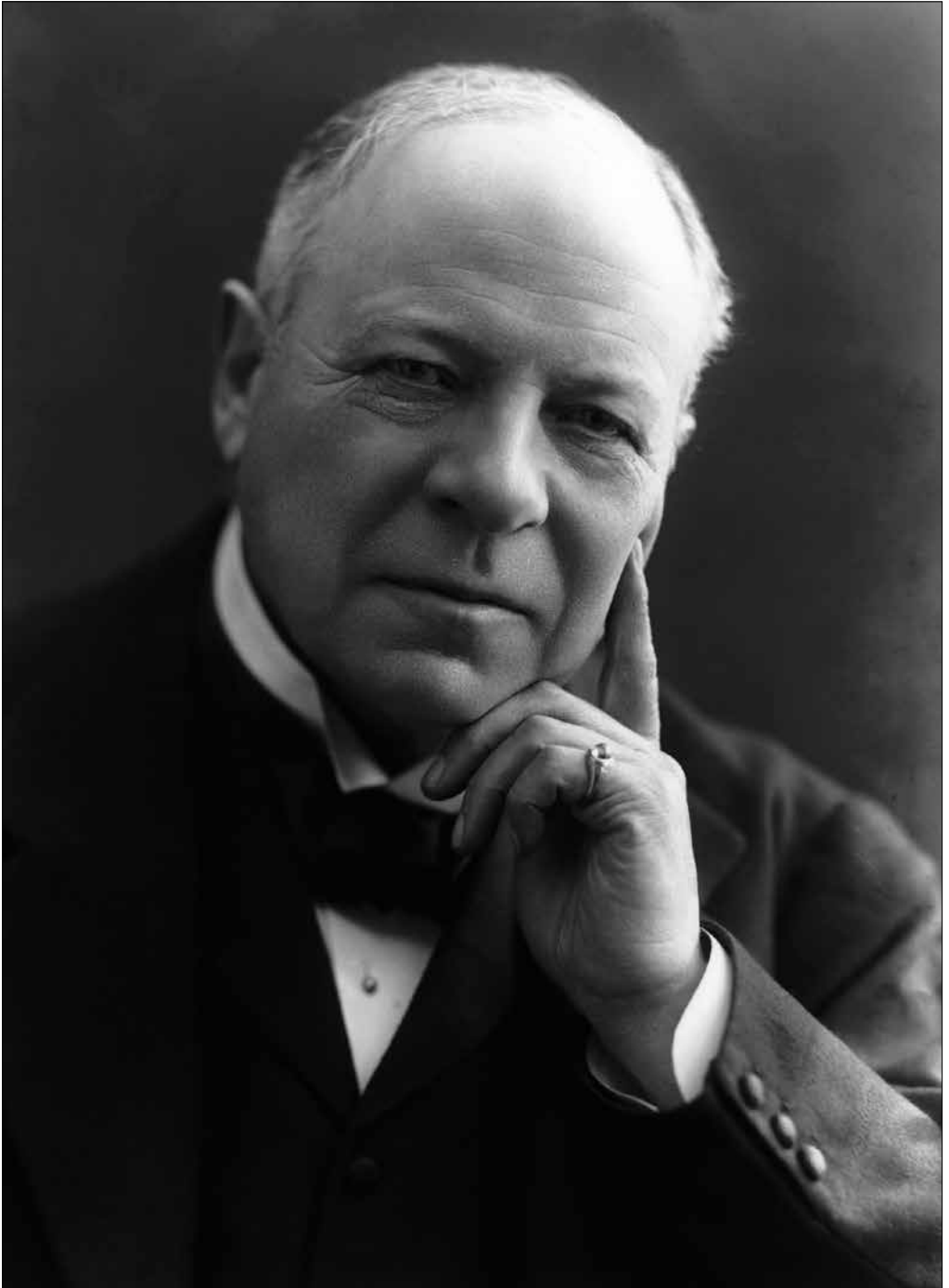
<sup>3</sup> David Henderson, *The Art of Reconnaissance* (London: John Murray, 1914, 3rd Edition), p.iii.

<sup>4</sup> There has been some recent interest in Henderson's career – see Francois Prins, 'Forgotten Founder' in *The Aeroplane*, April and May 2012, pp.60-63 & 36-38 respectively.



# **Birth of British Military Aviation**





Richard Burdon Haldane, Viscount Haldane  
Artist (Bassano), credited: © National Portrait Gallery, London

## Naval and Military Aeronautics

*HC Deb 02 August 1909 vol 8 cc1564-617*

Motion made, and Question proposed, "That a sum not exceeding £36,464, including a supplementary sum of £6,500., be granted to His Majesty to complete the sum necessary to defray the charge which will come in course of payment during the year ending on the 1<sup>st</sup> day of March, 1910, for sundry grants in aid of scientific investigation, etc., and other grants."

*The SECRETARY of STATE for WAR (Mr. Haldane)*

The Vote is a civil one, but it touches the Departments of the Navy and the War Office, and it is impossible to segregate the scientific elements in the Vote. In the discussion of the Vote, therefore, a little latitude should be allowed so that we may travel over the general field. This is the more necessary because the subject is such a new one. The Committee will be interested to know what progress has been made in aeronautics as applied to war purposes, and the answer must be from the very nature of the subject—not very much. There has been certain progress, and it will be found to be more substantial than it appears at first sight. I do not believe that so far that department of the subject with which this House is primarily concerned—the service of defence—any very rapid progress is being made all over the world. Great strides are being made, in the preparation of machines, but it is not enough to make machines that will fly, whether dirigibles or aeroplanes. They must be machines which can be made available for the purposes of war, and the difficulties which surround us are still so great that progress can only be made after exact and careful study and by the adaptation of inventions as they are brought forward to the peculiar conditions which must be fulfilled if effectiveness in war is to be secured. I only remind the Committee that, in war there is very little use for anything unless it can be applied with some certainty, that it would do what we want it to do, and unless you have some exactness in results. Now that stage has not been reached, and that has an important bearing on what I am going to say. The Prime Minister and the First Lord of the Admiralty some time ago asked me to take in hand the general consideration of the principles which underly this Vote and the devising of the machinery which should be called into existence, and after some study I made up my mind that there could be no real progress unless we proceeded scientifically and in order; that is to say, unless we were perfectly clear about what we wanted and as to the structure of the machines which were to be used to fulfil the purposes in view and the production of them in a way which would be at least effective. But I know that that is a very slow process. It is very damping to some ardent spirits, and yet I am sure that in the long run it is the best way of going. Accordingly, the first thing we did was to ask the Committee of Imperial Defence to investigate the subject, and to discuss it with the technical sub-Committee, which could take evidence and go into matters. That the Committee did, and they proceeded rapidly. We had the Report in a comparatively short time. The Report was to the effect that the class of machines must be divided into three heads—rigid dirigibles, non-rigid dirigibles, and aeroplanes. These belong to different spheres. For Naval purposes the rigid dirigible

is probably the only instrument of the kind that is of real value—at any rate, in the present state of knowledge. It may be quite different in twenty years, or even ten years' time, but I am talking of present conditions. For the Army the rigid dirigible has certain disadvantages. It is more difficult to turn, bring back, and bring to rest. It is more difficult in the Army than the Navy, and, therefore, in this matter we can only proceed tentatively, and it seems that the non-rigid dirigible is best for Army purposes. The aeroplane may become available for the Army, but at present there are certain defects. It will have to rise much higher before it can be safe for reconnoitring, and great strides will have to be made in the control of its flight. The remarkable events of the last few days—M. Blériot crossing the Channel, and other things that have been accomplished in the United States, and elsewhere—all point to this, that at some time hereafter the aeroplane will be an instrument which will be capable of effecting in all probability great results. But that is not so at the present moment, and even if the British Army had 200 aeroplanes of the best present construction we should not be one bit further on than we are at the present moment.

That being so, obviously there is a great deal of scientific investigation to do. We distribute that work by assigning to the Navy the investigation and, in a tentative way, the construction of the rigid dirigible. To the Army has been assigned the work of experimenting with non-dirigible machines of varying type, and also with aeroplanes. But the Committee of Defence reported that the non-dirigible was a long way further on, and much nearer being of use than the aeroplane at present, and, therefore, we set ourselves under the obligation to give our first attention to the non-rigid dirigible. But, in order to work these things out, it was necessary to get a great deal of knowledge. From what I have said it will be obvious that you cannot go fast in this matter. You must feel your way and make experiments. Another thing which is obvious is that what is being done in other parts of the world includes to a large extent in this class of work investigations which are available for everybody. Flying machines, whatever forms they take, are very simple machines, and you cannot keep secret very long any advance that has been made in their construction. Moreover, private inventors have been largely at work, and I doubt whether any machine which the Government possess would retain its secret for more than a very limited time. Therefore, I cannot say that I feel much concerned over what is a fact, that in this country we have not made the amount of initial progress that has been made in Germany, France and, perhaps, in the United States. But I reflect that much the same thing was true of submarines. To-day, by our scientific procedure and by the work that has been done in the Admiralty, we stand, it is no exaggeration to say, at the head of the world as regards submarines. Then again, in motor cars also we were behind. I am no expert in motor cars, but I know enough to have a strong impression that if we are not up to the best Continental countries in every way, we are getting very near it in the construction of motor cars. Therefore, being more or less responsible for this matter, I felt myself able to advise my right hon. Friends that science should come first. I did not mean by that that we should not construct or experiment, but it did seem to be vital that the mass of scattered information that had been accumulated should be investigated in its scientific order.

For that purpose the Department constituted the Advisory Committee under Lord Rayleigh's presidency, on which the House knows it is not too much to say we have got some of the finest scientific training in the world. That Committee has held various meetings since it was appointed, and, of course, continuous work will be going on under its direction in the National Physical Laboratory. Meetings have been held there, and also at Aldershot and in the War Office, and in a moment I will tell the House some things on which the Committee has agreed. The Committee is not intended to construct. It is appointed to advise. It is not even charged with the duty of investigation, but its purpose is to scrutinise investigations which are submitted to it in the course of the work of the Departments concerned; and it has also had to conduct systematic experiments and has had to be furnished with the proper apparatus for that purpose. I hope in a few days that the first Report of the Committee and its work—of course, it is only in a tentative state—will be made public; but I may tell the Committee, meantime, the general character of what has been done. One very important thing was, we should make systematic arrangements under this Committee for getting the fullest knowledge of what was going on in aerostatics all over the world. The Reports, some of them very technical and in different languages, had to be digested and collated, and observations had to be kept of what is going on in scientific periodicals and the publications of the Departments of State of the various Governments; all that is being done. The work of anybody dealing with this subject of aerostatics is becoming more and more scientific in character. I went over not long ago to my old University at Gottingen, and I found there a chair which has been founded by the German Government, of which the standard of technical knowledge was so high that no student was admitted to the lectures who was not capable of devoting his whole attention to aerostatics. That is a rather heavy demand, but one cannot keep abreast of these things unless one has a very high theoretic knowledge as well as practical experience. The two must work together; and the Committee that has such men as Lord Rayleigh and Dr. Glazebrook upon it, and such men on the practical side as Mr. Lanchester and Mr. Mallock, and others, like Professor Petavel and Mr. Shaw, and also such high authorities on the Army and Navy side as Major-General Hadden and Admiral Bacon, is a Committee which is well furnished from the various points of view.

Accordingly this Committee has been at work, and the first thing they have done is to determine the general questions which should be studied. There have been memoranda by the experts on stability, screw propellers, wind structures, petrol motors, light alloys, and a very difficult thing which has arisen in connection with balloons, the accumulation of electro static charges on balloons. Everybody knows what a peril electricity is in the air. And the Committee have mapped out the general field of their work. There are certain very general questions in aerodynamics which are very technical, and with which I need not trouble the House, questions specially relating to aeroplanes, such as the mathematical investigation of stability, the effect of sudden action of gusts of wind, and half a dozen other things which are the subject of particular experiments. Then there are questions relating to these motors, which have to be of special construction for air work, and there are questions relating to airships and meteorology; because when you get up into the air you do not go up into a body

which behaves uniformly, but into an infinite variety of gusts and disturbances which makes it necessary that you should be prepared for a great deal that you do not think about when you are in safety on the earth below. That is the class of work which the Committee is doing. They have been furnished with a considerable scientific equipment already. There is a wind channel, and there is a whirling table; there are wind towers for experiments in the open; and there are other apparatus of a special character. Then the National Physical Laboratory already have a tank under construction for experimenting in ships' models, and that has been further adapted for this kind of work, and for which it will be very useful. The Committee has wisely entered into communication with the Aeronautical Society and the Aero League. The design of the Committee is to afford assistance to private inventors wherever this can be properly done, because we feel that progress will be not only a Government but a national matter. We hope that there will be close and friendly communications preserved throughout between the Government Advisory Committee and those bodies, to which it will render all the assistance in its power. One other matter I will mention. The private inventor is always a great anxiety. If he sends in his invention before he has taken out a patent he will be sure afterwards to say that you have helped yourselves to his idea. Moreover, it is not always clear that you have not done so, because it is impossible to learn a thing of this kind and then exclude it altogether from your brain. Consequently we are asking private inventors to cover their inventions by patent before they come to us, so that we may not incur undue odium. I told the Committee what the Advisory Committee is doing—the class of its work. Of course, it is in very close relation both with the Admiralty and the War Office. The Admiralty is concentrating, under Admiral Bacon—whose record in connection with submarines and deep diving and other highly successful enterprises I need not dwell on—on the building of a rigid dirigible of the very largest kind, at least the size of the Zeppelin. That is being built at Barrow-in-Furness by Messrs. Vickers. It is an engineer's business, and Messrs. Vickers, who are eminently qualified for this purpose, are working out construction in this matter together with the Admiralty. I hope the combination of experts and practical men may give us a practical result some time next spring. Anyhow, it will be a very large dirigible.

I pass to what the War Office is doing. The War Office, to begin with, is reorganising its factory at Aldershot. We are separating the instruction which is at present given to balloonists from construction, and we are at present preparing for construction of a very large shed to take in the very largest size of a dirigible. We have also ordered a gas-bag for balloons of considerable size, which I trust will serve some better purpose than that of merely advertising the existence of the balloon. Anyhow, that is coming from a firm abroad, who have had the special construction of these things, which we desire to possess, and we have a car and an engine which will be used for this particular dirigible. Then a very patriotic enterprise has been undertaken by two bodies, a Parliamentary Committee of this House and the "Morning Post." The "Morning Post" has collected a large sum, and proposes to present the War Office with a non-rigid dirigible. Then the Parliamentary Committee offered to put up a shed.

...

Discussion abridged

...


*Mr. HALDANE*

The Committee who are making special investigation into the question have relegated aeroplanes for the practical purposes of war to a much inferior position to that at present occupied by the dirigible airships, whether rigid or unrigid. The War Office and the Committee who have charge of the aeroplane question are not losing sight of the matter; on the contrary, as I have said before, through the instrumentality of two gentlemen, very distinguished in the aeroplane world, we are to be put in possession of two machines in a very short time. They will be lent to us for experimental purposes, and we propose to work them. If we find that progress is made with them we shall acquire them, or others. We are not overlooking the matter. But the aeroplane will have to fly much higher and with much greater security before it can be used for war purposes. It is in a very different position in that respect from the dirigible balloon.

Vote agreed to.

[http://hansard.millbanksystems.com/commons/1909/aug/02/naval-and-military-aeronautics#S5CV0008P0\\_19090802\\_HOC\\_127](http://hansard.millbanksystems.com/commons/1909/aug/02/naval-and-military-aeronautics#S5CV0008P0_19090802_HOC_127)

accessed 23 Jan 2013

Register No.	87/644		Minute Sheet No.
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①

At a Meeting in the Secretary of State's room today, at which S. of S., A.G., M.G.O., and C.M. were present, the question of the inauguration of the New Military Wing of the Air Corps was discussed.

It was decided that a Committee, consisting of the following Members, should be formed to consider the administrative questions which must be settled before an announcement on the subject can be made in Army Orders.

CHAIRMAN.

Brigadier General D. Henderson, C.B., D.S.O.  
(if the Inspector General of the Home Forces can spare him)

MEMBERS.

An Officer from the Directorate of Military Training.  
An Officer from the Directorate of Recruiting and Organization.  
An Officer from the Directorate of Fortifications & Works.  
A representative of the Finance Department.  
A representative of the Admiralty.

This Committee is to recommend what arrangements are necessary in order that an Army Order may be published as soon as possible, and subsequently to deal with the steps to be taken to carry out the provisions of the Order.

H.C.  
8. 3. 1912.

(Signed A.G.M. 8.3.12)  
Asst. Secretary. ②

Will you kindly have arrangements made so that the Committee may meet with the least possible delay?  
F.C. Dorenschen  
8.3.12

[P.T. Over]

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Haldane Report Cover Sheet

## WAR OFFICE

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*Printed for the Committee of Imperial Defence. March 1912.*

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SECRET\*

139-B

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# REPORT OF THE STANDING SUB-COMMITTEE OF THE COMMITTEE OF IMPERIAL DEFENCE ON AERIAL NAVIGATION

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*2, Whitehall Gardens, SW  
February 29, 1912*

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\* Editor's note: The original protective marking is reproduced for completeness although this document is now UNCLASSIFIED.



## TERMS OF REFERENCE

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THE Prime Minister desires that the standing Sub-Committee of the Committee of Imperial Defence, composed for the purposes of this enquiry of the following Members:

Lord Haldane (*in the Chair*),  
The Right Hon W S Churchill, MP  
Colonel The Right Hon J E B Seely, MP, Parliamentary Under-Secretary of  
State for War,  
Lord Esher,  
Sir R Chalmers, Permanent Secretary to the Treasury,  
Vice-Admiral H S H Prince Louis of Battenberg, Second Sea Lord of the  
Admiralty,  
Lieutenant C R Samson RN<sup>†</sup>,  
Major-General Sir C F Hadden, Master-General of the Ordnance,  
Major-General Sir A J Murray, Director of Military Training,  
Brigadier-General D Henderson, General Staff,  
M O'Gorman, Esq<sup>‡</sup>,  
  
Rear-Admiral Sir C I Ottley (*Secretary*),

shall meet to consider:

- (1) The future developments of Aerial Navigation for naval and military purposes.
- (2) The measures which might be taken to secure to this country an efficient Aerial Service in war both as regards matériel and personnel.
- (3) Whether steps should be taken to form a corps of aviators for naval and military purposes, or otherwise to co-ordinate the study of aviation in the Navy and Army.

2, Whitehall Gardens, SW  
November 18, 1911

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<sup>†</sup> Since promoted Commander.

<sup>‡</sup> Added to the Sub-Committee at a later date.

SECRET

## REPORT

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THE Standing Sub-Committee of the Committee of Imperial Defence approve the attached Report by the Technical Sub-Committee, subject to the condition that the rates of pay (Part VII of the Report) and all financial considerations should be reserved for adjustment between the Departments concerned and the Treasury.

(Signed) HALDANE OF CLOAN (*Chairman*).  
WINSTON S CHURCHILL.  
J E B SEELY.  
ESHER.  
ROBERT CHALMERS.  
LOUIS BATTENBERG.  
C R SAMSON, Commander, RN.  
C F HADDON.  
A J MURRAY.  
DAVID HENDERSON.  
MERVYN O'GORMAN.  
  
CHARLES L OTTLEY (*Secretary*).

*2, Whitehall Gardens, SW*  
*February 28, 1912.*

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**REPORT**

**BY THE**

**TECHNICAL SUB-COMMITTEE**

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## TABLE OF CONTENTS

	PAGE
INTRODUCTORY REMARKS	1
PART I: Consideration of General Policy –	
Strategical considerations	2
General principles	3
General outline of the policy recommended	3
PART II: The Flying Corps –	
Functions	6
Conditions of Service	6
Conditions of Reserve Service	7
Emoluments	7
Aeroplanes	7
Remarks	8
PART III: The Central Flying School –	
Situation	8
Number and length of courses of instruction	9
Syllabus of the course of instructions	10
Numbers to be trained	10
Staff	11
Aeroplanes	12
Balloons	13
Building	13
Transport	13
Remarks	14
PART IV: The Naval Wing of the Flying Corps –	
Provisional organisation	14
Personnel	14
Aeroplanes	15
Sheds	16
Buildings, works, and land	17
Maintenance	17
The Eastchurch Aerodrome	17
Training programme	18
The use of airships for the Navy	18
PART V: The Military Wing of the Flying Corps –	
General principles of organisation	19
Administration	20
Fliers required for seven Aeroplane Squadrons	20
War establishment of an Aeroplane Squadron	21
Peace establishments	21
Distribution of Aeroplane Squadrons	22
Personnel	22
Seconding and enlistment	22
Aeroplanes	22
Sheds	23

	The use of airships for military purposes	23
	Captive and free balloons and kites	24
	Transport	25
PART VI:	The Aircraft Factory –	
	Functions	25
	British and foreign engines	25
	The Aerodrome, South Farnborough	26
PART VII:	Pay and Allowances of the Flying Corps –	
	Pay of Officers of the Flying Corps	26
	Pay of other ranks	28
	Rates of Pay for all ranks	28
	Pay of Officers under tuition at the Central Flying School	29
	Pay of the First Reserve	29
	Gratuities and Pensions of all ranks of the Flying Corps	30
	Gratuities and Pensions of Officers and other ranks under tuition	
	At the Central Flying School	31
	Pay of Civilians at the Aircraft Factory	32
	Uniform	32
	Miscellaneous recommendations	32
PART VIII:	Miscellaneous –	
	The use of private aerodromes for cross-country flying	33
	The encouragement of private enterprise	35
	Meteorology	35
FINAL OBSERVATIONS		36
	Schedule (A) –	
	War Establishment: Aeroplane Squadron. Military Wing of the Flying Corps (Provisional)	
	Schedule (B) –	
	War Establishment: An Aeroplane Squadron. Transport	
	Schedule (C) –	
	War Establishment: An Aeroplane Squadron. Distributed by Trades – Rank and File	

**SECRET**

**Report by the Technical Sub-Committee**

**INTRODUCTORY REMARKS**

At a meeting held on the 18<sup>th</sup> December, 1911, the Standing Sub-Committee of the Committee of Imperial Defence, which is enquiring into the future development of Aerial Navigation for naval and military purposes, agreed provisionally and tentatively to recommend certain broad principles regarding the future policy of the nation on this question (CID Paper AN 5). They concluded by delegating to a Technical Sub-Committee the task of elaborating all the details necessary to give immediate effect to the policy proposed, the actual terms of reference being as follows:

- (a) The establishment of the Naval Aviation Service (Naval Wing of the Flying Corps) .
  - (b) The establishment of the Military Aviation Service (Military Wing of the Flying Corps) ‡.
  - (c) The establishment of the National Corps of Aviators (Flying Corps) ‡.
  - (d) The staff and establishment of the State School of Aviation (Central Flying School) ‡.
  - (e) The arrangements proposed for housing the staff and personnel of the State School of Aviation (Central Flying School) ‡.
  - (f) The provision of aeroplanes for the Navy, the Army, the National Corps of Aviators (Flying Corps) ‡, and the State School of Aviation (Central Flying School) ‡.
  - (g) The provision of hangars (sheds) ‡ for the above.
2. The Chairman of the Standing Sub-Committee subsequently directed the Technical Sub-Committee to consider in addition the following question:
- (h) The use of dirigible balloons, captive balloons, free balloons, and kites in war, and the future organisation of the units devoted to any of these services.
3. In dealing with the questions referred to them the Technical Sub-Committee have endeavoured to adhere as closely as possible to the general principles provisionally adopted by the Standing Sub-Committee. The very detailed examination of each question which has been undertaken has, however, inevitably entailed in some cases modifications of these principles, and in others a clearer articulation of the policy proposed. Before setting forth their detailed recommendations regarding the several questions referred to them the Technical Sub-Committee consider it desirable to state clearly the general principles on which they have acted, and the general lines of the scheme adopted.

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‡ The Technical Sub-Committee have adopted the nomenclature given in brackets [342].

## PART I

### CONSIDERATIONS OF GENERAL POLICY

#### *Strategical Considerations*

4. The Sub-Committee have been impressed by the evidence which has been placed before them regarding the backward state of Aerial Navigation in this country, when contrasted with the progress made by other great naval and military Powers. To illustrate this, it is sufficient to mention that France already possesses about 250 efficient military aeroplanes, and 150 qualified military and 80 civilian flying men, in addition to several airships; Germany possesses 20 or 30 military aeroplanes, and there are in addition from 100 to 120 aeroplanes belonging to civilians in that country; there are besides some 20 airships in Germany; Italy possesses about 22 military aeroplanes; and these other countries are engaged in considerable developments of their aeronautical services. In contrast to this, Great Britain possesses less than a dozen efficient aeroplanes, and only two small airships, to meet the combined requirements of the naval and military services in time of war.
5. It cannot be maintained, however, that the necessity for an efficient aeronautical service in this country is less urgent than in the case of the other great naval and military Powers. The efficiency of the aeroplane for purposes of military reconnaissance has been proved both in foreign manoeuvres and in actual warfare in Tripoli, and the Sub-Committee have no hesitation in recording their opinion that aeroplanes have now become an important adjunct to the equipment of an army in the field.
6. The strategical and tactical uses of the aeroplane as an adjunct to the operations of a fleet cannot yet be forecasted with equal certainty, as the question depends largely upon the solution of the technical difficulties in rising from and alighting on a ship and in rising from and alighting on the water. It is clear, however, that the Royal Navy cannot afford to incur the risk of dropping behind other nations in this matter, and that every facility must be given for experiment and progress.
7. Apart from the purely naval and purely military uses of aeroplanes, however, there remains the question of their employment for coastal defence, viz, for use over water while operating from a base on land. For example, aeroplanes are expected to prove of the utmost value in connection with the operations of destroyers and submarine-boats employed on coastal defence, while for reconnaissance purposes over the sea their usefulness has already been demonstrated.
8. Whatever may have been the advantages of a policy of postponing the development of aeroplanes for naval and military purposes, and of leaving the pioneer work to private enterprise and to foreign nations, it is clear that no further delay can be permitted without the risk of placing our naval and military forces at a grave disadvantage in time of war. Now that aeroplanes have to a great extent passed out of the experimental stage, as regards their employment in warfare, an active and progressive policy has become imperatively urgent.

9. The Sub-Committee recommend therefore that, on grounds of naval and military policy, no time should be lost in giving effect to their proposals.

### ***General Principles***

10. In formulating the policy set forth in this Report the Sub-Committee have endeavoured to comply with the following principles:

- (a) The organisation adopted should provide establishments adequate for our present requirements, but must be sufficiently elastic to permit of considerable expansion in the future.
- (b) The organisation should be capable of absorbing and utilising the whole of the aeronautical resources of the country.
- (c) While it is admitted that the needs of the Navy and Army differ, and that each requires technical development peculiar to sea and land warfare respectively, the foundation of the requirements of each service is identical, viz, an adequate number of efficient flying men. Hence, though each service requires an establishment suitable to its own special needs, the aerial branch of one service should be regarded as a reserve to the aerial branch of the other. Thus in a purely naval war the whole of the Flying Corps should be available for the Navy, and in a purely land war the whole corps should be available for the Army.
- (d) It is important to give every possible encouragement to the development of private enterprise in aviation, and every inducement should be offered to flying men who do not belong to the Navy and Army to join the Flying Corps. Proposals in this respect, and with regard to encouragement for existing aerodromes, will be found in this report.
- (e) It is essential that all combatant officers in the Flying Corps should be practical flying men.
- (f) Experimental work in all branches of the Flying Corps should be co-ordinated.

### ***General Outline of the Policy Recommended***

11. The general outline of the scheme recommended by the Sub-Committee is as follows:

12. The British aeronautical service should be regarded as one, and should be designated "The Flying Corps".

The Flying Corps should supply the necessary personnel for a Naval and a Military Wing, to be maintained at the expense of, and to be administered by, the Admiralty and the War Office respectively. The corps should also provide the necessary personnel for a Central Flying School, and a reserve on as large a scale as may be found possible.



13. In order to arrive at any definite conclusions as to the strength and organisation required for the Flying Corps, and more especially for the Central Flying School, the Sub-Committee have found it necessary to work out in detail establishments for the Naval and Military Wings. Their conclusions are based on these calculations.

14. A Central School should be established for the training of flying men on Salisbury Plain, to be maintained at the joint expense of the Admiralty and War Office, and to be administered by the War Office. After graduating at the Flying School, flying men should become members of the Flying Corps, and should then be detailed to join either the Naval Flying School at Eastchurch for a special course of naval aviation, or one of the Military Aeroplane Squadrons for a special course of military aviation, or to pass into the Reserve of the Flying Corps.

15. The Naval Wing of the Flying Corps, entry to which should ultimately only be obtainable by qualifying at the Central Flying School, should for the present have its headquarters at the Naval Flying School at Eastchurch. It is impossible to forecast what its ultimate organisation and development will be, as this depends to a great extent upon the result of experiments, which are about to be commenced, with hydro-aeroplanes.

16. The Military Wing of the Flying Corps should consist at first of eight squadrons\*\*, entry to which should ultimately be confined to those who have qualified at the Central Flying School. The whole of these squadrons are required for use in connection with the Expeditionary Force. Expansion of the Military Wing will be necessary.

17. It is desirable that at present no establishment should be fixed for the Flying Corps as a whole, but only for the Naval and Military Wings, and these provisionally with a view to future expansion. The Flying Corps will be largely composed of officers and men who are not performing continuous service, and who are merely incurring an obligation and receiving a retaining fee on condition they keep themselves proficient. Many of them will probably be naval and military officers performing duty with their ships or regiments, and many others will have joined on conditions of service resembling those of the Special Reserve of the Army.

18. The mechanical requirements of the Flying Corps should be provided by the existing Army Aircraft Factory, to be renamed the Aircraft Factory. This establishment should undertake the following important duties: The higher training of mechanics for the Flying Corps and for the Central Flying School; the reconstruction of aeroplanes; repair work for the Flying Corps; tests with British and foreign engines and aeroplanes of the latest design; and experimental work.

19. The Aeronautical Advisory Committee should continue its experimental and research work on the present lines. The Sub-Committee desire to lay stress on the importance of the closest possible collaboration between the Naval and Military Wings, the Central Flying School, the Aircraft Factory, and the Advisory Committee. They recommend that an officer from the Central Flying School and an officer from the Naval and Military Wings respectively should be added to the Advisory Committee.

20. The Sub-Committee attach importance to the maintenance of private enterprise in the field of aeronautics in this country. The objects of this are not only to provide a reserve of flying

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\*\* Seven of these will be aeroplane squadrons, the eighth consisting of airships and kites.

men which may be drawn on in emergency, to stimulate invention, and to keep alive public interest, but also to provide aerodromes, landing places, and sheds at convenient intervals throughout the country, without which cross-country flights are almost impossible. The French Government rightly attach immense importance to cross-country flights, and offer every possible encouragement to those engaged in military aviation to undertake such flights. The Sub-Committee have received information to the effect that the majority of the private aerodromes will soon be in financial difficulties. They have included recommendations which, while contributing directly to the efficiency of the service, will, it is hoped, assist those private enterprises. These recommendations are (a) that for the present naval and military officers and all civilians, who are candidates for commissions in the Flying Corps, should first have to obtain their Royal Aero Club Certificate (in return for which officers should receive a remuneration of £75); and (b) that a small rent should be paid to the principal aerodromes for landing rights and for the use of sheds by members of the Flying Corps engaged in cross-country flights.

21. The Sub-Committee recommended that a permanent consultative Committee should be appointed, to which questions in connection with flying affecting both Departments should be referred by the Admiralty and War Office. They further recommend that this Committee should be designated the "Air Committee" and should be a permanent Sub-Committee of the Committee of Imperial Defence, occupying a position analogous to that of the Overseas Defence Committee and the Home Ports Defence Committee. The suggested composition of the Air Committee is as follows:

The Parliamentary Under-Secretary of State for War (*Chairman*).

The Commandant of the Central Flying School.

The Officer Commanding the Naval Wing of the Flying Corps.

The Commandant of the Military Wing of the Flying Corps.

The Director of the Operations Division, War Staff, Admiralty.

The Director of Military Training, General Staff, War Office.

The Director of Fortifications and Works, War Office.

The Superintendent of the Aircraft Factory.

: { A member of the Secretariat of the Committee of Imperial

*Joint Secretaries:* { Defence.

{ An officer of the Naval Flying School.

22. Such, then, are the main outlines of the scheme submitted by the Sub-Committee for the future development of flying for naval and military purposes in this country. Their detailed recommendations under each head are set forth below. In addition to the matter already referred to in general terms this report deals with various subsidiary details, such as the future of naval and military airships, balloons and kites, the meteorological investigation of the upper atmosphere, and the pay of the Flying Corps.

## PART II

### THE FLYING CORPS

#### *Functions*

23. In their recommendations for the formation of the Flying Corps with its reserve, the Sub-Committee have found some difficulty owing to the consideration that the requirements of wastage in war in this new arm are entirely unknown quantities. The estimates which have been made of first-line requirements in this Report are therefore to some extent guess work. Hence it follows that the Reserve of the Flying Corps must be as large as financial considerations will permit, and must be capable of expansion in case of emergency – capable, indeed, of absorbing the whole of the resources of the country in this branch of science.

24. In connection with the proposed enrolment of civilians, the Sub-Committee have had the advantage of the advice of the following gentlemen prominently connected with aeronautics, viz: Mr H E Perrin, Secretary to the Royal Aero Club; Mr James Valentine; Mr Alex Ogilvie; Mr F K McClean; and Captain Bertram Dickson.

#### *Conditions of Service*

25. Entry to the Flying Corps as officers should ultimately be confined to those who have graduated at the Central Flying School. Those officers should be drawn from (a) officers of all branches of the naval and military forces, and (b) civilians. The rank and file should consist of warrant officers, petty officers, non-commissioned officers and men transferred from the Royal Navy or the Army, and also of men enlisted directly into the Flying Corps, either on a regular or a special reserve basis.

26. Officers of the Navy or Army who desire to join the Flying Corps should make application through the ordinary official channels. If selected, they should, if not already in possession of the Royal Aero Club certificate, be instructed to obtain this certificate by private arrangement, and should be refunded the sum of £75 to meet the expense incurred. They should then be attached to the Central Flying School, and later, as may be necessary, to the Naval or Military Wing for further training. At the conclusion of this further period they should be eligible to be appointed either (a) for continuous service in the Naval or Military Wing of the Flying Corps, or (b) to the permanent staff of the Flying School, or (c) to the Flying Corps Reserve.

27. The period of appointment recommended in the case of officers, who elect for continuous service with the Naval or Military Wings of the Flying Corps or at the Central Flying School, should normally be four years, with such extension as may be approved. Should an officer be found unsuitable at any time he should be relieved of his appointment.

28. Civilian candidates who desire to join the Flying Corps as officers should forward their applications in the first instance to the Commandant of the Central Flying School, quoting the number of their Royal Aero Club certificate.

29. The conditions of service of officers and men who join the Naval or Military Wings of the Flying Corps for continuous service are dealt with separately in subsequent paragraphs. Men transferred from the Navy and Army, or enlisted from civilian sources, for continuous service should be selected by the naval or military authorities respectively, and by the Commandant of the Central Flying School. The period of enlistment recommended is four years, with re-engagement from year to year, or opportunity to transfer to the Reserve.

30. The Sub-Committee attach great importance to the primary condition that every member of the Flying Corps should incur a definite obligation to serve in time of war either for naval or military purposes in any part of the world.

31. The Flying Corps, with the exception of the Naval Wing and officers and men of the Royal Navy and Royal Marines who are members of the Reserve of the Flying Corps, should be under the administration of the War Office.

### ***Conditions of Reserve Service***

32. It seems desirable that the officers of the Reserve of the Flying Corps should be divided into two classes; the fliers of the first Reserve should be required, as a condition of receiving the retaining fee, to produce on the first day of each quarter satisfactory evidence that they have performed during the previous quarter flights amounting to an aggregate of nine hours in the air, and including the cross-country flight of not less than one hour's duration. These conditions should be subject to modification in particular cases. Fliers of the second Reserve should receive no retaining fee, and should not be required to carry out any flights, but should be available for service in the Flying Corps in time of war.

33. Fliers of the First Reserve should be given facilities for their obligatory flights every quarter at one of the naval or military establishments, or, if this is impossible, at a private aerodrome, all expenses being recoverable from the State in the latter case. An authorised rate of payment should be laid down for flights undertaken at private aerodromes. Fliers who have facilities for flying, such as those engaged professionally at the various private aerodromes, would, of course, have no difficulty in furnishing a certificate duly witnessed by some trustworthy person.

### ***Emoluments***

34. Recommendations regarding emoluments are contained in Part VII of this Report.

### ***Aeroplanes***

35. The question of the aeroplanes required for the Naval and Military Wings of the Flying Corps and for the Central Flying School is dealt with in Parts III, IV, and V of this Report. The Sub-Committee do not consider it desirable that any aeroplanes should be purchased for the Reserve of the Flying Corps at the present stage, though this should not prejudice future policy on this question. For the present the Reserve should provide personnel rather than matériel.

36. The Sub-Committee recognise, however, that a reserve of matériel would be required in war. They recommend, therefore, that the Commandant of the Central Flying School should keep a register of privately owned aeroplanes, which might usefully be purchased for the use of the Flying Corps in case of emergency.

37. They further recommend that members of the Flying Corps, who own aeroplanes, should be encouraged to bring these to the Central Flying School, when they undergo their training there, and to naval and military manoeuvres. Owners should be indemnified in the event of a serious accident to their machines, when so employed, or repairs should be effected at the cost of the State. They should, in addition, receive hire for their machines on a scale to be laid down.

38. The Commandant should be responsible that no privately owned machine is used at the Central Flying School which is not efficient and safe in every respect, and the Senior Flying Officer present should be similarly responsible on every other occasion. Officers should be given full discretion in this matter.

### ***Remarks***

39. The evidence taken by the Sub-Committee leads them to believe that the above inducements would be sufficient to attract a considerable proportion of the qualified flying men in this country, while the conditions are such as to ensure creation of a really valuable reserve, available in any part of the world, and for either service.

40. Apart from those flying men who are able to fly regularly, or who are employed on the staffs of private aerodromes, there are a number who have taken flying certificates, but have not the means or opportunity to undertake frequent flights. It is believed that these would welcome the opportunity provided for flying, as well as the retaining fee and the prospects of pay when called up for service.

41. It is not proposed at present to fix any limit to the numbers to be entered, as the number of qualified flying men in the country is comparatively small, and it is unlikely that as many as 100 applications will be received in the first year. Later on it will probably become necessary to fix a definite establishment of the Reserve of the Flying Corps.

## **PART III**

### **THE CENTRAL FLYING SCHOOL**

#### ***Situation***

42. The Sub-Committee recommend that the Central Flying School should be established on Salisbury Plain, on ground south-east of Upavon, the contract for the purchase of which has been signed. This ground must be regarded essentially as a flying ground. It should only be used for the training of troops in so far as that training interferes in no way with the work of Central Flying School.

43. The Technical Sub-Committee paid a visit to this site, and are satisfied that it is entirely suited for the purposes of the Central Flying School in every respect.

44. The technical members of the Sub-Committee, who visited the site twice, in order to view it under varying conditions, reported as follows:

"This area is in every way suitable for the proposed purpose. It is better than any British aviation ground with which the members of the Committee are acquainted".

"A certain amount of ground is at present under plough, but there is nothing to prevent the formation of an excellent surface for rolling over very large tracts".

45. Apart from its excellence as a flying ground, however, the site selected presents the following advantages:

(1) It is situated in a lonely spot several miles from a railway station, and is therefore not liable to the inconvenience and danger of attracting large crowds of spectators.

(2) The nature of the surrounding country is such that good landing places are available over a very wide area.

(3) A good road runs through the centre of the aerodrome affording all necessary transport facilities.

(4) The presence of large numbers of troops undergoing training on Salisbury Plain offers facilities for preliminary training in military reconnaissance.

(5) It is conveniently situated with regard to the existing aerodromes at Aldershot, &c, for the commencement of cross-country flights, and is not too far distant from the sea at Portsmouth and Portland.

### ***Number and Length of Courses of Instruction***

46. The Sub-Committee recommend that there should be three courses at the Central Flying School during the year, each course to last four months, which is considered to include a sufficient margin of time for leave of absence and spells of bad weather.

47. There appears to be no reason to suppose that one season of the year is less favourable than another for training in flying. It is possible that in summer there are more days during some part of which flying is possible. In winter, on the other hand, there are apt to be more days during the whole of which it is possible to fly.

48. The Commandant of the Central Flying School should be given discretionary power as to the standard to be obtained by individuals before graduation.

### ***Syllabus of the Course of Instruction***

49. The training to be carried out should include:
- (i) Progressive instruction in the art of flying.
  - (ii) Instruction in the general principles of mechanics and the construction of engines and aeroplanes.
  - (iii) Instruction in meteorology.
  - (iv) Training in observation from the air.
  - (v) Instruction in navigation and flying by compass.
  - (vi) Training in cross-country flights.
  - (vii) Photography from aircraft.
  - (viii) Signalling by all methods.
  - (ix) Instruction in types of war-ships of all nations.
50. The naval and military flying establishments should undertake the more advanced training in observation and the transmission of intelligence.
51. The Sub-Committee recommend that the Staff for the Flying School should be selected as soon as possible, and should be formed into a Committee to draw up the syllabus for the first course of instruction for submission to the War Office.

### ***Numbers to be Trained***

52. It is estimated that the number of fliers required for the Navy is forty a-year.
53. To provide the war establishment for the seven Aeroplane Squadrons that are considered necessary for our Expeditionary Force, 182 Officer fliers and 182 non-commissioned Officer fliers are required. This will entail passing through the Central Flying School one quarter of this total number annually, if it is assumed that under present conditions a flier can hardly be expected to remain at active aeroplane work for more than four years.
54. If, in excess of actual Naval and Military requirements, a margin is allowed of, say, 25 per cent for pupils undergoing instruction who fail to obtain certificates of proficiency either through sustaining injuries or through loss of nerve, the total service requirements as regards the annual intake of pupils at the school is as follows:

One-quarter military war establishment of fliers:	91
Royal Navy, say:	40
	——
	131
Add 25 per cent	33
	——
Total:	164

55. In addition it appears desirable to allow for the entry of (say) fifteen civilians during the course of the year, or five for each course of instruction.

56. Hence the total number to be passed through the Central Flying School in each year will be:

To maintain the Naval and Military Establishments:	164
Civilians:	15
	——
	179

57. Having regard to the foregoing considerations the Sub-Committee are of opinion that for the immediate future, accommodation should be provided for sixty pupils at the Central Flying School in each term. As these numbers are liable to be increased, when the requirements of the Army other than those of the Expeditionary Force are decided, the school should be readily capable of expansion.

**Staff**

58. The Sub-Committee recommend that the Staff of the Central Flying School should be as follows:

- 1 Commandant.
- 1 Secretary (Paymaster RN).
- 1 meteorological expert.
- 1 Medical Officer.
- 1 Quartermaster (military).
- 1 store keeper.
  
- 1 instructor – theory and construction.
- 1 engineer – for engines.
- 3 mechanists.
- 20 mechanics and labourers.
  
- 5 instructional flights, each:
  - 1 officer instructor.
  - 2 mechanics or petty officer fliers.
  - 4 riggers (or carpenters).
  - 4 fitters (or ERA).



## *Aeroplanes*

59. The Sub-Committee have obtained sanction for the purchase of the following twenty-five aeroplanes for the Central Flying School, and deliveries will commence as from the 30<sup>th</sup> April, 1912:

"A" Flight –

5 Bristol 50 Gnome engine biplanes, to be transferred from the present Air Battalion.

"B" Flight –

2 twin F-type Short biplanes, with Gnome engines.  
2 single F-type Short biplanes, with Gnome engines.  
1 Short-Tractor biplane, with 70 hp Gnome engine.

"C" Flight –

2 Flanders, two-seater, monoplanes.  
3 Roe, two-seater, biplanes.

"D" Flight –

1 Deperdussin, two-seater, 70 hp Gnome engine, monoplane.  
1 Deperdussin school machine, 60 hp Anzani engine, monoplane.  
3 80 hp Canton Unné Bréguet, biplanes.

"E" Flight –

2 Nieuport, 50 Gnome, two-seater monoplanes.	
2 Blériot, 35 hp Anzani, single-seater,	}
Monoplanes	}
1 Blériot, 50 hp Gnome, single-seater	}
Monoplane	}

Substituted for  
3 Bristol monoplanes  
in the list previously  
approved.

60. The makers have been called upon to meet the following requirements:

(a) The maker to supply a stress diagram or skeleton drawing showing the calculated load on each strut and tie wire, when in flight with flier, passenger, and fuel for one hour.

(b) To invert machine, load wings with double to load taken in flying less the wing weight and tilt to an angle of 1 in 5.

(c) When loaded as in (b) it must be possible to cut any one wire without causing any detrimental effect.

(d) The landing chassis must be able to be driven round Laffan's Plain at 15 and 20 miles an hour without damage.

(e) A margin of engine power to be provided beyond that required for the normal flight speed. To be proved by a rate of rising of not less than 70 feet per minute vertical velocity while travelling at a speed of not less than about 38 miles an hour.

- (f) One hour's continuous flight, finishing with a 500 feet *vol plané*.
- (g) Duplicate control and double control mechanism in all cases except single-seaters.
- (h) If required, for every machine built one representative of the Navy or Army must be taught to have complete control.

The estimated cost of the above aeroplanes is £21,000.

### ***Balloons***

61. Major Sir A Bannerman, Bart., Commandant of the Army Air Battalion, has pointed out in his evidence before the Sub-Committee, the value of cross-country flights in free balloons as a means of training aeroplane fliers in observation, map reading, and finding their way. Those members of the Sub-Committee who are fliers have pointed out that these arts are not easily taught in an aeroplane, as the attention of the flier, particularly while learning to fly, is engrossed in the management of his machine. The Sub-Committee recommend, therefore, that the course of instruction at the Central Flying School should include flights in free balloons, as long as these are available, but they do not propose that any new balloon should be constructed at present.

### ***Buildings***

62. It has been brought to the notice of the Sub-Committee that experience has shown that buildings of a permanent nature are very much more satisfactory, and ultimately more economical, than temporary buildings. Moreover, temporary huts are not well suited to the climatic conditions of Salisbury Plain.

63. Having regard, however, to the fact that the Central Flying School may require large expansion in the near future, and more especially that temporary buildings can be erected far more rapidly than permanent ones, the Sub-Committee recommend that all buildings, including sheds, should be of a temporary nature, without prejudice to the construction of more permanent buildings in the future.

64. In a second interim Report dated the 24<sup>th</sup> January, 1912, which has received the approval of the Prime Minister, the Sub-Committee have recommended that, in order to avoid delay in the establishment of the Central Flying School, sanction should be given by the Treasury for an immediate expenditure by the War Office for the erection of temporary barracks, sheds, workshops and a small hospital, at an estimated cost of approximately £25,000. All plans and specifications are now ready and tenders have been invited.

### ***Transport***

65. The Sub-Committee recommend that complete War Transport for two flights of aeroplanes should be provided at once for the Central Flying School. (See Schedule (B)).

### ***Remarks***

66. The Sub-Committee desire to lay stress on the importance of commencing operations at the Central Flying School at the earliest possible date, since the regular supply of trained fliers to both services, and the formation of a reserve depend upon this. It was this consideration which led them to submit two interim reports urging that the buildings should be taken in hand and the necessary aeroplanes purchased at once. They are informed that the buildings will be ready for occupation by the 30<sup>th</sup> June, 1912. The formation of the school should be proceeded with independently of the completion of the buildings by the use of canvas tents and sheds.

67. The Instructional Staff will require a few weeks in which to assemble, tune up, test, and accustom themselves to the new aeroplanes, but it may confidently be expected that the first course will be completed before the close of 1912.

## **PART IV**

### **THE NAVAL WING OF THE FLYING CORPS**

#### ***Provisional Organisation***

68. The Naval Wing of the Flying Corps should be established for the present at the Naval Flying School at Eastchurch. For the immediate present its energies will be devoted mainly to elementary training in flying, so as to provide a nucleus of fliers for the first requirements of the Navy, pending the establishment of the Central Flying School, and to experimental work in the development of aeronautics for the Navy.

69. In a short time the elementary training in flying should be undertaken entirely by the Central Flying School, and the Naval Flying School should then be utilised for experimental work, and for the specialised training of naval ranks and ratings, and of selected civilians in naval air work.

70. It is impossible to over-estimate the importance of experiments for the development of hydro-aeroplanes, and in flying from and alighting on board ship, and in the water under varying weather conditions. Until such experiments have proved conclusively how far such operations are practicable it is impossible to forecast what the rôle of aeroplanes will be in naval warfare, or to elaborate any permanent organisation. The present organisation must therefore be regarded as provisional.

#### ***Personnel***

71. The Sub-Committee recommend that the Naval Flying School at Eastchurch should, for administrative purposes only, be under the orders of the Captain of HMS "Actæon", and that all officers and men should be borne on the books of the "Actæon".

72. The Headquarters of the Naval Wing and the Staff of the School should, for the present, be as follows:

- This list should be subject to expansion as required.

## *Aeroplanes*

74. The final list of aeroplanes, hydro-aeroplanes, and floats recommended is as follows:

(1)	Instructional and practice machines –	£
(a)	One twin engine biplane (now in use) from Messrs Short Bros	1,400
(b)	One new twin-engine Short biplane from Messrs Short Bros	2,084
(c)	One 70 hp Gnome single-engine biplane from Messrs Short Bros	1,184
(d)	One Bréguet biplane from Bréguet Co, France, with Chenu engine	1,400
(e)	One Nieuport 50 hp two-seater from Nieuport Co, France	1,040
(f)	One Short monoplane from Messrs Short Bros	820
(g)	Deperdussin monoplane, two-seater 70 hp, from Deperdussin Co, England	1,080
(h)	One Etrich monoplane from Austria	1,500
	Floats for aeroplanes:	
	Six sets of floats, made by Messrs Short Bros. (Safety device for practice flying over water)	300

(2) Experimental and service machines –

(a)	Two hydro-aeroplane machines, one of the biplane and one of the monoplane type, with twin engines, to be ordered from Messrs Short Bros at once	4,500
(b)	Six hydro-aeroplanes to be tendered for at once by English firms, to fulfil the requirements as specified in Schedule I	}
(c)	Six further hydro-aeroplanes to be ordered from the firms making the most satisfactory machines	} 20,000
Total		35,308

75. Tenders have been called for all the above except items 2(b) and (c). These two items were not included in the interim report, as their immediate supply was not considered to be a matter of such vital urgency as in the case of the aeroplanes. As experiments with hydro-aeroplanes are in their infancy and very few successful flights from water have been made at all, and these few only from still water, the Sub-Committee recommend that the purchase of the six hydro-aeroplanes referred to in Items 2, (b) and (c), should be conditional on successful experiments with the two hydro-aeroplanes referred to in Item 2(a).

76. As regards items (d), (e), (f), (g), and (h) in clause (1), it should be stipulated that these machines should be delivered at Eastchurch, assembled, and flown for at least one hour by their respective firms before acceptance is taken.

77. In approving these lists the Sub-Committee have been actuated by the consideration that it is desirable to test a number of types with a view to arriving at the most suitable pattern for naval service. They recommend, however, that, as soon as a satisfactory type of aeroplane for future use has been evolved, orders should be given so as to ensure that there are always not less than two machines of the same type available.

### Sheds

78. The Sub-Committee desire to confirm the recommendation contained in the Interim Report of the Standing Sub-Committee, dated the 6<sup>th</sup> January, 1912 (CID Paper AN 10), that the following sheds should be provided forthwith for the Naval Flying School, viz:

(1)	Six large sheds, 60' + 70' + 15', built by Mr Wm Harbrow, South Bermondsey Station, London	£ 2,800
(2)	Three large portable canvas sheds	1,000
Total:		3,800

Two of the portable sheds have already been ordered.

79. Fixed sheds are preferred to portable ones at Eastchurch because the very exposed position of the aerodrome and the strength of the wind render the latter unsuitable and unsafe for permanent use. The three portable sheds are required for the use of aeroplanes employed for experimental work on the water off Burntwick Island, for emergency use in actual warfare, and for accustoming those under training to the sheds they would use on active service.

***Buildings, Works and Land***

80. The Sub-Committee recommend an expenditure of £7,250 on land, buildings, and works in connection with the Naval Flying School.

Negotiations for the purchase of the land required are in progress.

***Maintenance***

81. The Sub-Committee recommend that the following sums should be allotted for the general cost of maintenance of the Naval Flying School at Eastchurch during the financial year 1912-13:

	£
Instruments, compasses, thermographs, barographs, anemometers, meteorological tower, small balloon for carrying instruments, &c	700
Machinery for repair work	400
Aeroplane spares, such as aeroplane propellers, &c	500
Upkeep for twelve machines in constant use, petrol, oil and repairs	2,500
Subscription to Aero Club for use of aerodrome, annually	150
Travelling expenses, naval aviators visiting works, trials, &c	500
Purchase and upkeep of two motor cars (one of the shooting brake type)	1,250
A sum of money to be provided for encouragement of designers, constructors, and engine makers, and for purchase of accessories and improvements which are being continually put on the market	2,000
	<hr/>
Total:	8,000

82. With regard to the last item, the Sub-Committee consider it advisable that the Admiralty should have funds at its disposal for experimental work. The results of all experiments should, however, be communicated to the Aeronautical Advisory Committee.

***The Eastchurch Aerodrome***

83. Representatives of the Sub-Committee visited the Eastchurch Aerodrome with a view to ascertaining the suitability of the site. They reported that this aerodrome is quite suitable for a Naval Flying School of moderate dimensions.

84. The ground is held by the Royal Aero Club on long lease, and the use of the aerodrome is granted to the Royal Navy on favourable terms by the Royal Aero Club. This is satisfactory as far as it goes. But if it be intended that the school should be permanently situated here, and that expenditure on permanent buildings should be undertaken, it would seem to be advisable for the Government to institute inquiries as to the possibility of securing the freehold of the ground, thus safeguarding any expenditure on improvements, and also making it possible to extend the ground if required. There appears to be a likelihood that the freehold of the aerodrome and of additional ground might be secured on favourable terms. The Sub-Committee recommend this suggestion for the consideration of the Admiralty.

### ***Training Programme***

85. The Sub-Committee recommend for the favourable consideration of the Admiralty the following programme prepared by the Officer Commanding the Naval Flying School:

- (1) On the 1<sup>st</sup> March, 1912, four additional mechanics and four additional carpenter ratings should be sent to undergo training, and about this time more officers and some seamen ratings should be sent to be trained in aviation.
- (2) Provision should be made for the training of certain ratings to be transferred to the staff of the Central Flying School

### ***The Use of Airships for the Navy***

86. The Sub-Committee have given careful consideration to the question as to whether it is desirable to continue the experiment of building naval airships, which ended with the collapse of Naval Airship No 1 before it had actually undertaken a single flight. They have had the advantage of hearing the evidence of Captain Murray F Sueter, RN, Inspecting Captain of Naval Airships.

87. The Naval Airship No 1 was built on the recommendation of a Sub-Committee of the Committee of Imperial Defence, which reported in January 1909, at a time when the Zeppelin airship appeared to be well on the road to success. The expectations which it was hoped to realise may be gathered from the following extract from their Report (CID Paper No 106 B):

"5. *The Type of Dirigible for Naval Warfare.* Reliability is the first essential in an airship intended for use over water. It should be capable of remaining away from its base for periods of several days at least – that is to say, leakage of gas must be reduced to a minimum. This condition is more easily secured in a rigid than in a non-rigid type, as in the former case a space for air can be left between the outer and inner envelopes, which will prevent the expansion and contraction of gas due to the variation of temperature. Another essential is great speed, in order to render the airship as far as possible independent of wind, and this involves engines of high power. Secure mooring appliances are also indispensable, and these, it is held, can be provided more easily with a rigid than with a non-rigid frame. In order to ensure efficiency it is essential that the crew should be numerous enough to allow for reliefs, and that a certain amount of comfort should be provided. Reliable navigational facilities are required, and in this respect the rigid type appears to offer advantages over the non-rigid, as an observer in the former should be able to mount to the top through a gap between adjacent gas-bags with a view to taking astronomical observations, whereas this is impossible with a non-rigid balloon, from the car of which the greater part of the heavens is obscured by the gas-bag.

"All these conditions – engine power, mooring appliances, accommodation for the crew, and navigational facilities – involve additional weight and consequent increased lifting power, and the expert evidence taken by the Committee tended to show that where great size is desired the rigid type is preferable.

\* \* \* \* \*

"7. In this connection it is worthy of mention that there are grounds for supposing that the German Government intends to use the rigid Zeppelin air-ship for naval purposes. Nearly all the experiments have been made over water; it is housed in a floating shed; and German naval officers are stated to have been instructed in its use. On the other hand, the German dirigibles of the non-rigid type have hitherto been employed exclusively for military purposes.

"8. *The Use of Dirigibles in Naval Warfare.* The principal use to be made of dirigibles in naval warfare is for scouting. The attention of the Committee has been drawn to the fact that the visible horizon in clear weather from a balloon at a height of 1,000 feet is 40 miles distant, and at 2,200 feet 60 miles distant, as compared with 12 miles from the deck of a ship. It is obvious that an airship combining great speed with the power of ascending to these heights would possess great advantages in scouting over the vessels usually employed, and the cost should be very much lower.

"The cost of a dirigible suitable for naval purposes is estimated at £35,000 (including preliminary and incidental expenses), as compared with £80,000 for a destroyer and £400,000 for a 3rd class cruiser. It would appear also that, in the case of a fleet observing an enemy in port, or carrying out a blockade, the dirigible might be able to gain information which would be unobtainable by any other means. By scouting over a wide area round a fleet before nightfall a few dirigibles should, moreover, be able to give a long warning of intended torpedo-boat attack.

"9. In order to give the dirigible its maximum value as a naval scout, it is indispensable that communication by wireless telegraphy should be insured. The Committee is informed that no great difficulty is anticipated in securing this condition".

88. The Sub-Committee are of the opinion, however, that the prospects of the successful employment of the rigid type of airship are not sufficiently favourable to justify the great cost. They therefore recommend that the naval experiments should be confined to the development of aeroplanes and hydro-aeroplanes. The utmost vigilance should be taken, however, by the Admiralty in watching foreign developments of the airship, and the present recommendation should not be taken to prejudice a reopening of the question, should important developments occur.

## **PART V**

### **THE MILITARY WING OF THE FLYING CORPS**

#### ***General Principles of Organisation***

89. In this section the Sub-Committee have not dealt with any military requirements beyond those of the Expeditionary Force, those requirements being of urgent importance. It must be borne in mind, however, that considerable extension will be necessary in order to provide for the requirements of those military forces which are not included in the Expeditionary Force.



90. The Sub-Committee recommend that for the future the Military Wing of the Flying Corps should comprise all branches of aeronautics, including aeroplanes, airships and kites. All these are required for the same purpose and should work in close co-operation.

91. The present Air Battalion, RE, ceases to exist under this scheme. Its personnel and matériel should be absorbed as far as required in the Flying Corps.

92. The purposes for which aeroplanes will be required in land warfare are as follows:

- (a) Reconnaissance.
- (b) Prevention of enemy's reconnaissance.
- (c) Inter-communication.
- (d) Observation of artillery fire.
- (e) Infliction of damage on the enemy.

93. Having considered the organisation of the aeronautical forces of France and other Powers, so far as information is available, the Sub-Committee are of opinion that the Establishments laid down below will provide a suitable organisation for the Expeditionary Force of 6 divisions and 1 cavalry division, viz:

- Headquarters.
- 7 Aeroplane Squadrons, each providing 12 aeroplanes.
- 1 Airship and Kite Squadron, providing 2 airships and 2 flights of kites.
- 1 L of C Flying Corps Workshop.

### ***Administration***

94. The Sub-Committee recommend that the administration of the Military Wing should be carried out by the War Office.

### ***Fliers Required for Seven Aeroplane Squadrons***

95. Up to the present time we have only attempted to train officers as fliers. It is now proposed to train non-commissioned officers and men as well.

96. It is considered that the minimum number of trained fliers should be 2 per aeroplane. Of these 1 should be an officer, and, in the case of one-seated machines, both should be officers.

97. For purposes of calculation, however, 1 officer and 1 non-commissioned officer flier are allowed.

98. The number of fliers required on this basis is shown in the table below:

	7 Squadrons	
	Officers	NCOs
Commanders	7	...
Sergeants	...	7
3 sections	84	84
Totals:	91	91

99. In addition, it is necessary to provide a reserve to meet casualties, and it is considered that this should be on a basis of 100 per cent for six months' wastage.

100. The total number of fliers required will therefore be:

	Officers	NCOs
For war establishment and 7 squadrons	91	91
Reserve	91	91
Totals:	182	182

**War Establishment of an Aeroplane Squadron**

101. In addition to fliers the necessary mechanics should be provided for the maintenance of machines, &c.

102. The complete war establishment of a squadron is shown in Schedule (A), attached.

**Peace Establishments**

103. The first requisite is to provide the trained personnel for the formation of the war establishment of the flying service.

104. Having regard to the anticipated heavy wastage in time of war, to the necessity of having more than one highly trained flier if full value is to be obtained from each aeroplane, and to the time which will be required before a reserve can be built up, the Sub-Committee recommend that the War Office should aim at maintaining a peace establishment of the fliers for the 7 squadrons equal to the war establishment.

105. Eventually it may be possible to draw up a more economical peace establishment, when the Reserve of the Flying Corps has been developed sufficiently to enable the Military Wing to count on an effective organised reserve.

### ***Distribution of the Aeroplane Squadrons***

106. The distribution of the squadrons is a matter for the consideration of the War Office, but the Sub-Committee desire to point out that it would be advantageous to station one squadron at Salisbury Plain, within easy reach of the Central School, and one at Aldershot, near the Aircraft Factory.

### ***Personnel***

107. *Officers* – See paragraph 27.

108. NCOs and air mechanics<sup>††</sup> will be required as engine drivers, fitters, carpenters, smiths, sailmakers, riggers, &c. Selected NCOs and air mechanics should also be trained as fliers. To provide this personnel, it will probably be necessary to rely largely on direct enlistment, except, perhaps, as regards fliers.

### ***Seconding and Enlistment***

109. Although the period of enlistment recommended is four years, it is to be noted that the Sub-Committee are not in a position to recommend a definite period of subsequent Reserve Service. On completion of the period of continuous service re-engagement should be allowed from year to year, or transfer to the Reserve of the Flying Corps on the recommendation of the Commanding Officer of the Military Wing, or of the Commandant of the Central Flying School.

110. Commissioned officers joining the Flying Corps should be seconded and other ranks transferred.

111. Men wishing to enlist into the Corps for non-flying duties should be finally approved by the officer commanding the Military Wing, or the Commandant of the Central Flying School.

### ***Aeroplanes***

112. The total number of aeroplanes required for the seven squadrons of the military division will be eighty-four. The completion of these squadrons, however, and the training of fliers for them at the Central Flying school must occupy some considerable time.

113. In an interim report dated the 6<sup>th</sup> January, 1912 (CID Paper AN 10), which has received the approval of the prime Minister, the Standing Sub-Committee of the Committee of Imperial Defence have recommended that Treasury sanction should be given to the War Officer for the purchase forthwith of twenty aeroplanes and twenty sheds, at an estimated total cost of 28,000l. The types of aeroplane which the Sub-Committee recommend are as follows:

1 Nieuport monoplane, 100 hp, 3 seater.

1 Nieuport monoplane, 70 hp, 2 seater.

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<sup>††</sup> The term "air mechanic" is applied to denote men of the Flying Corps below the rank of petty officer or sergeant.

- 1 Deperdussin monoplane, 100 hp, 3 seater.
- 1 Deperdussin monoplane, 70 hp, 2 seater.
- 2 Flanders monoplanes, 2 seater.
- 2 Bréguet biplanes, 100 hp, 3 seater.
- 2 Bréguet biplanes, 80 hp, 2 seater.
- 2 H Farman biplanes, 70 hp (or more), 3 seater.
- 1 "B" Type, Aircraft Factory, to be made by the factory.
- 3 "B" Type, Aircraft Factory, to be made by the British and Colonial Aeroplane Company.
- 1 Cody Biplane, 120 hp.
- 1 Martin-Handasyde, 60 hp, 2 seater.
- 2 Blériot monoplanes, 50 hp, single seater.

The orders for most of these have been issued. Further orders will be issued during the course of the year 1912.

### ***Sheds***

114. A shed of a portable type, suitable for service in the field, should be at once provided for each aeroplane as it is ordered. Permanent sheds should be provided at the head-quarters of squadrons, when the locations have been fixed.

### ***The Use of Airships for Military Purposes***

115. The Sub-Committee have given careful consideration to the question of whether airships should still be used for military purposes. They have had the advantage of hearing the evidence of Major Sir A Bannerman, Bart, the Commandant of the Army Air Battalion, on the subject of airships, balloons, and kites.

116. The airship possesses the great advantage over the aeroplane in military warfare of being able to receive messages by wireless telegraphy; it is also able to transmit to greater distances.

117. France and Germany can establish permanent sheds or shelters at convenient intervals throughout the country, where their airships can seek refuge in bad weather, and they are therefore able to make better use of dirigibles than this country, whose Expeditionary Force is more likely to be employed oversea. It is hoped, however, that means will be found for overcoming our difficulties in this respect, and experiments in this direction are now being conducted, which give prospects of success.

118. On a general review of the foregoing considerations the Sub-committee are of opinion that any immediate extension of the existing equipment of airships is unnecessary so far as the requirements of the Expeditionary Force are concerned, and, as stated in paragraph 89, this report does not deal with military requirements other than those of the Expeditionary Force. Having regard, however, to the persistence of all the great continental nations in experiments with this type of aircraft, they think it would be undesirable for the Army to abandon entirely the use of airships, more especially in view of their recommendation (in paragraph 88) that the naval experiments should cease.

119. They recommend, therefore, that the present Airship Company, furnishing two airships, together with the kite equipment, should be retained, and should become an eighth squadron of the Flying Corps, as recommended in paragraph 93.

### ***Captive and Free Balloons and Kites***

120. A Sub-Committee of the Committee of Imperial Defence, which considered the whole question of aerial navigation in 1909, and took a considerable amount of evidence, reported as follows with regard to balloons:

"Captive balloons have for many years formed part of the regular equipment of all modern armies. The principal uses for which they can be employed in land warfare are reconnaissance and observation of artillery fire.

"It has been pointed out, however, that their value for reconnaissance purposes is limited by the fact that troops on the reverse slopes of hills of moderate elevation and steepness are entirely concealed from the view of observers in captive balloons, unless they rise to a great height; and in the latter case their view will frequently be obstructed by clouds. In hilly country, therefore, their value is small, though in flat country their usefulness has been proved.

"The advantages claimed for balloons in the observation of artillery fire are somewhat uncertain.

"In this connection the evidence showed that the balloon equipment required a somewhat bulky transport, and it seems very doubtful, therefore, whether it would be practicable to attach them to more than a very few of the heavy batteries".

121. The recommendation of the Sub-Committee was as follows:

"As soon as satisfactory results have been obtained with dirigible balloons the expenditure on captive balloons should cease".

122. With regard to kites the Sub-Committee referred to above reported that:

"Kites are employed for military purposes as a complement to captive balloons, inasmuch as they can only ascend in windy weather, when captive balloons cannot do so. Their functions are identical with those of captive balloons".

123. The information before the Sub-Committee differs in no way from the above. Emphasis has been laid, however, on the value of free balloons as a means of training flying men in finding their way. Airships are also useful for this purpose, and apart from their possible value in war, the Sub-Committee consider that either airships or balloons, if available, would be of assistance in the training of the Flying corps in peace.

124. Kites form at present the only means of aerial observation in high winds. The Sub-Committee recommend, therefore, that two flights of kites shall be included in the Airship Squadron of the Flying Corps.

### ***Transport***

125. The Sub-Committee recommend that Transport, as laid down in the War Establishments given in Schedule B, should be purchased for each flight on its establishment.

## **PART VI**

### **THE AIRCRAFT FACTORY**

#### ***Functions***

126. The Sub-Committee recommend that the existing Army Aircraft Factory should be renamed the "Aircraft Factory", and should be administered by the War Office. It should carry out the following functions:

- (1) The higher training of mechanics for the Flying Corps.
- (2) Repairs and reconstruction for the Flying Corps.
- (3) Tests with British and foreign engines and aeroplanes.
- (4) Experimental work.
- (5) The existing work in the manufacture of hydrogen, and generally meeting the requirements of the Airship and Kite Squadron.
- (6) General maintenance of the factory as at present.

The Chairman, accompanied by certain members of the Technical Sub-Committee, visited the Aircraft Factory, and they satisfied themselves that it is suitable for the performance of these functions.

#### ***British and Foreign Engines***

127. The Sub-Committee consider it important that this country should keep abreast of all practical developments in the aeroplane industry in all parts of the world. At the present time the primary need of this industry is the perfection of an entirely satisfactory engine. There are at the present time a number of aeroplane engines in the market, which are believed to have given satisfactory results. It is extremely difficult, however, especially in the case of foreign engines, to obtain reliable information regarding them without purchasing power. Experience has shown that the foreign engine manufacturer attaches but little importance to the prospect of business in this country, and when approached either personally or by letter, is prone to be suspicious of a desire on our part to learn by his experience.

128. The makers of engines whom it is desired to approach are as follows:

Anzani.	Viale.
Burlat.	Austro-Daimler.
Chenu.	Mercedes.
Dansette-Gillett.	NEC.
Gnome.	ABC.
Panhard.	Wolseley.
Renault.	Green.
Salmson (Canton Unné).	

129. The Sub-Committee recommend, therefore, that a sum of £3,500 should be granted to the Aircraft Factory for the purchase of engines, subject to the satisfactory fulfilment of a series of tests to be conducted at the Aircraft Factory, in horse-power, endurance, weight, fuel, and oil.

### ***The Aerodrome, South Farnborough***

130. The Sub-Committee are of opinion that certain improvements are required in the aerodrome, South Farnborough.

131. At present there is one good flying ground at Cove Common, where the Aircraft Factory is situated, and another on Laffan's Plain, and to make it possible to alight anywhere between these areas a passage has been cleared. It is very desirable, however, that another passage should be cleared in order to bring the area at Ball Hill into communication with the other two and to allow of a circular flight over the combined areas.

132. The Sub-Committee therefore recommend that a passage should be cleared as soon as possible from Laffan's Plain to the Aircraft Factory via Ball Hill. These alterations would greatly increase the value of this aerodrome.

133. Further improvements which could be effected here would be the clearing of a passage from Laffan's Plain to Fleet Pond.

## **PART VII**

### **PAY AND ALLOWANCES OF THE FLYING CORPS**

*Abridged – full version available online*

## **PART VIII**

### **MISCELLANEOUS**

*Abridged – full version available online*

## FINAL OBSERVATIONS

180. In presenting the foregoing recommendations the Sub-Committee desire to lay stress on the tentative nature of the scheme. In formulating an entirely new scheme for the creation of a new arm of the service, in every phase of which novel difficulties have to be surmounted, it is inevitable that omissions and mistakes should occur. To deal with unforeseen contingencies and ever changing conditions, as the art of flying progresses, the Sub-Committee consider the formation of the Air Committee as a permanent Sub-Committee of the Committee of Imperial Defence, as suggested in paragraph 21, to be a matter of the first importance.

181. The first step, on which everything else depends, is to get our flying men trained and machines for them to fly in. The foregoing proposals will provide at once some fifty-five additional aeroplanes, two hydro-aeroplanes, and in the near future sixty-four more aeroplanes and twelve more hydro-aeroplanes, and the Sub-Committee submit that every possible effort should be made to provide them with efficient crews at the earliest possible date.

(Signed) J E B SEELY (*Chairman*).  
G K SCOTT MONCRIEFF, Brigadier-General.  
DAVID HENDERSON, Brigadier-General.  
C R SAMSON, Commander, RN.  
R GREGORY, Lieutenant, RN.  
MERVYN O'GORMAN.

C L OTTLEY (*Secretary*)  
M P A HANKEY (*Assistant Secretary*)

2, Whitehall Gardens, SW  
February 27, 1912.

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# Pre-War Developments

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## ARMY ORDER.

Special.

WAR OFFICE,

15th April, 1912.

### ROYAL WARRANT.

Royal Flying Corps (Military Wing).

GEORGE R.I.

WHEREAS WE have approved of the establishment of an aeronautical service for naval and military purposes under the designation of the Royal Flying Corps ;

20
Royal Flying Corps
1

AND WHEREAS it is necessary to form a Military Wing of the Royal Flying Corps to which officers and men of Our Land Forces can be appointed ;

OUR WILL AND PLEASURE IS that the Royal Flying Corps (Military Wing) shall be deemed to be a corps for the purposes of the Army Act.

Given at Our Court at St. James's, this 13th day of April, 1912, in the 2nd year of Our Reign.

By His Majesty's Command,

HALDANE OF CLOAN.

**The Royal Flying Corps.**—His Majesty the King has been graciously pleased to approve the establishment of an Aeronautical Service for naval and military purposes under the designation of the Royal Flying Corps.

20
Royal Flying Corps
1

The Royal Flying Corps will supply the necessary personnel for a Naval and a Military Wing, for a Central Flying School and for a Reserve.

The Royal Flying Corps, with the exception of the Naval Wing and of officers and men of the Royal Navy and Royal Marines who are members of the Reserve, will be under the administration of the War Office.

Entry to the Royal Flying Corps as officers will ultimately be confined to those who have passed a

The Royal Warrant for the Royal Flying Corps (Front Cover), Royal Air Force, Archive, Hendon

course of instruction at the Flying School. These officers will be drawn from (a) officers of all branches of the naval and military forces, and (b) civilians.

Officers of the Regular Army who desire to join the Royal Flying Corps should make application to the War Office through the usual military channels. An applicant must state whether he desires to join the Royal Flying Corps for continuous or for Reserve service, and must give an assurance that he will, when required, complete the specified course of training. Officers who are desirous of, and are selected for, service in the Military Wing or the Central Flying School, but for whom there are no vacancies, will be appointed to the Reserve until vacancies occur. An officer of the Regular Army must have not less than 2 years' service. An officer above the rank of captain will be selected in exceptional cases only. An applicant must be recommended by his commanding officer and be certified as having good eyesight and as being medically fit for the work. Commanding officers, in forwarding applications, should state the candidate's weight, whether he is a good map-reader and field-sketcher, and whether he has any knowledge of mechanical engineering.

Officers of the Reserve of Officers, of the Special Reserve of Officers, or of the Territorial Force who desire to join the Royal Flying Corps should make application in the same manner as officers of the Regular Army, with the exception that a medical certificate will not be required with the application as these officers will be medically examined before selection under War Office instructions. The requirement of 2 years' service will not apply to Special Reserve or Territorial Force officers.

An officer selected for the Royal Flying Corps who has obtained, or subsequently obtains, the certificate of the Royal Aero Club, at his own expense, will be paid (if he has not already received it), under instructions from the War Office, the sum of 75 $\text{\pounds}$ . After selection he will be required to undergo a course of instruction at the Flying School. At the conclusion of this course, if satisfactorily completed, he will be eligible for appointment (a) for service in the Military Wing, or (b) to the permanent staff of the Flying School, or (c) to the Royal Flying Corps Reserve. If selected for appointment to the Military Wing or Flying School he will be appointed to the Royal Flying Corps for a period of 4 years from the date he joined the Flying School, and, except in the case of officers of the Royal Engineers, will be seconded in his regiment. The tenure of the appointment may be extended from year to year under conditions to be prescribed by the Army Council.

The Royal Warrant for the Royal Flying Corps (Page 2), Royal Air Force, Archive, Hendon

An officer who is found at any time to be unfitted for the duties of the corps will be required to rejoin his regiment.

An officer who is appointed to the Reserve of the Royal Flying Corps on the conclusion of his course at the Flying School will be attached to the Military Wing of the Royal Flying Corps for such further training as may be necessary. He will then rejoin his regiment or corps, and will remain available for service with the Royal Flying Corps for a period of 4 years. This period may be extended from year to year under conditions to be prescribed by the Army Council.

A gentleman not holding a commission who desires to join the Royal Flying Corps as an officer will forward his application to the Commandant, Central Flying School, quoting the number of his Royal Aero Club Certificate, and stating which wing of the corps he wishes to join. If selected for the Military Wing he will be granted a commission as 2nd lieutenant on probation in the Special Reserve of Officers. The training of these officers will normally be the same as that prescribed for officers of the Regular Army, and they will receive, under the same conditions, the sum of 75*l.* if they have obtained the Royal Aero Club's Certificate at their own expense. An officer who desires to leave the corps before the expiration of 4 years' service will be called upon to refund this sum. Officers holding probationary commissions may be confirmed in their rank on the completion of the course at the Flying School, and will then be graded in the Royal Flying Corps as flying officers.

The grades of officers in the Royal Flying Corps will be—

Commanding officer.  
Squadron commander.  
Flight commander.  
Flying officer.

Officers holding the appointments of commanding officer, squadron commander, and flight commander will, if of lower rank, be granted temporary rank of lieutenant-colonel, major and captain respectively, while holding these appointments. This applies to officers of the Regular Army, the Reserve of Officers, the Special Reserve of Officers, and the Territorial Force.

The warrant officers, non-commissioned officers and men, of the Royal Flying Corps (Military Wing) will be obtained either by transfer from the Regular Army or by enlistment for the corps. In the case of direct enlistment the terms of service will be 4 years' Colour and 4 years' Reserve service. In the case of transfer from other arms the conditions of service will be varied



so that a soldier shall complete 4 years' Colour service with the Royal Flying Corps from the date of transfer and the unexpired portion of his term of original enlistment in the Reserve of the Royal Flying Corps.

All officers and men of the Royal Flying Corps, including the Reserve, will be liable to serve in time of war, either for naval or military purposes, in any part of the world.

The organization of the Military Wing of the Royal Flying Corps, to fulfil the requirements of the Expeditionary Force, will eventually be as follows :—

Wing Headquarters.

7 Aeroplane Squadrons, each providing 12 aeroplanes.

1 Airship and Kite Squadron, providing two airships and two flights of kites.

1 Line of Communications Royal Flying Corps Workshop.

The peace establishment of an Aeroplane Squadron, which for the present will coincide with the War establishment, is shown in Appendix I. The several squadrons will be raised under instructions to be issued hereafter.

The personnel and matériel of the Air Battalion, Royal Engineers, will be absorbed as far as possible in the Military Wing of the Royal Flying Corps, and the Air Battalion will cease to exist as a unit of the Corps of Royal Engineers on the 13th May next.

The officers of the Reserve of the Royal Flying Corps will be appointed from (a) naval and military officers, and (b) civilians, who have completed the course of training satisfactorily, but are not serving on the establishment of the Naval or Military Wing nor on the permanent staff of the Flying School. These officers will fall into two classes. The flyers of the First Reserve will be required to perform certain flights during each quarter of the year. Flyers of the Second Reserve will not be required to perform any flights but will be available for service in the Royal Flying Corps in time of war.

Non-commissioned officers and men may be enlisted directly into the Special Reserve for a total period of 6 years.

Further instructions will be issued as regards the uniform of the corps.

#### *The Central Flying School.*

The Central Flying School will be situated on Salisbury Plain. The establishment of the school is given in Appendix II.

Its functions will be the training of candidates for, and personnel of, the Royal Flying Corps in—

- (1.) Art of flying, including cross-country flights.
- (2.) General principles of mechanics and of aeronautics entering into the construction of aeroplanes.
- (3.) Construction, maintenance and use of instruments, internal combustion engines, &c., forming part of the technical equipment of the corps.
- (4.) Meteorology.
- (5.) Observation in the air.
- (6.) Air navigation and flying by compass.
- (7.) Photography from aircraft.
- (8.) Signalling by all methods as applied to aircraft.
- (9.) Instruction in types of warships and aircraft of all nations.

The nature and dates of courses of instruction to be carried out at the school will be published from time to time in Army Orders.

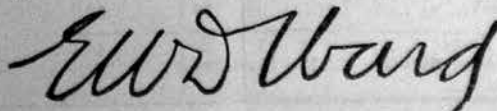
There will probably be three courses of instruction for flyers in each year.

*The Royal Aircraft Factory.*

The Army Aircraft Factory will be designated the "Royal Aircraft Factory," and will continue to be administered by the War Office. It will carry out the following functions :—

- (1.) The higher training of mechanics for the Royal Flying Corps.
- (2.) Repairs and reconstruction for the Royal Flying Corps.
- (3.) Tests with British and foreign engines and aeroplanes.
- (4.) Experimental work.
- (5.) The existing work in the manufacture of hydrogen, and generally meeting the requirements of the Airship and Kite Squadron.
- (6.) General maintenance of the factory as at present.

*By Command of the Army Council,*



6

**APPENDIX I.**  
**AN AEROPLANE SQUADRON.**  
 PEACE AND WAR ESTABLISHMENT.  
*(Provisional.)*

Detail.	Rank and file.				Total.	Remarks.
	Officers.	Warrant officers and sergeants.	Air mechanics.	Others.		
Headquarters (excluding attached) ... ..	7	2	12	...	21	
Headquarters attached ... ..	...	...	...	3	3	
Three flights ... ..	12	21	96	...	129	
Total squadron (excluding attached) ... ..	19	23	108	...	150	
Total squadron (including attached) ... ..	19	23	108	3	153	

COMPOSITION IN DETAIL.  
*(i.) Personnel.*

Headquarters—						
Commander ... ..	1	...	...	...	1	
Officer flyers (a) ... ..	6	...	...	...	6	(a) To act as reliefs to the officer flyers of the flights, or to be employed as observers.
Warrant officers ... ..	...	2	...	...	2	
Air mechanics (including batmen) ... ..	...	...	12	...	12	
Total ... ..	7	2	12	...	21	
Attached (b)—Royal Army Medical Corps ... ..	...	...	...	3	3	(b) In war
Drivers, Army Service Corps (train transport) ... ..	...	...	...	2	2	
Total headquarters (including attached) ... ..	7	2	12	3	24	
Three flights, each (c)—						(c) Each flight provides 4 aeroplanes.
Officer flyers ... ..	4	...	...	...	4	
Sergeants ... ..	...	7	...	...	7	
Air mechanics (including batmen) ... ..	...	...	32	...	32	
Total flight ... ..	4	7	32	...	43	
Total three flights ... ..	12	21	96	...	129	

The Royal Warrant for the Royal Flying Corps (Page 6), Royal Air Force, Archive, Hendon



7

(ii.) *Transport.*

Detail.	Head-quarters.	Three flights.	Total squadron.
<i>1st Line.</i>	Vehicles.	Vehicles.	Vehicles.
Motor cars ... ..	1	6	7
Motor lorries, 30-cwt....	...	9	9
Motor repair lorry ...	...	3	3
Shed lorry ... ..	...	6	6
Trailer trucks to hangar lorries ...	...	6	6
Motor cycles ... ..	...	6	6
<i>Train.</i>			
Motor lorry, 30-cwt., for baggage and supplies ... ..	1	...	1
Total ... ..	1	36	37

NOTE.—No drivers of mechanical transport are shown for 1st line transport, as all air mechanics will be trained to drive the vehicles. Fitters and turners are provided for the care of the engines.

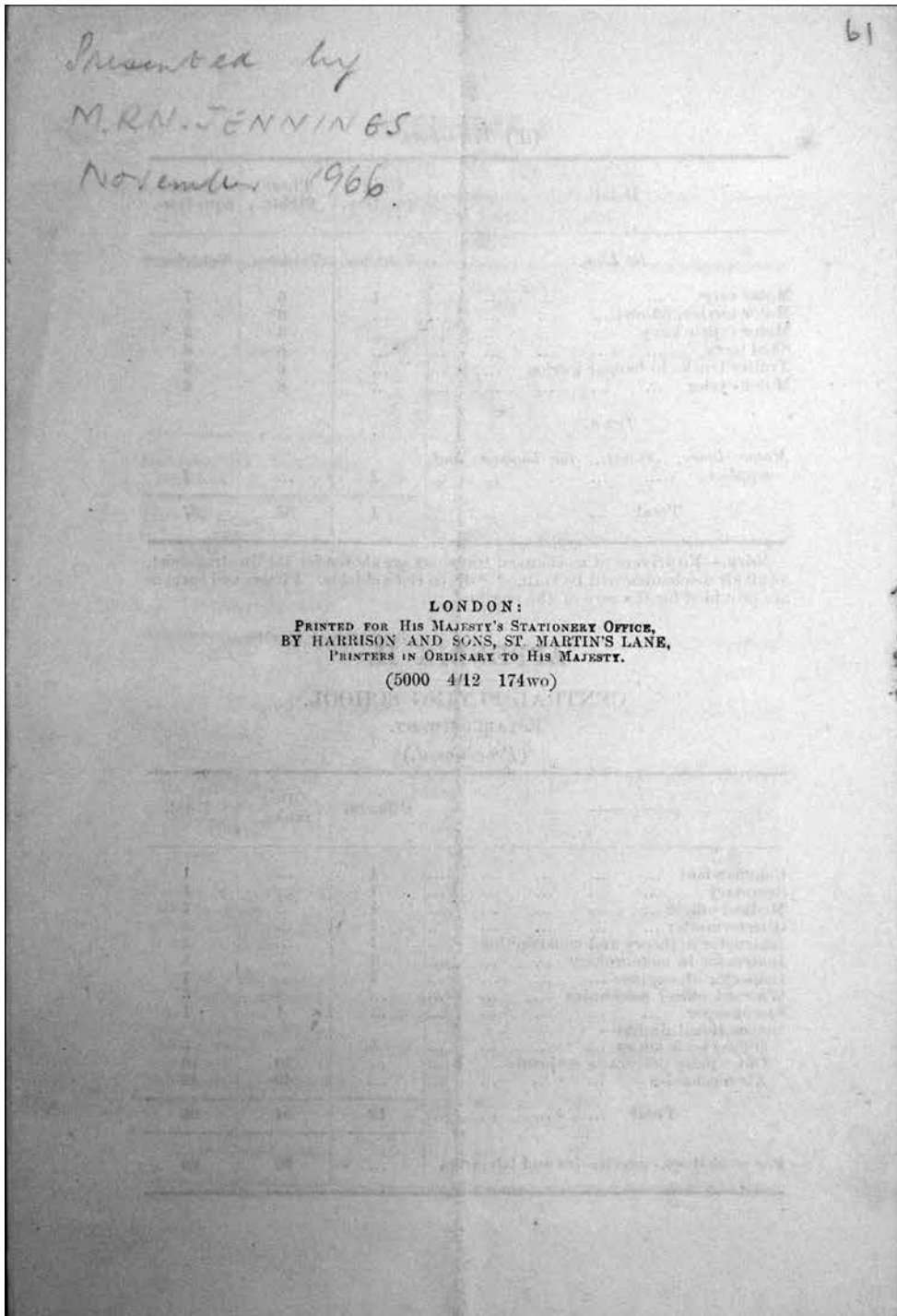
## APPENDIX II.

## CENTRAL FLYING SCHOOL.

## ESTABLISHMENT.

(Provisional.)

	Officers.	Other ranks.	Total.
Commandant ... ..	1	...	1
Secretary ... ..	1	...	1
Medical officer ... ..	1	...	1
Quartermaster ... ..	1	...	1
Instructor in theory and construction ...	1	...	1
Instructor in meteorology ... ..	1	...	1
Inspector of engines ... ..	1	...	1
Warrant officer mechanics ... ..	...	3	3
Storekeeper ... ..	...	1	1
Instructional flights—			
Officer instructors ... ..	5	...	5
Chief petty officers or sergeants ...	...	10	10
Air mechanics ... ..	...	40	40
Total ... ..	12	54	66
For workshops—mechanics and labourers	...	20	20



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Major General Sir Frederick Hugh Sykes

## Sir Frederick Sykes

By Doctor David Jordan

Sykes was born on 23 July 1877, and there was little sign in his early years that he would become a significant figure in British military history. Although an intelligent child, the death of his father (when Sykes was 2) meant that his education was curtailed at age 15 as there was a need for him to seek work, rather than attend University. He spent two years in France, largely with the aim of learning the language well enough to embark upon a diplomatic career, but he in fact began his working life in the tea industry and in shipping. Sykes was moved to volunteer for the Imperial Yeomanry Scouts during the Boer War. Taken prisoner by the Boers, he escaped, and was soon afterwards offered a commission in Lord Roberts' bodyguard. He remained in the army at the end of the South African War, transferring to the 15th Hussars in India in 1902. An erudite soldier, Sykes attended the Staff College in India, and was posted to the Directorate of Operations at the War Office in 1910. He did not assume this post immediately after his departure from his previous job, and used the time to learn to fly. A French-speaker, he observed exercises in France in 1911, and produced some notes for the War Office regarding the use of aircraft. He was convinced that aircraft (and balloons) offered considerable potential for military use, and became something of an advocate for air power. He served as Secretary to the Sub-Committee of the Committee of Imperial Defence on aviation, and was appointed to command the Military Wing of the Royal Flying Corps in 1912. Sykes' vision for air power was demonstrated in two articles in *Army Review* in 1913 and 1914 in which he gave a clear illustration of how he perceived the use of aircraft in future war.

His presumption that he would command the formation in time of war was overtaken by events, though, and he instead served as deputy to David Henderson, often acting as the commander when Henderson returned to London. Sykes was in the unfortunate position that his warm personal relations with the politically-minded General Sir Henry Wilson, coupled with his intelligence, ambition and a personality some found rather prickly led to many of his colleagues mistrusting him. Henderson appears to have been one of these, and when the Admiralty requested an air advisor for the Dardanelles Campaign in 1915, Henderson's decision to send Sykes to fulfil this role may have in part been motivated by the thought that this would keep Sykes away from RFC headquarters for a while, even if the decision to despatch him was entirely logical given Sykes' expertise. The problem for Sykes lay in the fact that while he was away, Henderson stepped down as General Officer Commanding the RFC in France. Sykes did not, therefore, take command of the RFC as he might have expected, with the job instead passing to Trenchard. It is safe to say that Trenchard and Sykes did not enjoy one another's company or rate each other's ideas on air power – a great pity, since it could be argued that the RFC and RAF would have benefitted greatly from the combined ideas and skills of the two men.

On his return from Gallipoli, Sykes moved away from the air service, becoming Director General of Organisation at the War Office, before moving on to become the representative for

the Adjutant General & Quartermaster General on the Supreme War Council at Versailles in November 1917. When Trenchard resigned as Chief of the Air Staff in April 1918, Sykes was chosen to replace him, but he assumed the post in addition to his duties at Versailles. This created conditions in which Trenchard – whose departure was the source of notable political controversy which in turn led to the resignation of the Secretary of State for Air – was able to be brought back into a command position (that of leading the Independent Force) which did not see him have to take orders from his nemesis.

Sykes offered a particularly grand vision for British air power within a wider imperial context after the First World War, but the cost of this was simply beyond the reach of the impoverished finances of the government in the aftermath of the Great War. The new Secretary of State for War and Air, Winston Churchill, found Trenchard's vision of a continuing independent air force rather more affordable, and Sykes was 'moved sideways' to become the Controller-General of Civil Aviation in 1919, with Trenchard returning as head of the RAF. Sykes resigned in 1922 following a clash over a lack of funding. He entered parliament as the Conservative MP for Sheffield Hallam, before leaving the Commons to become Governor of Bombay in 1928. He served as an MP again during the Second World War, but stepped down in 1945. Sykes then largely contented himself with service as a director on the boards of a number of public companies until his death in September 1954.



## XIII

**MILITARY AVIATION<sup>1</sup>**

By MAJOR F H SYKES, 15<sup>th</sup> Hussars, Royal Flying Corps

We have recently listened to most excellent technical lectures on subjects to do with the actual design of aircraft. I think it may now be of interest to consider the more military aspect, that is to say, the directions in which aircraft will be used and the results to be gained. It is sometimes said that aviation will revolutionize warfare, or even stop it altogether. This, of course, is absurd. The main principles of war have been the same for centuries, and will probably remain so for several more. Its instruments (of which aviation is the latest and to me the most wonderful) it is which vary. That aviation will, however, have a great effect on warfare I am convinced. I hope to show the form which I think this effect will take.

First, let me attempt to reduce to a few words the great principles of war strategy (as against peace strategy or all the preparations made before war breaks out) which the new arm must attempt to serve. They are these:

*Strategic Penetration* – Child's play: go for the enemy in his centre; hold him on one hand; beat him quickly on the other.

*Interception* – Walk round and masticate him thoroughly from behind.

*Concentration of Superior Force at the Decisive Point* – Select the enemy's weakest point, his flank or rear if possible; mass there; and reap the well-earned results.

It sounds very simple. But perhaps the enemy may be trying the same methods on you. Roads may be feet deep in mud, railways broken, bridges blown up, passes blocked, rivers (of course quite unfairly) in flood, transport broken down, supplies lacking, men hungry, cold, worn out, diseased. Such things have been.

Your countrymen, legislative bodies, Press, stock exchange, will take good care that you hear their comments: "Why *doesn't* old Brown-Jones get on"? "What *is* he doing"? "It is all so straightforward". "Can't the muddlepate see"? "Unless he bags the enemy's Army at once we really *must* send Jones-Brown".

War, like most other things, is simple, unless you know something about it.

But how does this affect military aviation? In this way. The fundamental difficulties of war are much the same now as they were in the days of Caesar. Even aviation will not alter them.

<sup>1</sup> A paper read before the Aeronautical Society of Great Britain.

In the thirteenth century armies were of some 30,000 men, and started real business when a few yards apart. At Waterloo the sides were roughly 120,000 and 90,000. In 1904, at Manchuria, one battle – Mukden – had a frontage of 80 miles, and the actual forces employed in the field numbered about 310,000 each.

In future (except possibly in the case of England) the entire able manhood of the country will take part at one point or another. Yet in all cases, given more or less an equal degree of preparation, both sides labour under much the same difficulties and enjoy similar advantages. The old, old principles prevail. Instruments, however, change. Factors develop. The latest – aerial work – is pushing its way amongst the innumerable concomitants of war. What will be its effect? Will one side gain? Will both gain, and so re-balance one-another? In any case no revolution of methods will occur.

### **THE GENERAL EFFECT OF AVIATION ON STRATEGY AND TACTICS IN MODERN WARFARE**

Before dealing in detail with points which go to make up military aviation, I should like to show as briefly as possible their general result.

In the first place the plans drawn out in peace will require even greater care and brain power devoted to them in order that the preliminary dispositions of troops, that is the “strategical deployment” may be the best possible. An all-round speeding up of the strategic operations may be expected. The sequence: order, counter order, and disorder should be less frequent. If the huge masses of modern Armies are found to have been wrongly placed, no amount of zeal, training, bravery, or mobility can make up. There will be no time for a general re-shuffling. The offensive will increase in advantage over defensive. Leaders must be prompt and correct in decision; troops prepared to make long and rapid movements. Army Corps will take upon themselves more the rôle of naval squadrons – their various positions, strengths, and movements will be generally known.

Efficiency, leadership of men, the greatest mobility, and – other things being equal – the greatest number will win. Hitherto it has been possible for a small, exceedingly mobile and well-handled force by rapid hidden movements sometimes to defeat considerably larger numbers. It was in this way that the splendid daring of Jackson, the American General, had such great results in Shenandoah Valley, in the war between the North and South. Aircraft will, I think, render this line of action practically impossible.

There can be no doubt that unless one side definitely obtains command of the air (and I will touch on this in more detail later), the cards will be more openly displayed for both. The problems of land warfare, which – if I may say so as a soldier – are far more difficult than those with which my brother officers of the Navy have to deal, will tend, owing to aerial developments, to approximate more closely to those of naval operations. I may say that I look forward to this with considerable satisfaction. We shall still have the enormous strains



of mobilization, of supply difficulties, of lines of communication, of weary legs, but the "fog of war", the "hill" behind which Wellington could not see, will, to a certain extent, be quietly and quickly removed.

Jackson said that "to mystify, mislead, and surprise his enemy is a commander's great object in war". Would such a move as Blücher's from Ligny to Waterloo now be possible? The fog of war was about Napoleon. His plans were upset. Again, at Mukden, the Japanese caused the Russians to think their left flank would be turned. Reserves were hurried East to counteract the expected movement. Counter-marching Westwards, they could only be thrown in piecemeal against the true Japanese flank attack. At the time of Mukden the Russians were gradually drawing on their large reserve strength in Europe and becoming adequate to their task; the Japanese were almost at the end of their tether. How might the world's history have been altered had the Russians, possessing command of the air and locating the actual movements of the Japanese reserves, met the flank attack with an outflanking movement?

Owing to the fear of moving troops in a wrong direction and having to countermarch them, there will, I think, be a tendency both in the strategical and tactical stages for commanders to await the reports of their aerial reconnoitres before deciding what to do. Preliminary orders will be issued and confirmed or altered in accordance with the results of reconnaissances. As the strategical merges into the tactical phase, so the character of the reconnaissance work will be modified. Certain long distance flights will still be advisable to discover possible flanking and reserve movements, but the greater number will consist of short flights to ascertain the tactical position and place the information *immediately* in the hands of the commander. But can both sides rely upon obtaining such aerial reports?

So far the results of aerial work have been concerned almost entirely with reconnaissance. In future it is perhaps unfair to assume that one side will have aircraft and not the other. How much will be possible while the enemy is also in possession of an aerial squadron?

Neither Tripoli nor the Balkans is a guide. The Italians had the air to themselves. The Allies also have been free from interference, except that a good deal of shooting has been done from the ground.

### **COMMAND OF THE AIR**

General Grierson has told us that war is impossible without command of the air. I am glad that this statement has caused many people to pause and think. But, if I may say so, though I agree with General Grierson with reference to the war of a few years hence, as regards that of to-day I am not quite so certain. I even hold that command of the air can never really be of the same nature as command of the sea. Neither can the same extent of strategical or tactical freedom in the area of operations be obtained, which might result from the vigorous use of good cavalry.

At sea and on land there are only two dimensions. In the air the third (climbing) is the difficulty. It may, of course, be overcome. We have the precedent of naval evolution from galley to Dreadnought. Weight and speed, the problems of naval designers for centuries, are those of aircraft engineers to-day. The enormous strides which aircraft have made during the last three or four years will, I feel sure, be far greater in the near future. Nevertheless, I feel that the third dimension is a severe stumbling block. A fighting machine, with its passenger, gun, ammunition, and possibly light armour, is a heavy machine. Every attribute is affected. It cannot, for some time, be as fast or easy to handle as an unarmed craft. It will climb more slowly, cause more strain on the pilot, and land with less certainty of remaining whole. The difficulties may be circumvented.

It is sometimes argued that possibly it is most advisable at present to develop primarily the number of high speed machines and the training of fliers to handle them. For the time being it would certainly seem that the fast scouting machine will have various advantages over the heavier type, with the result that, if both sides use it, both sides will know a great deal as to what the opponent is doing. If both sides also have fighting machines, the side upon which this fact has the least moral effect will have an important advantage. A little fighting in the air will, I think, have a far-reaching deterrent effect on the *moral* of the aerial forces of the losing side.

Military aviation is, and must be, dangerous. Those who take it up feel its enormous possibilities for success to their side. They accept its risks. The aircraft of one side will be imbued with greater staying powers, greater determination to fight. This side must be ours. It is this spirit which, creating moral ascendancy, always wins on land or sea. It will do so in the air. Thus again, as usual, we come to the man, the numbers of him available, his patriotism, self-sacrifice, and training.

The indications point, then, to two lines of acting being attempted by aircraft in war. The results of reconnaissance work to date demonstrate that each side must attempt, not only to gain information, but also to frustrate similar hostile effort. Certain aircraft will be employed purely for scouting purposes, others in fighting off the opposing aeroplanes and airships. The attempt to obtain command of the air will probably take place during the strategical concentration and before land hostilities have commenced. It is improbable that superiority once gained will be much affected by fresh machines being sent to the front. The moral effect accruing from original physical success in the air will be too great. The side which loses command of the air will labour under all the disadvantages of defensive action.

### **THE EFFECT OF AVIATION ON THE EMPLOYMENT OF VARIOUS ARMS**

There has been much discussion as to the effect of aviation on the employment of the various arms. Infantry is, of course, the arm upon which ultimate success depends. Aviation takes a place with its great auxiliaries. Its alliance is closest with cavalry, and it affects the action of the masses of an Army because it influences the uses to which cavalry is put. Those anxious to

reduce expenditure argue that, as aircraft can reconnoitre well, the value of cavalry has ceased to exist. This, I think, is quite unsound. Aircraft will aid and save the cavalry much unnecessary work. Cavalry, on its side, can help aircraft in many ways. The commander will be fortunate who has the most actively co-operating, highly organized, equipped and trained cavalry and air services. An instance of the value of joint action was afforded during the last manoeuvres, when a patrol discovered the outpost line of a hostile division, and an aeroplane its transport, and thus, though it was not exactly located, the approximate position of the main body.

The value of information is in proportion to the speed with which it is handed in. Under reasonable conditions of weather and country, a general can now within three and a-half hours expect a report as to the approximate strength, formation, and direction of movement of the enemy, if he is within an 80-miles radius. A similar result would take officers' patrols sent out from the strategic cavalry at least three days, while the prospects of acquiring the information would be less. Tactically the aeroplane is ready to undertake a reconnaissance of, say, three hours' duration whether to obtain information of the enemy's position and movements, to ascertain the nature of the ground to the front, flanks, and rear of a position, and to find suitable targets for the artillery. It will help in the service of intercommunication, in the co-operation of all arms, and also to supplement the telegraph and telephone services in obtaining news of what is happening during a battle.

Moltke's maxim of "march dispersed, fight concentrated", will be aided; a too early deployment and its attendant loss of strength be obviated. The reports of aircraft will afford a degree of security, a saving of officers, men, and horseflesh, in anxiety and strain on the commander, in mental wear and tear of the infantry and artillery. A weaker cavalry better helped by its aircraft may locate an enemy's cavalry, surprise and fight him on ground best suited to itself, and thus clear the way for the infantry main columns. The cavalry will be available to help the infantry in the decisive battle.

When opposing troops are close together aircraft will probably be detached to work with units such as divisions in order that the information may reach the hands of the subordinate commanders immediately concerned as rapidly as possible.

Lastly, we must always remember the great gain in *moral* which the side with the best air service will obtain. Nevertheless, too much reliance must not be placed on aircraft. The impossibility of work in fog, at night, and in high winds must be borne in mind. Further, the aircraft reconnaissance is essentially a rapid one. It passes and returns, its field of observation is not very detailed. Small bodies of troops will probably soon learn how best to hide themselves in the nearest cover, such as woods, villages, &c.

### **RECOGNIZING AIRCRAFT**

Both with respect to fighting in the air and to firing at them from the ground the recognizing of aircraft is a difficult question. Those who are accustomed to seeing aeroplanes can often tell

to which side or country they belong by their type. A reduction of the number of types used will help in this direction. Tables showing types of both friend and foe, as seen from below, will probably have to be issued to staffs and troops taking the field. In future, possibly, aircraft will tend to develop on nationally characteristic lines in the same way as warships have done, but as yet there is very little guide even in this way. Most British and French aeroplanes are very similar. German ones are certainly already somewhat different and more easily recognizable. The colour of machines, except occasionally in certain lights, cannot be distinguished if they are at a height of over 2,000 feet.

These facts render it a matter of great difficulty to arrange a system of umpiring on manoeuvres, by means of which an indication may be made as to the advantage gained by one or the other side in the question of air superiority. The naval method whereby two ships speak to each other by wireless and decide any point is obviously impossible. Nor does the system of firing a rocket to indicate to an aircraft that it is out of action and will not be allowed to continue its work for a time seem satisfactory. Last year, at all events, our Red and Blue aircraft had to pass one another, and it is a curious fact worth noticing that, owing to the attention of pilots and observers being concentrated purely upon obtaining information as to the position and movement of the hostile land forces, they seldom even saw each other in the air.

On manoeuvres a further condition of unreality is introduced by the fact that aircraft are seldom fired at from the ground. This is probably due to disinclination to shoot owing to the difficulty in distinguishing friend from foe, lack of experience in judging heights (experiments with range-taking instruments to determine the heights of aeroplanes have as yet given poor results), the uncertainty of effecting useful results as against disclosing one's position to the aerial observer, and the possibility of danger to friendly troops by such fire.

### **ALTITUDES MAINTAINED DURING RECONNAISSANCE**

The state of the atmosphere is mainly responsible for the height at which the reconnaissance of aircraft should be carried out. Observation is often difficult owing to the clouds and mist, and there is sometimes a tendency to descend to dangerously low altitudes in order to ensure correct information or verify that already gained. Bullets will probably quickly right this tendency in war. I understand that the Bulgarian fliers think anything under 4,000 feet unsafe from fire. Bullets, however, must not cause fliers to err on the side of caution when *looking* for information. The possibility of shrapnel is no excuse for failure. Once *obtained*, results cannot be too jealously guarded. Pilots must in any case endeavour to take advantage of clouds for concealment while minimizing their hindrance to observation. On a clear day observations can be accurately plotted on a map from an altitude of 4,500 feet, at which height the ground seems to be moving very slowly and reconnaissance is relatively easy.

### **NOTES ON RECONNAISSANCE**

There is no doubt that the work of piloting and observing entails heavy strain. Battling for even 20 minutes with a heavy machine through a difficult wind is an exhausting task, and

commanders must study economy in the use of aircraft at their disposal. As regards wind, I think it is fair to assume that aeroplanes will be able to fly five days out of six at one time or other of the day. The same pilot and observer should always work together if possible. Speaking tubes are useful between the two. For continuous work two officers per aeroplane are advisable. Under present conditions, and for any considerable period even in fair weather, it may be estimated that pilots and observers can only be employed for about three hours during the day, or say ten hours in three days. On completing his task a pilot must, if possible, be given complete rest. If the wind is tricky, the cold intense, or there are other unfavourable circumstances, the above estimate will probably have to be reduced. A reserve of pilots, and possibly of observers, is therefore necessary. This, however, would mean that observers will, as a rule, be officers of the Royal Flying Corps or of other regiments, not staff officers. On the other hand, there has been found a difficulty on the Continent in obtaining really good observation officers other than from those on the Staff.

Much careful training and practice will be required whatever officer is selected; not only is considerable experience in the air in 70 to 80 miles an hour machines necessary, but also a large and sound knowledge of military matters. The observer must know instinctively which facts are of importance and which are useless. The untrained officer is of no use. In my opinion the best staff officers, and as many of them as possible, should be trained and kept in practice for this purpose.

In strategical reconnaissance it is generally a matter of observing the enemy's main body. When they are in column of route it is comparatively easy to recognize their nature and to estimate their strength, while in dry weather the dust they throw up gives an early indication of their presence. The position and movements of the hostile cavalry masses, if discovered, will probably disclose the enemy's intention.

In tactical reconnaissance, on the other hand, troops must be observed after they have left the roads; they are then harder to find, it is most difficult to estimate their strength, and the results must be even more rapidly obtained and communicated. As observers on these occasions, therefore, it is advisable that staff officers, skilled in the work and fully acquainted with the latest reports, should make ascents from time to time in order to gauge matters, watch for movements of reserves or reinforcements, and report immediately to their generals.

Thus strategical reconnaissance is the easier of the two, and will generally give better and more accurate results. Here, too, however, careful and constant practice will be necessary, and, indeed, eventually the training of the observer will probably require even more care than that of the pilot.

Over easy country, that is when there are few but easily distinguished roads and railways, it has been found that the best results are obtained by mapping out a definite course for each aeroplane, for the pilot to find his way and the observer to confine his attention strictly to

observing. But in the case of difficult country, when there are many winding small roads, it is usually better to give a definite objective and let the observer direct the pilot. Over easy country a pilot-observer in a single-seater machine may be able to gather useful information, especially if it is a question of large strategical movements, but over a difficult area important results cannot be expected unless a definite objective only is given him.

### **NIGHT WORK**

The questions of night marches and of the concealment of troops are of much interest to the observer. It would certainly seem that one of the results of the introduction of aircraft will be more night advances and movements, either to make up for delay occasioned during daylight, to escape notice, or for the purpose of tactical reshuffling, necessitated by the reports of the evening reconnaissance. It has been found that, even in wooded country, large bodies of troops can be seen if they are on the move. It is, of course, difficult to report their number, and if halted it is practically impossible to find them. Concealment has been proved to be possible. Various methods of hiding troops must, therefore, be studied, and may on occasion be effective in war. But if forces are to be concealed, and only move at night or in bad weather, there will be much delay. Marches and operations will be greatly impeded. In this, as in so many matters, a compromise will probably be made. It will sometimes be advisable to hide, sometimes to push on and chance being seen. It is a question of generalship. Night marches when troops are weary and short of food are not popular; they entail heavy wear and tear, and, if continued for long, lower the fighting mettle of the men. During last manoeuvres neither side did much in the way of night marches, owing probably to the desire to keep the troops fresh for a final effort. If a night march is to be undertaken no preparations should be made which it will be possible for aircraft to see.

Not much has been done by aeroplanes at night, but such work may, I think, be considered one of the most important duties of airships. It is of considerable difficulty and requires much practice and training. I am afraid, therefore, that the unfortunate soldier must not expect to be free from the baneful influence of aircraft at night. His bivouac cooking fires – when and in what number to use them – will have to be considered, and the fact remembered that they should not be left burning in the morning. The danger to aeroplanes attempting to land at night is still very considerable. Machines sometimes return late, however, and land when it is almost dark with the help of petrol flares. Troops billeted in villages or towns will probably be an uncomfortable problem for the observer. It will undoubtedly be very difficult to estimate their strength.

### **HANDING IN INFORMATION**

Having obtained information, the greatest value must at once be gained from it. To effect this the commander of the aircraft must be in constant touch with the General Staff. His observers should be placed in full possession of all information already gained and movements intended. An aircraft may happen to spot a hostile body in quite an unexpected locality, and, if it appreciates the situation, rightly decide to return and report this before going on to its

allotted task. The freest hand possible should be allowed. It will usually be advisable to send two aircraft if the mission is a very important one.

In selecting a new position for Army or other Headquarters to which aeroplanes are attached, the necessity of having a suitable adjacent landing ground should be given considerable weight. Staff officers could quite easily learn the type of ground required. Routine instructions have already been drawn up.

Owing to the character of the country, it may often be impossible for aeroplanes to land quite close to Headquarters. A considerable advance has been made in methods of dropping messages, but much practice is yet required in this direction. Motor cyclists as despatch carriers are most useful. When the aircraft have inevitably to work from a point distant from Army Headquarters, motor cars are used for observers personally to report to Headquarters for instructions before starting, or on return to supplement written reports by verbal information.

The question of signals from aircraft is a complex one. Lights, puffs, discs, Klaxon horns, &c, have been tried, but the results have so far not been entirely satisfactory.

The employment of an aeroplane for the transmission of intelligence from Army Headquarters to the cavalry division has been found to answer well.

The French are reported to have sent messages a distance of 50 or 60 miles by wireless. The difficulty of receiving, owing to noise, both in airships and aeroplanes, has yet to be overcome, and the interference between stations also restricts its use. If used the necessity for a cipher is obvious, and only a few important messages should be sent.

Many people are astonished at the apparently extraordinary number of accessories required to keep a number of aircraft in the field. Transport, spare parts, tools, sheds, mooring masts, and other absolutely innumerable impediments. On manoeuvres last year some 8 motor cars, 12 light tenders, 10 heavy tenders, and 8 Foden steam lorries were fully employed to keep 2 airships and 14 aeroplanes going. May I here interject a hope that constructors will recognize our difficulties in this respect, and give all the help they can towards some degree of standardization.

During prolonged operations it will be a matter of great difficulty to maintain more than 50 per cent of machines in working order, and even this will necessitate a great quantity of immediately available spare parts and a high degree of training in all concerned. It would, I think, seem probable that no aeroplanes or engines and few pilots and observers will last more than three or four months on active service. Efficient and sufficient repair lorries are essential, though present experience points to the fact that first-aid repairs can only be of the character of replacing damaged parts. More serious damage must be repaired at the flying dépôt at

the advanced base. A considerable source of wastage will probably lie in the fact that engine failure will have an inconvenient habit of occurring when a machine is securing its very best information over hostile country! Even the Royal Aircraft Factory cannot help us under these circumstances! The best remedy lies with engine manufacturers, and it is in this direction that we hope for the next great step.

### **SHEDS**

Sheds, if used, require a great deal of transport and personnel. Actually many aeroplanes can remain out at night for short periods if some sort of cover is provided. Sheds will probably only be kept for overhaul purposes. If, however, a shed could be designed which is sufficiently light to permit of one per aeroplane being carried without prohibitive transport, the efficiency of the machines and their detachments would undoubtedly be much increased. A practicable method is to use the present sheds, but only to move the field base every three or four days. The disadvantages of this procedure are that the field base will probably not always be with Army Headquarters as it should be. There may be a tendency to loss of touch and to the waste of valuable time morning and evening.

The weight of airship sheds, of course, renders them quite prohibitive. Mooring masts and a prayer for good weather have to be put up!

### **TRANSPORT**

Even if sheds are not carried, transport (with its own complement of spares) is essential also to permit of the field bases being moved to points convenient to the landing places of the aeroplanes, as otherwise valuable time will be wasted in the aeroplanes having to go some distance to the rear for overhaul, supplies of petrol and oil, food for the men, &c.

The technical personnel at the field bases requires a high degree of training (in addition to a large proportion of physical and mental steel), and must be in sufficient numbers to provide reliefs. The bases have frequently to be moved by day and the overhaul of aircraft to be carried out by night.

### **TYPES OF AIRCRAFT CONSIDERED BY THE AUTHOR TO BE REQUIRED IMMEDIATELY**

To sum up the conclusions to which the many considerations I have tried to place before you lead me, I think we want:

- First.* For strategical work, a single-seater scout aeroplane with a speed of 90 miles an hour, a landing speed of half that figure, a very high rate of climbing, and a petrol capacity of, say, 300 miles. Good view is also essential.
- Second.* A two-seater with speeds of 80 and 40, and 200 miles tankage; carry a light weapon, be a good climber, and be capable of landing on bad ground. Good view.



- Third.* A two-seater fighting machine with speeds of 70 and 40, to carry a gun, ammunition, light armour, and petrol for 200 miles. Again of good climbing powers.
- Fourth.* A semi-rigid airship of about 250,000 cubic feet capacity, a speed of 55 miles an hour, keep the air for at least six hours. To carry a crew of eight, a light gun and ammunition, wireless, searchlights, &c.

We in England are rather apt not to recognize the capabilities of airships. They have not yet attained to really great speed, but their range of action is very large, observation is easy from them, they can hover silently, carry light armament, drop bombs or explosives, they can fly in quite strong winds, and rise at a rapid rate. The answer to such vessels other than meeting like with like is at present difficult to see. They are a very formidable weapon. It is an unwise satisfaction to shirk such realities.

### **DREAMS OF THE FUTURE**

The types I have mentioned are those wanted now. I dream, in the not far distant future, of scouting aeroplanes of 120 miles an hour; fighters to carry pilot and assistant, gunner and observer at a speed of 100 miles; weight-carriers to transport troops, rations and equipment 10 or 12 at a time a distance of 30 miles and make five trips a day. Given four hundred of these and some 20,000 to 24,000 men are landed a double march ahead, with no weariness of the flesh, but rather physically and mentally braced up by a pleasant journey. The navies of the world – I am sorry for them – but, in my dream, they have somewhat to relinquish their present proud position, their rôle is that of floating defence; the air service – built up from joint fortresses, arsenals, dockyards, Government offices, factories of war material, are protected from the air by an elaborate system of ... I don't think I will tell you that yet. How extraordinarily interesting it all is!

But for England to maintain her political weight in the world these possibilities, though at present still dreams, must be looked into, worked at, grappled with, until the Army and Navy and public understand at least their dangers. We are so slow at taking up a new thing. Is it that our national imagination is sluggish – that we are wanting in mental alertness? The phrase "The slowness of great strength" is out of date. "Strong in courage and knowledge, quick and certain in action", must take its place.

The Aeronautical Society is doing all it can to help. But many more channels for the rapid dissemination of knowledge on aerial subjects are required. If I may say so, I think that if the Royal Flying Corps had done nothing else (and it is doing a good deal), the fact of its having brought the two services into joint action would be quite sufficient justification for its existence. The public must now be brought into partnership. In France the aerial services have the solid backing of consistent popular opinion. We cannot do without it in this country. With it we can and will take the foremost place in the air as now on the sea. All rests eventually

on the public. It must not be allowed to shirk its responsibility. Information as regards developments in aircraft designs and employment by land or sea, progress in the formation and training of the Royal Flying Corps, lessons learnt in aerial reconnaissance, meteorology, wireless, and the vast number of other kindred subjects must be put in their possession. As a help in this direction we hope shortly to start a Royal Flying Corps journal. Hearty hospitality will be extended in this to articles on subjects in connection with service aviation.

I am not pessimistic as to the question of interest in aeronautics coming. It will come, but it must be made by us all to come quickly.

Transcribed by RAF CAPS from The Army Review, July 1913.

An electronic version of this document, along with a follow-up paper on the same subject, published in 1914 by The Army Review, is available at:

<http://www.airpowerstudies.co.uk/apps/documents/>



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THE NAVAL AIR SERVICE

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1908-1918

**DOCUMENTS RELATING TO THE NAVAL  
AIR SERVICE**

Volume I

**1908 – 1918**

*Edited by*

CAPTAIN S. W. ROSKIL, D.S.C., R.N., M.A.

*Fellow of Churchill College, Cambridge*

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**47.** *Extracts from Admiralty Circular Letter CW.13964/14 of 1 July 1914 'Royal Naval Air Service – Organisation' (Adm. 1/8378)*

[It will be noted that although this letter does once refer to the Royal Naval Air Service 'forming the Naval Wing of the Royal Flying Corps' there is a strong suggestion of separatism, particularly in the statement that 'it will form part of the Military Branch of the Royal Navy'. Presumably Mr. Churchill, who had very recently expressed strong views against separation (See No. 46), failed to notice the implications; or possibly the letter was not submitted to him for approval. Unfortunately the paper carrying the signature of the approving officer has not survived. The actual act of separation from the Royal Flying Corps did not take place until just over a year later – shortly after Churchill had left the Admiralty (See No. 72).]

The following regulations are to be substituted for those provisionally issued in the Admiralty Circular Letter No.22 of 15<sup>th</sup> July 1912.<sup>i</sup>

The Royal Naval Air Service will form part of the Military Branch of the Royal Navy, and the various ranks will be added to the list of officers of the Military Branch in Art. 169 of the King's Regulations. They will not, however, be entitled to assume the charge and command of a ship unless they belong to one of the existing ranks in the Military Branch and are expressly authorised to do so by superior authority.

#### A.- GENERAL ADMINISTRATION

The Royal Navy Air Service, forming the Naval Wing of the Royal Flying Corps, will comprise all naval aircraft and personnel, either for active or reserve service, and will be administered by the Admiralty.

It will consist of:-

The Air Department, Admiralty.

The Central Air Office.

The Royal Naval Flying School.

The Royal Naval Air Stations.

All seaplanes, aeroplanes, airships, seaplane ships, balloons, kites, and any other type of aircraft that may from time to time be employed for naval purposes.

When Naval Air Stations are established at places on the coast where Coast Guard Stations exist, the Coast Guard duties will be taken over and performed by the officers and men of the Royal Naval Air Service. Until the Royal Naval Air Service is more fully developed such ratings as are necessary will be lent from the Coastguard for these duties.

All ranks and ratings of the Royal Naval Air Service will be borne on the books of one of H.M. Ships, and will serve under the provisions of the Naval Discipline Act accordingly.

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<sup>i</sup> No.16.

The Military Wing and its Reserve, and the Central Flying School will be administered by the War Office. A portion of the staff of the Central Flying School will be drawn from the Naval Wing.

## B. – OFFICERS

### *(1) Application for Enrolment*

Officers serving afloat who desire to join the Royal Naval Air Service should forward their applications through the usual Service channels. Officers of the Royal Marines serving at Headquarters will forward their applications through their Commandant.

Officers of the Royal Naval Reserve or the Royal Naval Volunteer Reserve, when not serving afloat, should forward their applications through the Admiral Commanding Coast Guard and Reserves.

Officers on the Retired and Emergency Lists, or on Half-Pay, should communicate direct with the Secretary of the Admiralty. The application must contain the following details: -

[Not reproduced]

### *(2) Application for Enrolment by Civilians*

Civilians will be eligible for direct entry into the Naval Wing as officers under the terms of the special regulations on the subject. All such officers will be appointed as Flight Sub-Lieutenants, Royal Navy, on entry, but they will be on probation until they have qualified in all respects.

### *(3) Selection*

Selections will be made by the Admiralty from time to time from the roster kept at the Air Department.

Officers of the Royal Navy on the active list will not be eligible for selection until they have completed one year's service as commissioned officers, or in the case of warrant officers until they have received confirmation of their rank.

Sub Lieutenants will be required to possess their watch-keeping and engine room certificates. Officers of the Royal Marines will not be selected until they have completed their courses.

### *(4) Conditions of Service*

An officer appointed to the Royal Naval Air Service, who has obtained or subsequently obtains the airship or aeroplane pilot's certificate of the Royal Aero Club at his own expense, will be refunded the sum of £75., or such lesser fee as he has been charged for his tuition. Such payment will not be made until after a reasonable period of probation and will depend upon a satisfactory report being received from the Commanding Officer under whom the

officer is training. Should he resign or retire within four years of the date on which he was selected, he will be liable to refund this sum, less one quarter such sum for every completed year of service.

\* \* \*

All applicants who are selected will, as a rule, be required to graduate at one of the Royal Flying Corps Instructional Establishments before being appointed to the Royal Naval Air Service, and if there is no vacancy for them for active service after completing their course they may be placed in the reserve until a vacancy occurs.

All Officers in the Royal Naval Air Service will be liable to be detailed for any branch of the Service, *i.e.*, Seaplane, Aeroplane, Airship, Seaplane Ship or Kite work, or for constructional or administrative work in connection with aircraft in general, and they may be required to serve either afloat or on shore at home or abroad. In time of war they are liable to serve for either naval or military purposes.

Every encouragement will be given to officers to make themselves acquainted with all branches of Air work. As soon as circumstances permit, it will be a general principle that airship officers are taken from those who have served in other branches of the Royal Naval Air Service.

The period of service in the Royal Naval Air Service for officers drawn from the active list, Royal Navy, must be limited by their flying efficiency, and will not, as a general rule according to present experience, exceed a duration of four years, dating from the time of selection. A certain number will, however, be selected to fill the higher posts in the Air Service. Those officers who are not selected for these higher posts will return to their ordinary duties in the Fleet after the above period, but may be reappointed subsequently for further duty in the Air Service at the discretion of the Admiralty.

Other Officers will pass into the Reserve at the expiration of four years, unless their term of service is extended or renewed. On the completion of one year's service they may, if considered suitable, be permitted to extend their original engagement to a total of six years; after 4 years' service to 8 years; after 6 years' service to 10 years; or alternatively they may be permitted to renew their engagement on its completion in the ordinary course.

Any officer who at any time is found to be unfitted for the duties of the Royal Naval Air Service will be liable to discharge therefrom, and those officers who belong to other branches of the Royal Naval Forces may be required to revert to their ordinary duties. This will not necessarily indicate that any blame is attributable to the officer.

Service of Naval Officers in the Royal Naval Air Service (not including the Reserve) will count in all respects as service in a ship of war at sea.

*(5) Rank in the Royal Naval Air Service*

Officers of the Royal Naval Air Service will be graded in the following ranks, and will take rank and command accordingly:-

Wing Captain with relative rank of Captain, R.N.

Wing Commander with the relative rank of Commander, R.N.

Squadron Commander (when in command) with the relative rank of Lieutenant-Commander

Squadron Commander (when not in command) with relative ranks of Lieutenant over 4 years' seniority (but senior to all Flight Commanders). On attaining 8 years' seniority in the relative rank of Lieutenant these Officers will rank with Lieutenant Commanders, R.N.

Flight Commander with relative rank of Lieutenant, R.N., over 4 years' seniority.

Flight Commander with relative rank of Sub-Lieutenant, R.N.

Warrant Officer, 1<sup>st</sup> Grade with relative rank of Commissioned Warrant Officer, R.N.

Warrant Officer, 2<sup>nd</sup> Grade with relative rank of Warrant Officer, R.N.

*Specialist Officers.* Officers employed on specialist duties, particularly gunnery, torpedo, or engineering, will be graded in the above ranks and will be instructed in the special air work which concerns them, and will be denoted by the letter (G), (T), (N), or (E) &c. As far as practicable officers in the Royal Naval Air Service will be selected to go through the specialist courses with a view to filling these posts.

Specialist Officers will not draw their specialist allowances.

In the initial stages it is necessary to form an arbitrary seniority list. Officers are to rank in accordance with this list, which has been, as far as possible, based on air experience. Some exceptions have been made on account of the relative age and seniority of officers prior to their entry into the Naval Wing. Subsequent to the date of this letter all entries to the Royal Naval Air Service will be graded from date of transfer or appointment to the rank of Flight Lieutenant or Flight Sub-Lieutenant. All promotions will be by selection, but as a rule no Flight Lieutenant will be promoted to Flight Commander unless he has served for at least two years as a Flight Lieutenant, and no Flight Commander will be promoted to Squadron Commander unless he has served at least one year as a Flight Commander.

As regards discipline, officers on the Official List of the Royal Naval Air Service shall rank with each other and command in the order in which they stand on that List, and each officer, so



long as he remains on that List, shall be subordinate to every officer who stands higher than his own, whatever may be their respective positions in the other branches of the Royal Navy.

Further, no officer (whether he was originally an officer of the Royal Naval Forces or not) while he is on the Air Service List shall ever assume any charge or command whatsoever except that which may appertain to the Air Service, or relate to the officers or men thereof, unless he receives express authority to assume such charge or command either from the Admiralty or, in case of emergency, from the Senior Naval Officer present. In any such case he shall rank and command in the order in which his name stands in the Official List of officers of his original Branch in the Royal Navy.

The names of officers of the Royal Navy who are selected for employment in the Royal Navy Air Service will be shown in the Official Navy List in italics in the Seniority List of the Branch to which they belong, and similarly when they revert to their original Branch their names will be shown in italics in the list of officers of the Royal Naval Air Service in the Navy List.

Officers entered direct from civil life will hold a position of entire equality in the Royal Naval Air Service in every respect with officers of the Royal Navy or Royal Marines who are of the same grade and seniority. In order to identify them closely with the Royal Navy and for their general instruction they will be embarked in a ship of war for a definite period each year. Their rates of pay will not be affected during this period, except that they will not receive flying pay.

Medical officers who may be employed in the Naval Wing will not be graded, but will be subject to the special instructions which have been issued.

\* \* \*

Naval Officers who already belong to the Military Branch will wear the uniform of their rank with the addition of an eagle on the sleeves above the distinctive lace.

Other Naval Officers who join the Royal Naval Air Service will wear their naval uniform with the distinctive lace of their relative rank in the Military Branch, and an eagle on the sleeves above the cuffs.

Others who join the Royal Naval Air Service will wear the uniform of their corresponding rank in the Military Branch of the Royal Navy with the exception that the anchor on buttons, cap badge, epaulettes, and sword belt will be replaced by an eagle.

During preliminary courses of instruction whilst under training Officers will not be required to alter their uniform in any respect.

Officers who may hold a higher rank in their original branch than that which they have been granted in the Naval Air Service will continue to wear the uniform of such higher rank

or relative rank (modified as above), but this will not entitle them to any higher position in regard to the duties of the Royal Naval Air Service than that which they are entitled to by their position in the Air Service List of Seniority.

The description of the flying dress and of the special working dress will be issued subsequently.

The uniform for all men graded in the Royal Naval Air Service will be the naval uniform of their rating with the following alterations in regard to badges: -

[Alterations not reproduced]

## APPENDIX I

### AIR OFFICERS

Whilst employed upon the duties of the Royal Naval Air Service, Officers whose names are upon this list rank and take command in the order that their names stand on the list.

Whilst Officers from the Royal Navy are so employed, their names are specially in *italics* on the list of their rank in the Royal Navy in order to indicate that their naval rank is in abeyance.

The first Royal Naval Air Service Seniority List had been framed on an arbitrary basis. All Officers who may subsequently enter the Royal Naval Air Service will, on being first graded, be placed at the bottom of the list of Flight Lieutenant, with the exception that if any Officers are entered for some particular duty a temporary grade of a higher nature may be given to them to give them the necessary authority and precedence.

Promotion from grade to grade will be by selection and not by seniority. The seniority in the Naval Air Service Grade, as regards Officers now on the list, will count as from the date of this Circular Letter. Time served previously in grades of the same name will not count as seniority.

[The Seniority List is not reproduced in full. Captain Sueter's name came first, followed by those of six Wing Commanders – O. Schwann, E.A.D. Masterman, F.R. Scarlett, E.M. Maitland, N.F. Osborne and C. R. Samson. Among the more junior officers appeared A.M. Longmore, R.H. Clark-Hall, C.L. Courtney, F.W. Bowhill and G.R. Bromet, all of whom achieved high rank later in the Royal Air Force. Appendix II, not reproduced, gave 'Regulations for the Special Entry of Officers into the Royal Naval Air Service for a limited number of years']

**48.** *Memorandum by Captain Murry F. Sueter, Director, Air Department, Admiralty, dated 9 July 1914 and Addressed to the Junior Officer of his Department.*

(Air 1/185)

It has come to my notice that some of the Air Officers are not in complete agreement with the new scheme for the Royal Naval Air Service.

This scheme has now been approved by the Board and has received the sanction of His Majesty The King. Should any of the Air Officers not feel prepared to do their utmost to make the scheme a success and so to build up the Naval Air Service, I will be prepared – much as I shall regret the necessity – to submit their names to the Board for their services to be discontinued in the Air Department.

To make the Naval Air Service a success it is imperative that small personal objections should be put aside, and that the work of every individual be conducted in strict accordance with the principles of policy which have been entrusted to my hands as Director.

Every Officer should weigh carefully whether he is prepared to remain in the Air Service or whether he prefers to go back to the sea service, but if he elects to remain it will be taken as an expression of this willingness to make every endeavour to build up the Air Service and hasten its development on the lines of policy which have now been definitely laid down, and not in accordance with his personal bias towards a policy which has been definitely rejected.

Transcribed by RAF CAPS.

An electronic version of this document is available at:

<http://www.airpowerstudies.co.uk/apps/documents/?&page=1>

# **Development of Air Power in World War 1**

General Hd. Qrs.

17/10/14.

O.B./B.1889.

From,

The Field-Marshal, Commanding-in-Chief,  
British Forces in the Field.

To,

The Secretary,  
War Office, London, B.W.

General Staff, Operation Section

17/10/14.

No. G.A.541.

General Head Quarters,  
17<sup>th</sup> October, 1914.

Sir,

I have the honour to bring to your notice that since the beginning of operations it has been found that the calls on the services of the Royal Flying Corps have materially increased. The necessity for watching the enemy's line for prolonged periods, during which movements of great masses both from reserves and from different parts of the fighting line may take place at a distance of fifty or sixty miles, demands continuous and extended reconnaissance to an unforeseen degree. At the same time tactical aeroplane reconnaissance has proved so valuable that for this purpose and for directing artillery fire it has been found necessary to attach aeroplanes continuously to Army Corps. At the present moment 2 2/3 squadrons out of 5 are detached from Headquarters to Corps. It has also been found necessary to form and now to increase a wireless flight for use with artillery, and there is no doubt that the demands for wireless aeroplanes will also increase.

I consider that, at its present strength, the Royal Flying Corps is just able to meet the demands on it. In the event, however, of any considerable increase in the British Army in the Field, additional squadrons will be required, if reconnaissance on the present scale is to continue. I would therefore urge the necessity of completing in personnel and material the 1st, 7th and 8th Squadrons of the Royal Flying Corps, already authorised, at as early a date as possible, to admit of the additional work being attempted.

Such efficiency as the Royal Flying Corps may have shown in the field is, in my opinion, principally due to the organization and training. It is therefore most desirable that any reinforcements should be organized, trained and equipped in exactly the same manner as the squadrons now in the field.

Owing to the complete divergence between the methods and equipment of the Naval and Military Air Services, I do not consider that units of the Royal Naval Air Service would be suitable as reinforcements to this Force.

I have the honour to be,

Sir,

Your obedient Servant,

(Signed) J.D.P. French, Field-Marshal,  
Commander-in-Chief.

G.O.C.

Royal Flying Corps.

---

The attached is passed for your information.

G.H.Q.

(Sd) A.Cavendish, Colonel,

20/11/14.

A.A.G. for A.G.

2.

A.G.

I am of opinion that, under present circumstances, the Royal Flying Corps in the field still requires a Commanding Officer. There is much divergence of opinion, coupled with a lack of technical knowledge, in the Army, as to the proper methods of employing aircraft in war, and a central authority is necessary in order to ensure that the best results are obtained with the limited means at our disposal.

21/11/14.

(Sd) David Henderson, Maj.-Genl.  
Commndg. Royal Flying Corps.

D.

SUGGESTIONS BY COLONEL TRECHARD.

Organisation  
of R.F.C. Wing  
as Army or  
Divisional Troops.

No. This is unsound.

Advantages of this  
organisation.

No. Cohesion is  
essential still.  
This is purely view  
of prospective wing  
commanders. The best  
advantage to all will  
be obtained by hand-  
ling R.F.C. as a Corps  
and not splitting it  
up.

Responsibility of  
O.C.R.F.C. at outset.

Replacing Division

Functions of H.Q.  
R.F.C.

No. Too little  
technical knowledge  
yet.

Position in the field  
of H.Q.R.F.C.

See above. This  
makes G.O.C.'s  
functions purely

Communication be-  
tween O.C.R.F.C. and  
detached squadrons.

supply.

1. A Royal Flying Corps wing of three or four squadrons could be organised in service in the same way as Army or Divisional troops. That is to say, that instead of remaining together as a single unit under their own Headquarters the squadrons could be definitely allocated to the large units of the field army, the squadron commanders being directly responsible to the high commanders.

2. In this way, by the elimination of a flying Corps Headquarters from the channel of communication, delay in the transmission of orders and reports, and unnecessary duplication of work, would be avoided. Moreover, the cumbersome nature of the R.F.C. transport, working as a united corps, which is a matter of concern to the G.O.C.'s and Staffs, would be done away with. Lastly, the enterprise of the enemy's airman would not be directed to the huge mark otherwise provided for them and all the eggs would not be in one basket.

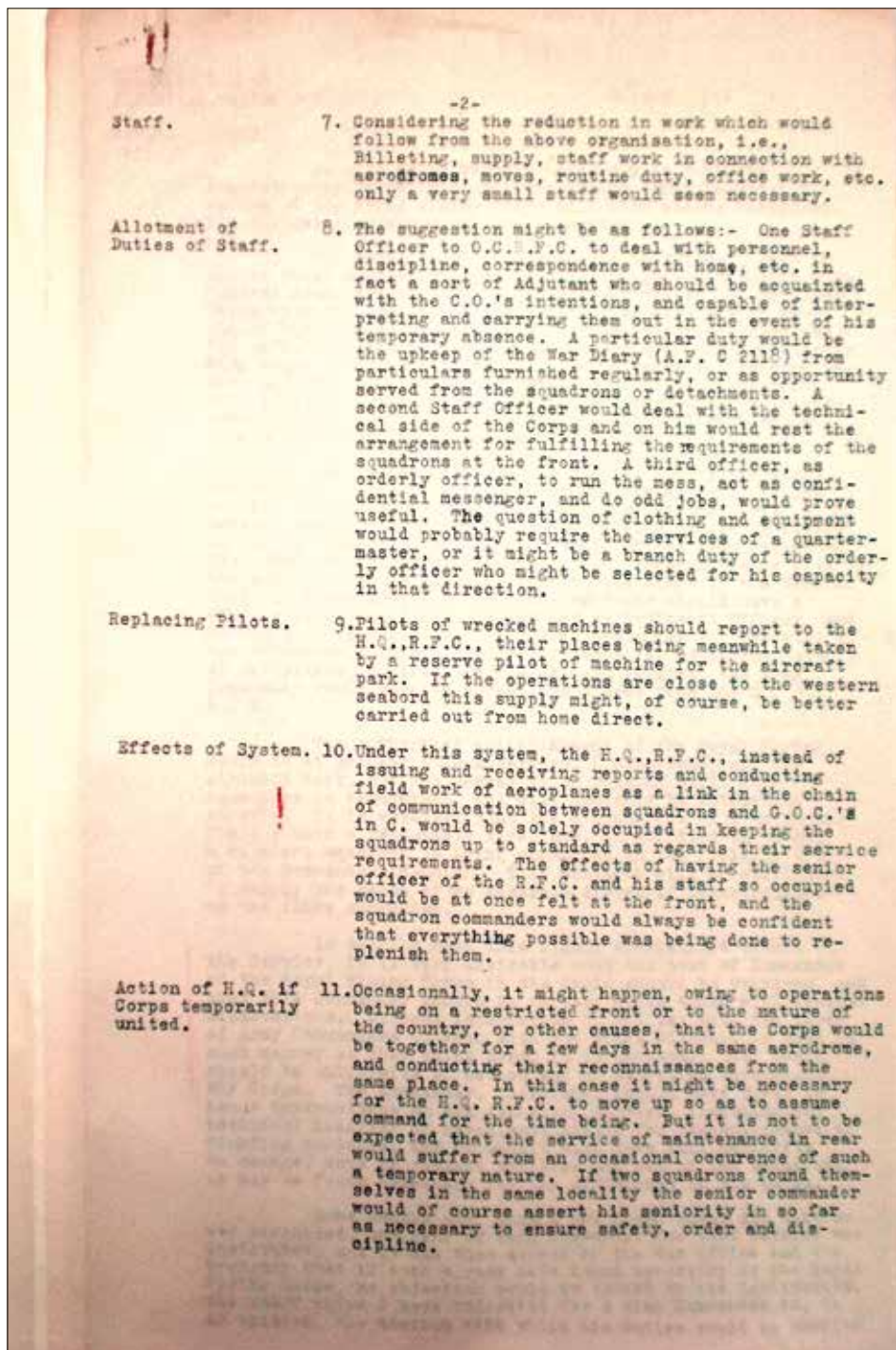
3. At the outset, the O.C.R.F.C. would advise the Army Commander as to the best method of allotting squadrons of the R.F.C. to the large units, having in view the nature of the work to be undertaken. He would then be no further concerned with the actual field work of the squadrons whose commanders would receive orders directly from, and report directly to, the high commanders to whom they are attached.

4. It might normally be expected by the G.O.C. in C. that the O.C.R.F.C. should remain with him at G.H.Q. in an advisory capacity, following the custom of representatives of other army troops, i.e., Artillery, Engineers, Medical, Veterinary, and other services. But this does not seem advisable in the case of the R.F.C. the chief function of whose O.C. would now become the equipment and replenishment in personnel, aeroplanes and transport of his detached squadrons, and his station, that place from which he could best carry out this service. The supply of the detachments would of course rest with the A.S.C. of the command to which they were attached.

5. The best position for the H.Q., R.F.C. in view of the foregoing would undoubtedly be in close proximity to the aircraft park in order to closely supervise the service of maintenance of the squadrons at the front.

6. To enable the system to work satisfactorily it is essential that the H.Q.R.F.C. should be in constant and certain communication with the detached squadrons. Usually this would present no difficulty as events do not move rapidly in modern war. But in the event of a repulse, or rapid advance by forced march it is conceivable that touch might be lost, and once lost, difficult to regain. Perhaps the best plan would be to make the detachment commands responsible for communication with the H.Q., R.F.C. in the events stated above, either by motor bicycle, tender or aeroplane.





Trenchard 1914 Red Ink Paper - 2, Royal Air Force Museum, Archive, Hendon







Whole-plate glass negative, Hugh Montague Trenchard, 1st Viscount Trenchard, 1919  
Artist (Walter Stoneman),  
Credited: © National Portrait Gallery, London

## **Marshal of the Royal Air Force Sir Hugh Trenchard (later Viscount Trenchard)**

By Doctor David Jordan

Born in Taunton on 3 February 1873, Hugh Trenchard began his military career as a probationary subaltern with the Kincardine and Forfar artillery, and before transferring to a regular commission with the Royal Scots Fusiliers. Service in the Boer War was curtailed by an enemy sniper, and there were doubts as to whether he would survive his wound. He not only survived, but regained fitness by becoming a winter sports aficionado, winning a tobogganing championship at the Cresta Run. Service in Nigeria followed from 1903-1910, during which he was awarded the Distinguished Service Order. He fell seriously ill with an abscess on his liver, and was returned to England. Once again, there was a period when there was doubt as to whether he would survive.

Trenchard duly recovered, but began to fear that his career had reached a dead end. Searching for a new challenge, he was encouraged to join the recently-formed Royal Flying Corps by a friend, Captain Eustace Lorraine, who was serving with the new formation as the adjutant of the Central Flying School. Trenchard ignored protests that he was too old to learn to fly, and soon gained his pilot's certificate. Newly-qualified, he was posted to the Central Flying School to complete his training as a military aviator, but discovered himself in the odd position of acting as both student and adjutant – Lorraine, the man who inspired him to join the RFC, had been killed, and as the most senior available pilot, Trenchard was the logical replacement, even though this strange arrangement saw Trenchard setting and marking his own exams to pass out from the CFS course. Trenchard was then formally appointed as the CFS's Assistant Commandant. He was in command of Military Wing at Farnborough at the outbreak of the First World War, a situation he found uncongenial, as he was anxious to serve in France. Despite agitating to go overseas, he remained at Farnborough until posted to France to command First Wing RFC in March 1915. This placed him in charge of the RFC Wing working for Sir Douglas Haig, marking the start of a strong professional relationship between the two men which endured. When Sir David Henderson decided that he could not both command the RFC in France and act as Director General of Military Aeronautics and returned to London, Trenchard took over GOC RFC in France in August 1915, in the rank of Brigadier-General.

Trenchard commanded the RFC in France until January 1918, and this post saw him overseeing the development of the RFC as a key element in the fighting on the western front – during the course of his tenure, most of the major air power roles and missions familiar today evolved, even if they were known by different terms at this point.

Although doubtful about the wisdom of creating a third service during the middle of a war, and concerned about the effect that the formation of the RAF would have on efficiency, Trenchard's success and reputation as the leading airman of his day led to his appointment as the first Chief of the Air Staff of the Royal Air Force.

He returned to London in early 1918 to oversee the creation of the new service, but resigned shortly before the RAF came into being as the result of a series of disagreements with the Air Minister, Lord Rothermere. He was persuaded to delay his resignation until after the RAF had formed, but it was accepted on 13 April 1918, and he was replaced by Frederick Sykes. This caused a political outcry – in part driven by a member of parliament who was serving in the RAF – and led to Lord Rothermere's resignation less than a fortnight later.

Rothermere's successor, Lord Weir, persuaded Trenchard to take command of the RAF's Independent Force (IF), created specifically to bomb Germany. Trenchard was not convinced about the value of the IF, but as it was the only post on offer to him, he accepted despite his concerns. Although the IF performed to the best of its abilities, Trenchard was moved to record in his diary for 11 November 1918 that the IF had been a waste of resources.

Although Sykes continued as the Chief of the Air Staff, his grand vision for the future of British air power was unaffordable, and the new Secretary of State for War and Air, Winston Churchill, engineered Sykes' translation to control civil aviation and the return of Trenchard to lead the RAF.

Re-appointed Chief of the Air Staff in March 1919, Trenchard set about building the Royal Air Force as a third service, aiming, as he put it to lay foundations which might be either the basis of a great castle or a pleasant little cottage. This saw the creation of the RAF College at Cranwell and the RAF Staff College at Andover, as well as operational developments in the use of air power in colonial policing.

Trenchard's belief in the offensive potential of air power, coupled with the need for a distinct role for the third service also led to the creation of a doctrine which placed strategic bombardment at the heart of the RAF's business, even though the day-to-day, 'bread and butter' work of the air force was to cooperate with the land component on operations in the colonies and mandated territories. Trenchard led the fight to preserve the RAF in the face of a number of attacks by the other two services who feared that it would both deprive them of funding and the sort of air power that they felt they needed; by the time he relinquished the post of CAS in January 1930, Trenchard had placed the RAF on a firm footing as an independent service.

Trenchard moved on from the RAF to serve as Commissioner of the Metropolitan Police from 1931-35. His vision for the Metropolitan Police was not one which the Police Federation shared, and his tenure was regarded as being one notable for considerable upheaval within the force. Nonetheless, his tenure saw the introduction of the Police College at Hendon, although its planned role as the place of education and training for senior leaders rather than basic induction training was not to be realised.

Trenchard remained an influential figure within the RAF. His interventions were not always appreciated by the government, particularly when he intervened over issues such as

disarmament and the defence of Singapore while still serving as police commissioner. He continued to speak as a proponent of air power and the RAF in the House of Lords following his retirement from public office.

In 1940, Churchill offered Trenchard the role of commanding Home Forces, but Trenchard's view of what the job entailed did not match that of the Prime Minister – it was clear that Churchill wished to have a very 'hands on' role himself, prompting Trenchard to decline. He instead spent much of the war visiting RAF stations and units at home and abroad, proving a particularly popular visitor. He also wrote a number of memoranda calling for ever greater efforts in the bombing campaign against Germany. His later years were marked by the onset of blindness, but he remained active in his support of the RAF until his death on 10 February 1956.

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**TRAINING MANUAL, ROYAL FLYING CORPS**  
**PART II**  
**(MILITARY WING)**

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**1915**

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**General Staff, War Office**

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## CHAPTER II

### THE EMPLOYMENT OF AEROPLANES IN WAR

#### CHARACTERISTICS AND PRINCIPAL DUTIES OF AEROPLANES

1. Aeroplanes have a radius of action and speed which vary considerably with the type of machine. The average distance which an aeroplane can cover in calm weather is 250 miles, and the average speed is about 70 miles per hour. If properly looked after they may be left in the open for considerable periods without serious deterioration. Different types are constructed and equipped for particular duties, eg, for reconnaissance, artillery observation or offensive action, but although each type is primarily intended for a particular duty, all are able to perform other duties to some extent.
2. The duties of aeroplanes in war may be sub-divided as follows:
  - (a) Reconnaissance.
  - (b) Direction and observation of artillery fire.
  - (c) Fighting against other aircraft.
  - (d) Destruction of matériel and demolitions at vulnerable points on the enemy's communications.
  - (e) Offensive action against troops on the ground.
  - (f) Miscellaneous duties.
3. The most important rôle of aeroplanes in war is reconnaissance. A well-trained and efficient air service will enable a commander to form his plans with a fuller knowledge of the situation than will be possible to one whose air service is inadequate to the task which it has to perform.
4. Aerial reconnaissance, like that carried out by cavalry, may be considered under three heads: strategical, tactical and protective. It differs, however, in the following way from that effected on the ground:

First, it is very rapid. Aeroplanes can maintain a speed of from 50 to 90 miles an hour, and thus obtain in a few hours information that would require several days to obtain by other means.

Second, it is not stopped by natural obstacles such as rivers, or by artificial obstacles in the shape of fortresses.

Third, it can ascertain the movements, position and approximate strengths of the enemy's main bodies instead of the mere contour of his covering troops.

Fourth, it is a comparatively simple matter to bring back the information gained in time for it to be made use of.

5. On the other hand, aeroplanes can accomplish little or nothing in heavy rain, fog, gales or darkness, and although they may be able to fly on any given day, they may not be able to do so at any particular time of day. Further, they may sometimes bring back misleading negative information, they cannot remain in continuous touch with the enemy by day and by night and usually cannot identify individual units.

Hence aviation is a valuable addition to other means of reconnaissance, but does not in any way dispense with the necessity for the latter.

6. Hostile aircraft should, as a rule, be attacked wherever met, in order to prevent the acquisition of information by the enemy, and to gain or retain a moral and material ascendancy in the air. Fighting should be avoided only when the pilot has received instructions to the effect that the safe accomplishment of his mission is to be placed before all other considerations, or when he is confident that his reconnaissance has discovered information which it is of paramount importance to his own side to receive without delay.

As in other forms of reconnaissance, information may sometimes have to be fought for, and reconnoitring aeroplanes must always be prepared to do so.

Aeroplanes constructed and equipped with the primary object of fighting in the air will usually be employed to protect those with little offensive power, such as wireless machines. They will also be employed to cut off and destroy hostile reconnoitring aeroplanes, or to attack hostile aeroplanes which are directing artillery fire.

7. The location of targets and the direction of artillery fire is one of the regular functions of aeroplanes, and a proportion are especially equipped for this purpose.

The artillery of a force which is best served by its aircraft will be enabled to gain the ascendancy, more especially in siege warfare, or when the battle has reached a deadlock, and there is little movement on either side. The attainment of this superiority of our artillery will be greatly facilitated if our aircraft have established over those of the enemy an ascendancy so marked that he is unable to use his aeroplanes for the observation of the fire of his guns.

8. Aeroplanes may be employed in the destruction of hostile ammunition and petrol depôts and transport parks. They may also be used to hamper the enemy's operations by the



demolition of road and railway bridges, railway junctions, and detraining stations. Such action may hinder the movement of reinforcements, ammunition, or supplies, either in a limited area in which a tactical decision is being sought, or at such vulnerable points as the enemy's lines of communication, where interruption of traffic, during a critical period of the campaign, may influence the general situation. Owing to the limitations of the carrying power of aircraft, and the consequent necessity of concentration of effort to ensure adequate material results, such enterprises involve the use of a number of aeroplanes.

9. Under certain conditions the moral effect of aircraft against troops on the ground may be very considerable, though the actual effect may be small.

10. Aeroplanes may be employed to watch and report the movements of friendly troops, and thus keep the staffs in closer touch with the progress of events than has been previously possible. The great speed of aeroplanes and the fact of their not being hampered by ordinary obstacles, render them a valuable agent for the conveyance of messages or of staff or other officers. They may also be used for the rapid conveyance of small quantities of ammunition or supplies which may be urgently required at some otherwise inaccessible point.

## **CO-OPERATION OF AEROPLANES WITH OTHER ARMS**

### **DISTRIBUTION**

1. A proportion of aircraft is usually retained to work immediately under General Headquarters in order to locate and watch the movements of the enemy's main reserves, for distant reconnaissance on the flanks and beyond the battle area, and for offensive action against vulnerable points on his lines of communication.
2. Wings of the Royal Flying Corps are attached to armies for the purpose of reconnaissance, observation and direction of fire, and for offensive operations.
3. In order that there may be no duplication of work, a Corps or Divisional Commander, when a detachment is sent to him, should be informed by the Wing Commander of the area of reconnaissance for which the detachment will be responsible. The allotment of aeroplanes for this duty, for observation and direction of Artillery fire, and for offensive operations should be made by the Commander of the detachment. The Commander of the detachment will report at once to the headquarters of the formation to which his squadron or flight is allotted, stating the number of machines he has available, so that they may be used to the best advantage.

## **CO-OPERATION OF AEROPLANES WITH ARTILLERY**

1. It is imperative that close touch be maintained between the Artillery and the Royal Flying Corps unit concerned.

2. During a battle aeroplanes will be detailed to work with certain batteries or groups of batteries, and one or more of the following methods of co-operation will then be adopted:

(a) The observer signals the position of all hostile batteries or other important artillery targets located in the zone allotted to his artillery, and then ranges on each in turn. This method places considerable responsibility on the observer and he should therefore be made fully conversant with the general situation beforehand so as to be in a position to select targets in their relative importance.

(b) An artillery reconnaissance is made by one or more aeroplanes which afterwards land and report to the Commander of the artillery, and then ranges on each in turn. This officer then allots targets and aeroplanes to the units under his command, and observation of fire is carried out in the usual way.

(c) If the artillery Commander and his units are supplied with wireless receiving sets, the positions of targets as signalled by an observer may be taken by all wireless stations using the same prefix. The artillery Commander may then detail units to engage specified targets. The observer watches the results of fire, calls up the battery whose fire needs correcting, by the general prefix followed by the index number of the target, and proceeds to correct.

3. The observer should signal to the artillery Commander when he has to return to the landing ground so that no time may be lost in sending out another machine.

4. During an advance the infantry and advanced artillery posts may keep in touch with aeroplanes by means of electric signalling lamps. If the further advance of infantry is hindered by an obstacle, such as a fortified house, the artillery Commander may signal an aeroplane to direct the fire of a specified battery on to the obstacle. In such circumstances no other battery should fire lyddite shell on the area in which the obstacle is situated, while ranging is taking place.

5. If an observer locates a particularly favourable target such as a hostile force halted in mass, or on the march, he may indicate its position by firing smoke signals when vertically over the target. He will continue to fire these signals at intervals until fire is opened. The movements of a target may also be indicated in this way and the stop signal used when it appears desirable to stop the fire. Certain batteries should be detailed to watch for these signals and to act on them without delay. These signals will not be required by wireless machines already in touch with batteries. Such machines will signal the position of the hostile body followed by the signal "fleeting opportunity".

These signals should only be used by specially authorized observers.

6. Aeroplanes may be detailed to work with the artillery of the advanced guard when contact with the enemy is about to occur. Observers will then signal the positions of the enemy's batteries, &c, direct to the artillery commander of the advanced guard. They may be required to range the artillery on these targets or to report generally on the effect of fire. When necessary aeroplanes will show that they wish to signal information by making a complete circle over the advanced guard artillery. As a general rule, when the force is deployed, the approximate positions batteries are to occupy, and the zones they are to engage, should be stated to observers before they leave the ground. But information as to the positions batteries will occupy is not essential when observers are in touch by wireless, and can receive messages by lamp from the artillery commander.

### OFFENSIVE ACTION

1. Every effort must be made to attain superiority in the air as early as possible. The importance of aerial reconnaissance and the observation of artillery fire by aeroplanes is so great that each side will strive to prevent the other making use of them.

2. The main types of offensive action by aeroplanes are:

- (a) Attack of aircraft.
- (b) Destruction of material.
- (c) Attack of troops.

(a) *Attack of Aircraft.* Hostile aircraft should be attacked wherever met, unless for such reasons as the distance to be traversed, or the importance of the information already gained, the observer should consider it undesirable to engage.

The means for fighting in the air are:

- (i) The use of firearms.
- (ii) Dropping steel darts or some apparatus designed to injure the hostile machine.
- (iii) Throwing or dropping incendiary or explosive bombs.

Skill in piloting and the use of high speed aeroplanes are of great value in this work, but weapons of offense, preferably firearms affording volume and accuracy of fire, are necessary to give them effect.

The relative volume of fire can be increased by;

- (1) The use of more efficient weapons;
  - (2) Concentrating the fire of two aeroplanes upon one of the enemy;
  - (3) Manoeuvring for position so as to obtain the most effective use of one's own weapons, while denying the use of his to the enemy.
3. Accuracy of fire may be increased by manoeuvring, but is also largely dependent on the training of the gunner.

Fire arms are selected for their suitability for types of aeroplanes. In many aeroplanes a machine-gun can be used with great effect, a rifle or carbine is better adapted to others, and in some, such as single-seater scouts, automatic pistols are all that can be readily used.

Rifles and pistols should be loaded before starting and placed where they can be readily used.

A rifle-calibre machine gun capable of delivering a rapid rate of fire for periods of two or three minutes is the most generally suitable arm.

The gun mounting must allow the largest possible area of traverse, elevation and depression. Large arcs are difficult to obtain in tractor aeroplanes, and even in those of a propeller type it is necessary to move the gun bodily in order to enable the gunner to see over the sights.

4. The following table gives the best positions for firing from various types of aeroplanes, and the best positions for our aeroplanes in air fighting:

	BEs & Avros	Parasols: Moranes & Bleriot's	Propeller Machines
Best direction to fire	Backwards, upwards, slightly to one side	Backwards and upwards	To the front and slightly upwards
Best position of our aeroplanes with reference to that of the enemy	In front and at a lower altitude	In front	Behind and below
Best relative position of two aeroplanes working as a pair	Side by side at same altitude		

5. The pilot should also:
- (a) When chasing, aim to keep the enemy in view, and himself out of view.
  - (b) Endeavour to keep his aeroplane between the enemy and the sun, and the enemy on his gunner's left hand.

(c) Avoid placing himself on the left of the enemy (unless it puts the sun in the enemy's eyes), and not fly immediately above or below him.

(d) If a turn is necessary turn towards the enemy, not away from him. By turning away the enemy may be lost sight of and given an opportunity to follow.

The observer gunner must:

(1) Carry glasses to identify aircraft.

(2) Note the relative speeds of the aeroplanes and, if with the advantage, hold fire until a favourable opportunity is gained.

(3) Not fire at long range unless it is obvious that no further chance will be afforded.

(4) Aim well in front for crossing shots, allowing (as a rough guide)  $1\frac{1}{2}$  lengths per 100 yards.

6. To fight a successful action in the air a mutual understanding must exist between the pilot and the observer-gunner, more especially in fighting from a machine, from which the observer fires to the rear as the pilot cannot keep the enemy's aeroplane in view. This undertaking is only gained by experience and practice. Observers should frequently practice handling firearms in the aeroplane and firing from it.

(b) *Destruction of Matériel.*

1. The destruction of matériel, and especially the despatch of expeditions against any particular target, should not be undertaken without reference to Royal Flying Corps Headquarters, in order that the latest information as to the value of the target may be obtained, and to ensure that it is worth the risk incurred.

2. The objectives may be local targets, such as are offered by the enemy during his daily operations, eg, ammunition or transport parks, aerodromes, observation balloons, &c, or his means of communication and sources of supply, eg, railway trains, stations, petrol dépôts, bridges, power stations, water and gasworks, &c.

3. In order that a sufficient weight of bombs may be carried to render such attacks really effective, observers are not generally taken, but they may be required to carry out the reconnaissance of the objectives selected for attack, and should always note and report suitable objectives. These should be photographed by the aerial reconnaissance so that the pilots of the attacking machines may be provided with pictures showing the appearance of the objective as seen from the air.

(c) *Attack of Troops.*

1. The attack of troops on the ground may be undertaken at the discretion of the pilot, provided always that sufficient care is exercised in avoiding the attack of localities where any considerable injury is likely to be inflicted on peaceful inhabitants.
2. The weapons which may be employed are:
  - (i) Machine guns.
  - (ii) Steel arrows.
  - (iii) Shrapnel or melinite bombs.
3. The weight which can be carried in addition to the observer is small, and consequently the loss inflicted on the enemy will be less than if the pilot undertakes the attack alone with a full load of bombs; but it may sometimes be advantageous to carry out this form of attack in conjunction with reconnaissance.
4. The best results may be expected to be obtained during a pursuit when the moral effect is greatest, and when troops crowded on roads or at defiles offer good targets. Observers should note and report suitable opportunities for this form of attack.

**ACTION OF AEROPLANES WHEN FIRED AT BY ANTI-AIRCRAFT GUNS**

1. When fired at by anti-aircraft guns an aeroplane can:
  - (a) Change its altitude, viz, dive 100 feet or more.
  - (b) Change its direction sharply.
  - (c) Combine (a) and (b).
2. If the previous course is persisted in, changes of altitude offer little or no difficulty to the guns, as they are allowed for and corrected instantly by the sights. Sharp changes of direction, however, completely upset the prediction and cause all the shell already fired to be wasted. It is a question entirely of flight of shell. At a range of 5,000 yards the shell takes, approximately, 15 seconds to arrive. When firing it is, therefore, necessary to give sufficient deflection to the gun so that the shell shall meet the path of the aeroplane in 15 seconds time. If the aeroplane turns at right angles to its path, all the shells then in the air (about eight) are wasted and a new prediction has to be made which can be as easily upset by repeating the manoeuvre before another 15 seconds elapse.

3. A change of altitude combined with a change of direction is so slight an improvement on change of direction alone, that it is probably not worth losing altitude for.
4. The position of the sun with regard to the aeroplane has an important bearing on the difficulty of recognising aeroplanes and observing the fire of anti-aircraft guns.

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**PAPER ON FUTURE POLICY IN THE AIR**

**22<sup>ND</sup> SEPTEMBER 1916**



## FUTURE POLICY IN THE AIR

Since the beginning of the recent operations the fighting in the air has taken place over the enemy's line, and visits of hostile aeroplanes over our lines have been rare. It is to be hoped that this state of things may continue, but as one can never be certain of anything in war, it is perhaps an opportune moment to consider what policy should be adopted were this state of affairs to change, and were the enemy to become more enterprising and more aggressive.

It is sometimes argued that our aeroplanes should be able to prevent hostile aeroplanes from crossing the line, and this idea leads to a demand for defensive measures and a defensive policy. Now is the time to consider whether such a policy would be possible, desirable and successful.

It is the deliberate opinion of all those most competent to judge that this is not the case, and that an aeroplane is an offensive and not a defensive weapon. Owing to the unlimited space in the air, the difficulty one machine has in seeing another, the accidents of wind and cloud, it is impossible for aeroplanes, however skilful and vigilant their pilots, however powerful their engines, however mobile their machines, and however numerous their formations, to prevent hostile aircraft from crossing the line if they have the initiative and determination to do so.

The aeroplane is not a defence against the aeroplane but it is the opinion of those most competent to judge that the aeroplane, as a weapon of attack, cannot be too highly estimated.

A signal instance of this fact is offered to us by the operations which took place in the air at Verdun.

When the operations at Verdun began, the French had few machines on the spot. A rapid concentration was made, and a vigorous offensive policy was adopted. The result was that superiority in the air was obtained immediately, and the machines detailed for artillery co-operation and photography were enabled to carry out their work unmolested, but as new units were put into the line which had less experience of working with aeroplanes, a demand arose in some quarters for machines of protection, and these demands were for a time complied with. The result was that the enemy took the offensive, and the French machines were unable to prevent the hostile raids which the enemy, no longer being attacked, was now able to make. The mistake was at once realised and promptly rectified. A policy of general offensive was once more resumed, and the enemy at once ceased to make hostile raids, all his time being taken up in fighting the machines which were attacking him. Superiority in the air was thus once more regained.

On the British front, during the operations which began with the battle of the Somme, we know that, although the enemy has concentrated the greater part of his available forces in the

air on this front, the work actually accomplished by their aeroplanes stands, compared with the work done by us, in the proportion of about 4 to 100. From the accounts of prisoners, we gather that the enemy's aeroplanes have received orders not to cross the lines over the French or British front unless the day is cloudy and a surprise attack can be made, presumably in order to avoid unnecessary casualties. On the other hand, British aviation has been guided by a policy of relentless and incessant offensive. Our machines have continually attacked the enemy on his side of the line, bombed his aerodromes, besides carrying out attacks on places of importance far behind the lines. It would seem probable that this has had the effect so far on the enemy of compelling him to keep back or to detail portions of his forces in the air for defensive purposes.

When Lille station was attacked from the air for the first time no hostile aeroplanes were encountered. The second time this place was attacked our machines encountered a squadron of Fokkers which were there for defensive purposes. This is only one instance among many.

The question which arises is this: Supposing the enemy, under the influence of some drastic reformer or some energetic leader, were now to change his policy and follow the example of the English and the French, and were to cease using his aeroplanes as a weapon of defence and to start a vigorous offensive and attack as many places as far behind our lines as he could, what would be the sound policy to follow in such a case? Should we abandon our offensive, bring back our squadrons behind the line to defend places like Boulogne, St Omer, Amiens and Abbeville, and protect our artillery and photographic machines with defensive escorts, or should we continue our offensive more vigorously than before? Up to now the work done by the Germans compared with that done by our aeroplanes stands, as we have seen, in the proportion of 4 to 100, but let us suppose that the enemy initiated a partial offensive in the air, and that his work increased, compared with ours, to a proportion of 30 or 50 to 100, it is then quite certain that a demand for protective measures would arise for protective squadrons and machines for defensive patrols.

One of the causes of such demands is the moral effect produced by a hostile aeroplane, which is out of all proportion to the damage which it can inflict.

The mere presence of a hostile machine in the air inspires those on the ground with exaggerated forebodings with regard to what the machine is capable of doing. For instance, at one time on one part of the front whenever a hostile machine, or what was thought to be a hostile machine, was reported, whistles were blown and men hid in the trenches. In such cases the machines were at far too great a height to observe the presence of men on the ground at all, and even if the presence of men was observed it would not lead to a catastrophe. Again, a machine which was reported in one place would certainly, since it was flying rapidly, be shortly afterwards observed in another part of the lines and reported again, but the result of these reports was often that for every time the machine was sighted a separate machine was reported, leading at the end of the day to a magnified and exaggerated total.

The second policy, then, which should guide all warfare in the air would seem to be this: to exploit this moral effect of the aeroplane on the enemy, but not to let him exploit it on ourselves. Now this can only be done by attacking and by continuing to attack.

It has been our experience in the past that at a time when the Germans were doing only half the work done by our machines that their mere presence over our lines produced an insistant and continuous demand for protective and defensive measures.

If the Germans were once more to increase the degree of their activity even up to what constitutes half the degree of our activity, it is certain that such demands would be made again.

On the other hand, it is equally certain that, were such measures to be adopted, they would prove ineffectual. As long as a battle is being fought any machine at the front has five times the value that the same machine would have far behind the lines.

If the enemy were aware of the presence of a defensive force in one particular spot he would leave that spot alone and attack another, and we should not have enough machines to protect all the places which could possibly be attacked behind our lines, and at the same time continue the indispensable work on the front.

But supposing we had enough machines both for offensive and for defensive purposes. Supposing we had an unlimited number of machines for defensive purposes, it would still be impossible to prevent hostile machines from crossing the line if they were determined to do so, simply because the sky is too large to defend. At sea a number of destroyers will have difficulty in preventing a hostile destroyer, and still less a hostile submarine, from breaking the blockade. But in the air the difficulty of defence is still greater, because the area of possible escape is practically unlimited, and because the aeroplane is fighting in three dimensions.

The sound policy would seem to be that if the enemy changes his tactics and pursues a more vigorous offensive, to increase our offensive, to go further afield, and to force the enemy to do what he would gladly have us do now. If, on the other hand, we were to adopt a purely defensive policy, or a partially offensive policy, we should be doing what the French have learnt by experience to be a failure, and what the rank and file of the enemy, by their own accounts, point to as being one of the main causes of their recent reverses.

Moreover, in adopting such a policy it appears probable that the Germans are guided by necessity rather than by choice, owing to the many fronts on which they now have to fight, and owing also to the quality and the quantity of machines they have to face on the Western front alone. Nevertheless, one cannot repeat too often that in war nothing is certain, and that the Germans may, either owing to the pressure of public opinion, or the construction of new types of machines, or the rise of a new leader, change their policy at any moment for a more aggressive one.

Advanced Headquarters,  
Royal Flying Corps,  
September 22<sup>nd</sup>, 1916.

Transcribed by RAF CAPS from copy held at RAF Air Historical Branch, AHB 5/230.

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*Printed for the use of the Cabinet. April 1916.*

**CONFIDENTIAL<sup>1</sup>**

## **AIR SERVICE IN THE WAR (II)**

This paper is supplementary to that which I wrote and circulated to the Cabinet on the same subject on the 16<sup>th</sup> February.

Since then the Co-ordination Committee, which was appointed to adjust relations between the War Office and the Admiralty, in respect of supplies for the Air Service, has broken down. Its chairman, Lord Derby, and its independent advisory member, Lord Montagu of Beaulieu, have both resigned; and there can hardly be any question of setting it up again in anything like the same form. A new chairman and a new advisory member would be merely the prelude to a renewed disaster.

The reasons for which the Committee has failed have been stated with candour both by Lords Derby and Montagu in their letters of resignation to the Prime Minister, and, more especially by the latter, in public speech. They are such as were clearly anticipated and exactly foretold by those who objected to the appointment of the Committee at the start, and were indeed inherent in its composition and powers.

The composition of the Committee, which was regarded as a Sub-Committee of the War Committee, was as follows: Lord Derby; three representatives of the Admiralty, namely, Admiral Vaughan Lee, Commodore Sueter, and Commander Briggs; two representatives of the War Office, General Sir D Henderson, and Colonel Ellington; and Lord Montagu. Sir M Hankey and Colonel Storr, of the Imperial Defence Committee, acted as secretaries.

Broadly speaking, its functions were described in the terms of reference as being "to collaborate in and co-ordinate the question of supplies and design for *materiel* for the naval and military air services".

Two features in its composition may at once be noticed:

1. Though described as a Sub-Committee of the War Committee, not a single one of its members was a member of the War Committee, nor was its chairman a member of the Cabinet. He was not, therefore, in a position to exercise real authority.
2. While the first War Office representative, Sir D Henderson, was a member of the Army Council, and could therefore speak for the War Office as a plenipotentiary, the leading

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<sup>1</sup> Editor's note: The original protective marking is reproduced for completeness although this document is now UNCLASSIFIED.

Admiralty representative was not a member of the Board of Admiralty, and had no authority ... tribution to the Committee, and, as a consequence, the Committee itself, was sterilised from the start.

Lord Derby's reasons for resigning, as stated by him, were as follows:

1. The Committee had no executive power and no authority. (Lord Montagu used the same language).
2. A fundamental disagreement was found to exist between the two branches of the service, each having its own organisation, *esprit de corps*, and aspirations.
3. The terms of reference were so narrowly limited as to preclude the Committee from deciding any question of policy. The Secretary has stated that the Admiralty representatives invariably took the line that the Committee had nothing to do with policy. A broader view was taken by Sir M Hankey himself, who thinks that it would have been in the power of the Committee, after ascertaining the views of both Departments, to submit a co-ordinated scheme. But I confess that I do not so read the terms of reference; and in my view Lord Derby was right in accepting the Admiralty view of the exceedingly restricted nature of his own and his colleagues' functions.

Lord Derby further went on to say that he found no existing division of duties between the Naval and Military Air Services, and no general principles upon which co-ordination was possible. Without such a policy, he said, it was impossible to allocate orders.

To these reasons Lord Montagu added that no decision could be arrived at by the Committee unless all its members were unanimous, and that no recommendation could be made unless the representatives of the Admiralty and War Office agreed.

The powerlessness of the Committee was sufficiently demonstrated when they came to discuss an admirable Interim Report, drawn up, after five sittings, by Sir M Hankey. Upon this they found it impossible to agree; and the aforesaid resignations followed.

It has been important to summarise the reasons of the failure in order to avoid the danger of reproducing, by similar causes, the same result. So far as I can judge from independent evidence, the underlying cause lay in the more rigid conception of its prerogatives entertained by the Admiralty than by the War Office, and its reluctance to admit of any interference with or diminution of the present autonomy. An agreement could not even be arrived at on such questions as by which of the two Air Services long-distance raids should be carried out, and whether it was necessary for the Admiralty to continue to construct aeroplanes, or seaplanes and airships only.

At the same time, if I may judge from the draft Interim Report, the Committee would appear to have done some extremely useful and valuable work, both in investigation and in co-ordination, which should be of great assistance to any who may succeed them, and to have appreciably advanced the solution of some of the very complicated problems connected with the present position of the Air Service.

There now remains the question by what kind of organisation the defunct Committee ought to be replaced, not so much to satisfy public opinion (although I believe this to be keenly aroused) as to advance the settlement of the air problem in relation to success in the present war, and to the creation of a sound air policy thereafter.

For the reasons already given I have dismissed the idea of reviving the Committee in anything approaching its present form.

Equally do I dismiss the idea of reverting to the *status quo ante*. I believe that neither Parliament nor the public would acquiesce in any such decision. I have had many opportunities of ascertaining what is the opinion, not of ignorant or prejudiced outsiders, but of responsible authorities and experts on the matter. I have not found a single person outside the two offices (and I doubt if there are many there) who is content with the present situation. I pay no attention to the newspaper articles on the subject, which I have seldom read. But it is from the mouths of those who know, and have fought and seen, that I have repeatedly heard the following charges or admissions, which if collectively at all true will account for the widespread desire for a radical change. Owing to the great mistake of 1912, we have as yet no lighter-than-air ships to act as the eyes of our fleet, or to fight the Germans with their own weapons. How much our naval reconnaissance suffers in consequence the authorities know full well. After nearly twenty-one months of war our fighting planes are outclassed by German machines, and for the time we have ceased to hold the mastery of the air. Though we are now turning out some splendid new machines, we are still working at the front with a majority of old types, and our men are liable to be outclassed and outpaced by the enemy. For the first year of the war we were, I believe, solely dependent on French engines; and though we are now doing better as regards home supply, we still have to rely in the main on French engines – the Gnome, Renault, Salmson, de Rhone, and Clerget. We have not as yet been able to provide ourselves with a fleet of high-flying and powerful aeroplanes capable of attacking and destroying Zeppelins in this country. The methods of defence adopted against these invaders have not hitherto been attended with great success, and have resulted in sad loss of life to our own aviators.

As regards the relations between the two branches of the service, so imperfect has been the co-ordination that, not merely are designs competed for and machines ordered, but operations have sometimes been undertaken, without any intercommunication. Each service still claims the right to conduct long-range offensive operations, and therefore to acquire the high-power engines for the purpose. The evidence is incontestable that there has been a

great lack of co-operation, and a competition, often the reverse of advantageous, between the two services.

To these I might add the grave mistakes – for which the present Board of Admiralty has no responsibility – which resulted in 1914 in making the Admiralty accountable for the aerial defence both of London and the United Kingdom (except, I believe, the arsenals and factories); in the order of 1,100 Curtis machines in the United States at a cost of 1,750,000l, only a third of which were fortunately supplied, while these turned out to be useless as war airplanes and could only be used for school work; and in the costly extravagance of the armoured cars and land Dreadnoughts, on the former of which over 1,000,000l of the public money was wasted.

The sum of these allegations, whether or not they can be justified in every particular, explain why it is that so strong a demand has arisen for a broader and more far-seeing policy and for a more authoritative control, and why it is impossible to revert to the *status quo ante*.

If this conclusion be accepted, what are the alternatives that now remain open to us? They may be classified under the headings – (A) Further Investigation; (B) Immediate Action.

(A) (1) The Government may hold that even now it is not fully or correctly seized of the position, and that further enquiry is needed before a definite solution is sought. For this purpose it would of course be possible to appoint an independent Committee – for the most part outside of the Government – who might be composed of or take the evidence of the experts and others, with instructions to produce a scheme. Personally, I think that this would be the worst of all courses, because (1) it would involve an abnegation of the responsibility of Government; (2) the experts, I am told, are by no means in agreement, and profoundly mistrust each other; (3) there is no guarantee that the resultant scheme would be one that the Government would be in the least inclined to accept. If that were so, valuable time would have been wasted, and the public would say that it had been tricked.

(2) There is a variant of this idea for which more might be said. It is that the Prime Minister should appoint a small Cabinet Committee, under one of his colleagues, to hear the various parties, the War Office, the Admiralty, the aviators, and, if necessary the malcontents, and to furnish a scheme. My own impression is that while this might have been a possible or even desirable course six or even three months ago, it is now too late. The cry would be raised “Another Committee”, and “a further postpone-ment of decision”. Neither am I clear, from the attitude of the two parties on Lord Derby’s Committee, that any substantial progress would be made. Each office or each service would repeat its formulæ or its pretensions, and when the Committee had listened to them, made up its own mind, and reported, the controversy would have to begin all over again either in the War Committee or in the Cabinet, to whichever body the matter was finally referred.



Moreover, I do not see how such a Committee could report, even if it sat every day – for which it is well-nigh impossible in existing circumstances to find the time – in less than three weeks or a month, so that the final decision would be even longer delayed.

Other forms of enquiry may be suggested. But I will not pursue them here, because it is not in that direction that the solution is at all likely, in my judgement, to be found.

I turn, therefore, to the heading of “Action”:

- (B) (i) Lord Derby in his letter of resignation, while not mentioning the word Air Ministry, held that the two services ought to be, and ultimately must be, amalgamated (though he recognised the extreme difficulty of doing this in war time). Even now he considered it essential that they should be housed in the same building, with, if possible, a Joint Designating Branch and a Joint Central Branch; and he stated that, while the military representatives on his Committee were ready to assent to this proposition, the naval authorities were not agreed, and the Board of Admiralty objected decidedly to the removal of the Air Branch from their building.

Lord Montagu, in his speech at Birmingham, argued without qualification for an Air Ministry with full power and responsibility; and he has since circulated to the Cabinet a memorandum containing a concise and definite plan for that object.

Sir M Hankey, in his Draft Report, asked the Committee to say that, while “perceiving considerable difficulties and many objections in the way of the immediate formation of a separate National Air Service, they consider that their deliberations must be conducted in the light of a possible eventual consummation of this ideal”. Such a National Air Service (which would, of course, involve an Air Department or Ministry) would, he added, involve, as its natural sequel, the construction of a national air factory.

Such are the recorded opinions of members of the Committee. Outside the Committee there is scarcely a dissentient voice among those who are qualified to speak, or have taken a prominent part in speaking, that an Air Ministry is the sole and inevitable solution. Here, again, I except the two Departments, in which opinion differs, or, at least, is less unanimous; and it may candidly be admitted that many of the speakers who advocate such a Ministry are probably insufficiently acquainted with the departmental difficulties involved. Whether these are insuperable now and in war time it is difficult to say without closer examination. That they will eventually have to be overcome cannot be doubted.

A variety of schemes for the creation of such a Ministry and department have been circulated and made public. They all agree in one respect, viz, in demanding a Cabinet Minister as chairman – a demand which, it is probable, proceeds less from confidence in the existing administration than from the conviction that, without an authority of Cabinet rank in the chair, such a department could neither frame nor carry out a policy, nor hold its own with the War Office, Admiralty, and Treasury.

Mr Pemberton Billing, MP, has published a scheme in which the Air Minister would preside over a Board consisting of a number of Directors, of Operations, Air Defences, Construction, Personnel, Equipment, with one member representing the Army and another the Navy. There would also be a Parliamentary Secretary, a Financial Secretary, and a Permanent Secretary, and, indeed, a departmental organisation on a large and independent scale.

Lord Montagu's scheme is more modest. The President, in this case, would be assisted by a Consultative Board, consisting of Vice-President (or Parliamentary Secretary), Chief of Naval Aviation, Chief of Military Aviation, Chief of Anti-Aircraft Corps, and Director of Research. Under the Board would be a number of departments.

I need not here analyse other schemes which I have seen.

All these plans involve, or appear to involve, proceedings closely analogous to those which were adopted when the Ministry of Munitions was set up, ie Parliamentary legislation, the official appointment of a representative in one or both Houses of Parliament, the creation of a full departmental staff or secretariat, the removal from both the War Office and the Admiralty buildings of the staff of the two services, the amalgamation of those services, their housing in a single building, complete control of Construction and Supply, the appointment of a Financial Secretary or Adviser, and some considerable measure of financial independence.

No scheme that I have seen proposes to take away from the supreme Naval and Military Commanders (eg, Sir J Jellicoe, Sir D Haig, Lord French) the complete control of the aircraft placed at their disposal. The Board or Ministry would formulate a policy in consultation with its naval and military advisers. Its execution would be left to the several commanders.

I do not anticipate that, in the present state of public opinion, any great Parliamentary difficulty would be encountered in passing the necessary legislation; for, with scarcely an exception, the principle of such a department was not merely endorsed, but enthusiastically urged, by every speaker in the recent debates in both Houses of Parliament.

The objections that may be raised to it appear to be the following:

1. It would be disliked, and perhaps resisted by the Admiralty.
2. It would be a concession to public agitation – an argument that is of little value if either the public agitation has been right, or the result would conduce to the more vigorous prosecution and the speedier termination of the war.
3. It may be said that it would produce an amount of friction and disorganisation that would be ill-compensated by the increase in efficiency, if there were such an increase, that would be obtained. The answer is, of course, that this would depend upon the degree of friendliness with which the two great departments would regard the changes. They might make the life of such a department a purgatory, perhaps worse. On the other hand, with tact and goodwill, it might sail with a fair wind.
4. It is too late in the course of the war to attempt it – a plea which rests on the uncertain and wholly obscure factor of what the duration of the war may be, and which is to some extent discounted by the consideration that even were the war to cease in six months, an organisation for air service ought in all probability to survive.

On the other hand, quite apart from those who wholeheartedly support the scheme, and regard it as a vital element in national success, I have found many, who, while not enamoured of the idea, or even distrusting it, would sooner make the plunge now, than continue taking off and putting on our clothes on the bank, and who think that, doubtful as the experiment may be, it is at least better than any further attempt at makeshift or compromise. Better, they say, take the entire forces away from Admiralty and War Office and assume the full responsibility, than continue to nibble at the authority of either or both, and attempt an interference which will probably be ineffective and certainly irritating.

I have no idea what view the Prime Minister or the Cabinet may take of these considerations. But in the event of their being equally unwilling either to take the extreme step or to do nothing, I have considered whether any other course would be possible. With much diffidence I submit, before concluding, the following outlines of yet another alternative. I would not like to be too sharply challenged about every particular, because, unlike the majority of my colleagues, I have no department behind me to assist me in the preparation of schemes, and am dealing with a subject in which I am necessarily an amateur. I have, however, at the Prime Minister's insistence, had conversations with the principal parties concerned.

(ii) An Air Board might be constituted on the conceivably following lines:

(a) The Board might be comprised thus:

President, who should be a Cabinet Minister.

Military representative (who would naturally be Sir D Henderson, now a member of the Army Council).

Naval Representative (who must be a member of the Board of Admiralty – if not an existing member, then one who would be added to it for the purpose – otherwise he could not speak for the Admiralty, and would only have power to refer, or, in other words, to defer).

An officer possessing personal experience of aircraft and aviation and aviation in war (but not an inventor or pilot).

One or two independent persons with mechanical engineering or general administrative experience.

(b) The Board should be an advisory Board in relation to its President, ie, matters should not necessarily be decided by voting strength.

(c) The Board should be appointed by the Government on the distinct and avowed understanding that its duty is, firstly, to formulate a policy; and, secondly, in the light of the experience which it would presently acquire, to advise the Government, before any long time has elapsed, for or against the creation of an Air Ministry, and, if the former, then to draw up a scheme. It might find the obstacles insuperable, or it might in due time present a thought-out and acceptable plan. In either case it would act after personal experience.

(d) If the question be asked what “formulating a policy” means, I would give several illustrations in reply. The duty of the Board, after considering the respective cases of the Army and the Navy, already placed before Lord Derby’s Committee, would be to determine their respective spheres of operation; to decide (of course in consultation with them) when they should co-operate and when they should act independently; to prevent competition in the production and purchase of aircraft, and equally in the employment of men and machines; to settle the vexed question of long-range operations, at present the source of so much dispute, duplication, and waste; to co-ordinate the demands of Home Defence and Foreign Aggression; to frame a comprehensive policy (if it does not already exist) for Home Defence; to co-ordinate sea-patrol with land attacks.

(e) In the event of the War Office or Admiralty representative disagreeing with any proposed act or pronouncement of the Board or its chief and persuading the Army Council or the Board of Admiralty of the justice of his views, reference should then be made to the War Committee, which should be the sole Court of Appeal.

(f) For these purposes the President should be a member, and be summoned to the War Committee, whenever such cases, or cases in any way affecting the Air Service, are under discussion. There he could, if necessary, argue his case with the Secretary of State or the First Lord, and the War Committee could decide.

(g) It would probably be found desirable, if not to amalgamate the two forces (pending the final report of the Committee) at least to place their directing staffs under a single roof without delay, and eventually to amalgamate both the Designing Branch and the Control Branch. I may add that the greater part of the two staffs are already located outside the War Office and Admiralty buildings.

(h) The Board would gradually undertake the provision both of material and personnel for the two services. Their present strength is Royal Flying Corps, about 25,000 men; Royal Naval Air Service, between 6,000 and 7,000 men.

(i) The Board would, of course, leave all operations to the Admirals and Generals in command.

(j) The entire operations of the Board would be preliminary to the formation of an Imperial Air Service; and if they became convinced of the need, to the creation of a Ministry of Department of the Air.

(k) Until such a department were decided upon, it might be possible to avoid legislation. The Cabinet Minister selected as chairman would answer for the Board in whichever House of Parliament he had a seat. Arrangements would have to be made for some other member of the Government to reply in the other House. Arrangements as to secretarial and other work could probably be made without the need of an Act of Parliament.

If an illustration be required of the smooth working of a Board or Committee constituted without legislation, and yet operating with authority and without friction, I may refer to the Shipping Control Committee, over which I have had the honour to preside for nearly three months, and to which questions of the first importance are constantly referred, not merely for examination, but for *decision* by the Foreign Office, Board of Trade, and other Departments.

These are merely rough ideas as to what such an Air Board might be and do. But I would add that unless its constitution is welcome to the War Office and the Admiralty, unless both these Departments will agree to facilitate a task which must in any case be most difficult, and often odious, unless the Government give the President and his Board executive authority (within the limits above specified), and unless the Cabinet explicitly regard and treat the Board as a possible preliminary to, and, should it be so, as the official precursor of an Air Department in the future, it would be futile to set it up, and no sane man would be found to accept the chair.

I am far from recommending the above tentative and temporary solution to the Prime Minister or to my colleagues. But in examining the question I have felt it to be my duty to leave no avenue unexplored.

C of K

April 16, 1916.

Transcribed by RAF CAPS from a copy held at the RAF Air Historical Branch.

An electronic version of this document is available at:

<http://www.airpowerstudies.co.uk/apps/documents/>

*War Office,  
5th September, 1916.*

His Majesty the KING has been graciously pleased to award the Victoria Cross to the undermentioned Officer:—

Lt. William Leefe Robinson, Worc. R. and R.F.C.

For most conspicuous bravery. He attacked an enemy airship under circumstances of great difficulty and danger, and sent it crashing to the ground as a flaming wreck.

He had been in the air for more than two hours, and had previously attacked another airship during his flight.



Lieutenant William Leefe Robinson VC, of 39 Squadron, pictured above on 25 September 1916



Lieutenant William Leefe Robinson VC sat in the cockpit of his 39 Squadron BE2c, 2092, in which he shot down the German Army Shutte-Lanz airship, SL11, over London during the night of 2/3 September 1916

*September 1916*

*From: Lieutenant Leefe Robinson, Sutton's Farm.*

To: *The Officer Commanding No. 39 H. D. Squadron.* Sir: I have the honour to make the following report on night patrol made by me on the night of the 2-3 instant. I went up at about 11.08 p.m. on the night of the second with instructions to patrol between Sutton's Farm and Joyce Green. I climbed to 10,000 feet in fifty-three minutes. I counted what I thought were ten sets of flares - there were a few clouds below me, but on the whole it was a beautifully clear night. I saw nothing until 1.10 a.m., when two searchlights picked up a Zeppelin S.E. of Woolwich. The clouds had collected in this quarter and the searchlights had some difficulty in keeping on the airship. By this time I had managed to climb to 12,000 feet and I made in the direction of the Zeppelin - which was being fired on by a few anti-aircraft guns - hoping to cut it off on its way eastward. I very slowly gained on it for about ten minutes. I judged it to be about 800 feet below me and I sacrificed some speed in order to keep the height. It went behind some clouds, avoiding the searchlight, and I lost sight of it. After fifteen minutes of fruitless search I returned to my patrol. I managed to pick up and distinguish my flares again. At about 1.50 a.m. I noticed a red glow in the N.E. of London. Taking it to be an outbreak of fire, I went in that direction. At 2.05 a Zeppelin was picked up by the searchlights over N.N.E. London (as far as I could judge). Remembering my last failure, I sacrificed height (I was at about 12,900 feet) for speed and nosed down in the direction of the Zeppelin. I saw shells bursting and night tracers flying around it. When I drew closer I noticed that the anti-aircraft aim was too high or too low; also a good many shells burst about 800 feet behind - a few tracers went right over. I could hear the bursts when about 3,000 feet from the Zeppelin. I flew about 800 feet below it from bow to stem and distributed one drum among it (alternate New Brock and Pomeroy). It seemed to have no effect; I therefore moved to one side and gave them another drum along the side - also without effect. I then got behind it and by this time I was very close - 500 feet or less below, and concentrated one drum on one part (underneath rear). I was then at a height of 11,500 feet when attacking the Zeppelin. I had hardly finished the drum before I saw the part fired at, glow. In a few seconds the whole rear part was blazing. When the third drum was fired, there were no searchlights on the Zeppelin, and no anti-aircraft was firing. I quickly got out of the way of the falling, blazing Zeppelin and, being very excited, fired off a few red Very lights and dropped a parachute flare. Having little oil or petrol left, I returned to Sutton's Farm, landing at 2.45 a.m. On landing, I found the Zeppelin gunners had shot away the machine-gun wire guard, the rear part of my centre section, and had pierced the main spar several times.

I have the honour to be,

Sir,

Your obedient servant,

(Signed)

W. Leefe Robinson, Lieutenant

No. 39 Squadron, R.F.C.

Report by Lt Leefe-Robinson following First successful Engagement of a Zeppelin



## APPENDIX 1

### MEMORANDUM ON THE ORGANIZATION OF THE AIR SERVICES

*By Lieutenant-General Sir David Henderson, July 1917*

The Royal Flying Corps came into existence in the month of May 1912. In its original organization it was intended to be a joint service, and was divided into a Naval and a Military Wing, the Central Flying School, the Royal Aircraft Factory, and a Reserve. The intention of the Sub-Committee of the Committee of Imperial Defence which drew up the original scheme, that the Corps should be a joint Corps, is evident from the following questions from its Report, dated 28th February 1912:

‘While it is admitted that the needs of the Navy and Army differ, and that each requires technical development peculiar to sea and land warfare respectively, the foundation of the requirements of each service is identical, viz an adequate number of efficient flying men. Hence, though each service requires an establishment suitable to its own special needs, the aerial branch of one service should be regarded as a reserve to the aerial branch of the other. Thus in a purely naval war the whole of the Flying Corps should be available for the Navy, and in a purely land war the whole corps should be available for the Army ...’

‘The British aeronautical service should be regarded as one, and should be designated “The Royal Flying Corps”. The Flying Corps should supply the necessary personnel for a Naval and a Military Wing, to be maintained at the expense of, and to be administered by, the Admiralty and the War Office respectively. The corps should also provide the necessary personnel for a Central Flying School, and a reserve on as large a scale as may be found possible.’

These different establishments, however, were separately controlled. The Military Wing, Central Flying School, the Royal Aircraft Factory, and the Reserve – with the exception of that portion of it which was composed of officers and men of the regular Naval Service – were under the administration of the War Office; the Naval Wing and the Naval Officers and men of the reserve were to be administered by the Admiralty. In order to ensure co-operation between the two services, a Joint Committee was formed called the Air Committee, composed as follows:

The Parliamentary Under-Secretary of State for War (Chairman).  
The Commandant of the Central Flying School.  
The Officer Commanding the Naval Wing of the Flying Corps.  
The Commandant of the Military Wing of the Flying Corps.  
The Director of the Operations Division, War Staff, Admiralty.

The Director of Military Training, General Staff, War Office.

The Director of Fortifications and Works, War Office.

The Superintendent of the Aircraft Factory.

Joint Secretaries: A member of the Secretariat of the Committee of Imperial  
Defence

An Officer of the Naval Flying Staff.

In practice this Committee proved somewhat unwieldy, and as might be expected from its composition, the members were inclined to range themselves into two parties, a Naval and a Military. The only member who, from his position, was entirely unprejudiced was the Commandant of the Central Flying School, who happened to be a Naval Officer – the present fifth Sea Lord of the Admiralty. The Meetings of the Committee, however, were of some value in acquainting each service with what the other was doing, but beyond this no very practical results were achieved from it.

In fact, the two services from the beginning tended to drift apart, rather than come more closely together. The Joint Service was never more than a pious aspiration, and when in 1914 the Naval Wing of the Royal Flying Corps was transformed into the Royal Naval Air Service, the separation became more marked. The Navy had always retained their old Flying School at Eastchurch, so that the one remaining bond of union, the Central Flying School, was not the only source from which the Naval Air Service drew its pilots. The two services were in this state of almost complete separation when the war broke out.

As soon as hostilities began, the necessity for rapid expansion of the air services, both for the Navy and Army, became apparent, and competition was inevitable. In the matter of personnel, the competition was not serious, although there was a great disadvantage in the fact that applicants who had been refused by one service were sometimes accepted by the other, but in the matter of supply, competition was really serious from the beginning, and both services suffered. An effort was made to eliminate this rivalry by dividing up the aeroplane and engine firms in the country between the Royal Flying Corps and the Royal Naval Air Service, but this was a rough-and-ready cut and not satisfactory. In the purchasing of aeroplanes and engines from France, there was direct competition, and there was no method discovered by which independent arbitration between the two services could be brought to bear. The Navy complained that there was really enough material available for both services, which then were very small, but that the methods of purchase by the Royal Flying Corps were slow and inefficient, and that therefore the Army were always trying to grab from the Navy material which the latter had been able to acquire. The Army, on the other hand, complained that the Navy purchased everything in sight, whether they required it or not, that their needs were not nearly so great as those of the Army, and that the material which they were purchasing was not required for proper Naval purposes. These views on both sides may have been justified or not, but there was a good deal of friction amongst subordinates, and not very much good feeling between the personnel of the services.

The necessity for some arbitration between the services, in the matter of supply, was brought to the notice of the War Council. The old Air Committee had from the beginning of the war been dormant, and although never abolished had never met. The new Air Committee under the Presidency of Lord Derby was instituted, but the same defects as with the old became apparent; the Committee had no real power, and was terminated by the resignation of the Chairman. This effort had done no good, so a somewhat more definite attempt was made by the formation of the First Air Board, under the Presidency of Lord Curzon. This Board necessarily took some time to become acquainted with the situation, and to acquire sufficient technical knowledge to know exactly how matters stood. After some months of deliberation, for indeed the Board had no executive power, the Chairman issued a Report recommending a considerable extension of the powers of the Board, in order to enable it to deal with the situation. After considerable discussion, the War Cabinet appointed a second Air Board – the present one – with extended powers, but still so limited that it is only by the exercise of the utmost goodwill by the members of the Board that business can be properly carried on.

The present situation is this: The Board is responsible indirectly, through the Ministry of Munitions, for the supply of all aeroplanes and engines, and many of the accessories of aviation. It is permitted to discuss matters of policy, and to make recommendations thereon to the Board of Admiralty and the Army Council. The rest of the business of aeronautics is still divided between the Navy and the Army, and this remainder includes such important features as the provision of the whole of the personnel, the provision of aerodromes, buildings, and storage accommodation, all training and discipline, all plans of aerial defence, and the distribution of the aerial forces. The Air Board has cognizance of these matters only through the Naval and Military members of the Board. From this it arises that on the adoption of any policy, the responsibility of carrying it out is completely divided at present. For instance: a large increase of the Royal Flying Corps had been sanctioned, the Air Board have to supply the material and the Army Council the personnel; and the division of responsibility goes farther than this. In order to train the pilots, for which the Army Council are responsible, the Air Board must supply training aeroplanes or engines, there will be a shortage of pilots, and if there is a shortage in pilots, all the efforts of the Air Board in providing war aeroplanes and engines will be wasted. Similarly, for the training of pilots new aerodromes are required; the Army Council has to provide these. If the Department of Fortifications and Works should fail to supply the aerodromes, then the Military Aeronautics Directorate will fail to supply the pilots, and again all the efforts of the Air Board will be wasted owing to a failure which is quite outside their control or jurisdiction.

Another important factor in the future of the Air Service is the position of the Airship and Balloon Branch. When the RFC was first formed, all the airships in possession of the Government belonged to the Military Wing. On 1st January 1914 the whole of these were, by a Cabinet order, turned over to the Navy, and since then the Army has had no airships. The RFC, however, still use kite balloons and ordinary spherical balloons in common with the RNAS, and the supply is somewhat complicated.

The real disadvantage of the present system is, however, that no complete view of aerial policy by the Air Board is possible, for the airships are entirely under the Admiralty. It seems probable that the possible use of airships and of aeroplanes or seaplanes coincide at certain points, and if so, it is evident that no complete air policy can be carried out except by a body which has control of both branches.

The Air Board is at present composed of:

A President.

A Parliamentary Secretary.

A Representative of the Board of Admiralty.

A Representative of the Army Council, and Two Representatives of the Ministry of Munitions,

the two latter being business men dealing with the business affairs of Supply. One of the duties of this body is to allocate aeroplanes and engines to the Navy and to the Army. It is evident from the composition of the Board that this allocation must, in the end, be made by the President and the Parliamentary Secretary. In order to enable them to arrive at a correct decision they have nothing to go on except the arguments of the Naval and Military Representatives, and their own common sense and judgement. They have no advisory staff whatever; the Technical Department of the Air Board is concerned only with the technical details of the aircraft and their accessories. In the event of a serious disagreement as to the allocation of aircraft, the Naval and Military representatives have a right to appeal to the War Cabinet through the Admiralty and War Office respectively, and hitherto such a right of appeal has never been exercised. This, however, is rather a tribute to the judgement of the President and the Parliamentary Secretary, and the goodwill of the Naval and Military representatives, than a satisfactory evidence that the organization is properly fitted to carry out its duties. In order to enable the President to consider the larger questions of aerial policy, and to give him the means of forming a correct judgement as to the relative importance of the different methods of employing aircraft, the Air Board ought to be equipped with a staff on the lines of the General Staff at the War Office, or the War Staff at the Admiralty. Under present conditions, however, the formation of such a staff would not be an easy matter.

The only persons with sufficient training and knowledge to undertake such work are either Naval or Military officers, and to place such officers in a position in which their advice might be directly contrary to the policy of their Naval or Military superiors is not quite a workable proposition. Until there is a prospect of a real career in the Air Force, it will be found very difficult to form a staff whose opinions could be accepted as being entirely fearless and unprejudiced.

It is difficult to indicate any method of overcoming the present illogical situation of divided responsibility in aeronautics, except by the formation of a complete department and a

complete united service dealing with all operations in the air, and with all the accessory services which that expression implies. A department would have to be formed on the general lines of the Admiralty and War Office, with a full staff, and with full responsibility for war in the air. Undoubtedly some portion of our air forces must be considered as accessory to the Navy and to the Army, and such contingents would have to be allotted according to the importance of the sea and land operations in progress, but it does not seem necessary that such contingents should be composed of Naval or Military personnel; any suggestions of that kind would only prolong the situation of divided responsibility. Individuals of such contingents might be officers or men of either service, but for their period of service with the Air Forces they would be lent to the Air Ministry, and would be in every respect completely under the control of that Ministry. It would be difficult just now, in the middle of a great war, to train all our pilots in such a manner that they would be equally fitted for land or sea service, and therefore, in the main, the contingents would be composed of the personnel at present employed with the Army and with the Navy. The whole system of training, however, especially in its earlier stages, should be completely unified; and it is only when pilots and mechanics begin to specialize, and then not in all cases, that it would be necessary to earmark them for service by sea or by land. The unification of training ought to have an immediate effect both on efficiency and economy.

It is, of course, evident that until the immediate needs of the Navy and Army can be supplied, there will be no central Air Force available for independent operations. So far as the Army is concerned, however, there is a reason to hope that its immediate needs for fighting, for reconnaissance, and for artillery work, will be met in the early months of next year, and that even then a considerable force of bombing machines will also be available. If the Air Ministry were in existence now, it would be its duty to look ahead and consider the best means of employing this Service, that is to say, considering for instance whether it could be better employed under the direct command of the Commander-in-Chief in France, or only under his nominal command, if service in France, but strategically directed by the General Staff of the Air Ministry. For the present Air Board to undertake such a study would be very difficult, and probably not very useful. There is no staff available to consider such questions except the staffs of the Naval and Military members of the Board, and these officers sit on the Board mainly as representatives of the Board of Admiralty and the Army Council. All investigations of the kind at present are purely Naval or Military, and it is not to be expected that the opinions expressed should be entirely free from the Naval or Military bias of these separate departments.

Yet it is by no means clear that, even on the present programme, we shall reach the limit of desirable expansion in the air forces. The problems of the future should be attacked now, otherwise we may waste force when we have it, or we may want additional force when we might have had it.

Although logically the desirability of a separate unified Air Force is almost beyond dispute, yet in its formation many administrative difficulties will have to be overcome, and this will

be particularly difficult in time of war. In the first place, the formation of a complete staff for the Ministry is necessary; a branch for general staff duties, a branch for personnel, a branch for general and technical material and armament, a branch for works and buildings, and a complete financial establishment. Although these staffs need not necessarily be very large in numbers, it would be difficult to lessen the number of branches, and the finding of experienced personnel capable of taking the necessary responsibility would not be an easy matter at this period of the war. Further, as the Air Service would have to be a third Military Service, and separate from the Army and the Navy, it would be necessary to draw up and pass a Discipline Act on the lines of the Naval Discipline Act or the Army Act; to draw up and promulgate King's Regulations and prepare a Pay Warrant. It must be evident that these duties could not be undertaken by the officers who are at present responsible for the administration of the Air Service. A considerable amount of outside assistance would be required, and even with all possible facilities, this work would add very heavily to the burden of the senior officers and officials who are now connected with aeronautics.

If a scheme for a United air service were definitely adopted by the Government and announced, and measures taken to put it into effect, it is not anticipated that there would be any serious difficulty over the transference of the personnel from their old services to the new. But in this matter a great deal would depend on the definite announcement that the Service was to come into being, and that the scheme would be carried through. Otherwise, it is very likely that there would be a considerable amount of doubt and hesitation among the personnel, which would detract from the efficiency of the Force while the transfer was in progress.

To put it shortly, the formation of a new Air Service, even in war time, is not impossible, and although in certain respects it might cause temporary dislocation and reduction of efficiency, it may be that the final results would entirely outweigh this. The principal objection to carrying it out in war time is that the load of responsible officers is already so heavy that the addition of the considerable amount of somewhat complicated and original administrative work might be a serious distraction.

What had hitherto been considered the main obstacle to the formation of a separate Air Service is, however, a disadvantage that appears rather in peace time than during war. It is due to the consideration that the endurance of any person under the continued strain of flying is normally limited. Before the war it was considered that the active life of a flyer was probably about four years, under peace conditions, but under the stimulus of war, a number of pilots have already exceeded this limit, and the actual period of which a pilot will be able to continue active work is rather a matter of speculation. Undoubtedly, however, there is a limit and, therefore, in so far as the flying officer is concerned, not a very good prospect of a life career in the Air Service. As officers rise in rank above the rank of Flight Commander, their flying is not, in war at any rate, so continuous, but this is chiefly for the reason that in war the responsibility of a Squadron Commander is heavy and his work on the ground is pretty arduous. There is not, in fact, much time for him to fly. In peace, however, in order to

preserve his position and his authority, it will be necessary for a Squadron Commander to fly regularly. There are a certain number of ground appointments which will be open to pilots who have given up flying, but these pilots are not always the most suitable persons for such appointments. The fact has therefore to be faced that, as far as we know at present, there will be a continual flow from the Air Service into civil life, of young men who have been forced to give up flying and for whom no other appointments in the Air Service can be found. In the course of their service, such men would have acquired a considerable amount of technical skill, which might be made available to certain branches of civil life, but even so, it will not be easy to make the prospect of the young officer of the Air Service comparable with the prospects of regular officers of the Navy or Army.

In order to inculcate discipline, to ensure a good system of administration in units, and to infuse a good spirit into the Air Service, it would be most advisable in the early stages to continue to borrow a considerable number of officers, non-commissioned officers or petty officers, from the Army and Navy. The excellent spirit of efficiency of the Royal Flying Corps at the present moment is due almost entirely to the influence of the very carefully selected officers and non-commissioned officers who joined it from the regular Army.

The administrative difficulties of forming a united Air Service in time of war have been indicated, but in this special project of combining the Naval and Military Air Services at the present moment there are many minor and petty difficulties which will have to be considered, if the final decisions are to be accepted with unanimity and approval, and without creating such friction and jealousy as would interfere with the work that has to be carried out till the war is over. The Air Services are composed very largely of quite young men, most of them of a very lively temperament. Such matters as the adjustment of a relative rank in the two Services, or the uniform to be worn, of the titles of rank in the various grades, will be discussed in the Services with a great deal of freedom, and a good deal of prejudice. They would be discussed also, with more prejudice and with less knowledge, in Parliament and in the Press, and our experience in the past does not lead to the belief that either of those bodies will give much assistance in smoothing over difficulties. Personally, I think that if it is decided to form a United Air Service, the more important decisions – if the matter is handled with judgement – will be accepted without much objection, but that there will be the most violent controversies over the petty details.

To sum up the whole question, it seems only right that I should give a personal opinion. I believe that to ensure the efficiency of the Air Services in future, they ought to be combined, and that they should be under the control of a Ministry with full administrative and executive powers. The difficulties of carrying out this policy are purely war difficulties, and I believe that if this policy be carried out during the war, there will be a temporary loss of efficiency, which will be most marked in the administrative offices at present in control, but which must be considered even in the units actually engaged in operations. To minimize this loss of efficiency it would be advisable to draw up a complete scheme for the Air organization, and

to take advice on the legal and administrative questions which have here been touched on, before announcing any change of policy, and after the announcement of the policy, it would be necessary to disregard entirely amateur advice and suggestions, and to leave the Air Board and the Services to work out their own salvation as best they may.

The time which will be occupied in preparing for the change will be considerable, and actually the balance of advantage or disadvantage in making the change depends on the estimate of the Government as to the duration of the war. If it be anticipated that the war will continue until next June, I think the change should be made for reasons of efficiency. But if the war should stop near the end of this year, we should lose rather than gain by attempting at present to alter the present system. The decision, therefore, appears to me to be a speculative one, but only in point of time, for I am convinced that eventually a united, independent Air Service is a necessity.

(Sgd) DAVID HENDERSON  
*Lieut-General DMGA*



**WAR CABINET**  
**COMMITTEE ON AIR ORGANIZATION AND HOME**  
**DEFENCE AGAINST AIR RAIDS (2<sup>nd</sup> REPORT)**

(For First Report, see G.T.1451)

1. The War Cabinet at their 181st meeting held on 11<sup>th</sup> July 1917, decided (Minute 3):

“That the Prime Minister and General Smuts, in consultation with representatives of the Admiralty, General Staff and Field Marshal, Commanding in Chief Home Forces, with such other experts as they may desire should examine:

1. The defence arrangements for Home Defence against air raids.
2. The Air organization generally and the direction of aerial operations”.

2. Our first report dealt with the defences of the London area against air raids. The recommendations in that report were approved by the War Cabinet and are now in process of being carried out. The Army Council have placed at Lord French’s disposal the services of General Ashmore to work out schemes of air defence for this area. We proceed to deal in this report with the second term of reference: the Air organization generally and the direction of aerial operations. For the considerations which will appear in the course of this report we consider the early settlement of this matter of vital importance to the successful prosecution of the war. The three most important questions which press for an early answer are:

1. Shall there be instituted a real Air Ministry responsible for all Air Organization and operations?
2. Shall there be constituted a unified Air Service embracing both the present RNAS and RFC? And if this second question is answered in the affirmative, the third question arises:
3. How shall the relations of the new Air Service to the Navy and the Army be determined so that the functions at present discharged for them by the RNAS and RFC respectively shall continue to be efficiently performed by the new Air Service?

3. The subject of general Air Organization has in the past formed the subject of acute controversies which are now, in consequence of the march of events, largely obsolete, and to which a brief reference is here made only in so far as they bear on some of the difficulties

which we have to consider in this report. During the initial stages of Air development, and while the role to be performed by an Air Service appeared likely to be merely ancillary to naval and military operations, claims were put forward and pressed with no small warmth, for separate Air services in connexion with the two old-established War Services. These claims eventuated in the establishment of RNAS and RFC, organized and operating on separate lines in connexion with and under the aegis of the Navy and Army respectively, and provision for their necessary supplies and requirements was made separately by the Admiralty and War Office to provide a safeguard against the competition, friction, and waste which were liable to arise, an Air Committee was instituted to preserve the peace and secure cooperation if possible. When war broke out this body ceased to exist, owing to the fact that its Chairman and members nearly all went to the front, but after a time it was replaced by the Joint War Air Committee. The career of this body was, however, cut short by an absence of all real power and authority and by political controversies which arose in consequence. It was followed by the present Air Board, which has a fairly well defined status and has done admirable work, especially in settling type and patterns of engines and machines and in coordinating and controlling supplies to both the RNAS and RFC.

4. The utility of the Air Board is however severely limited by its constitution and powers. It is not really a Board, but merely a Conference. Its membership consists almost entirely of representatives of the War Office, Admiralty and Ministry of Munitions, who consult with each other in respect of the claims of the RNAS and RFC for their supplies. It has no technical personnel of its own to advise it, and it is dependent on the officers which the departments just mentioned place at its disposal for the performance of its duties. These officers, especially the Director General of Military Aeronautics, are also responsible for the training of the personnel of the RFC service. Its scope is still further limited in that it has nothing to do either with the training of the personnel of the RNAS or with the supply of lighter-than-air craft, both of which the Admiralty has jealously retained as its special perquisites. Although it has a nominal authority to discuss questions of policy, it has no real power to do so, because it has not the independent technical personnel to advise it in that respect, and any discussion of policy would simply ventilate the views of its military and naval members. Under the present constitution the powers of the Air Board, the real directors of war policy are the Army and Navy, and to the Air Board is really allotted the minor role of fulfilling their requirements according to their ideas of war policy. Essentially the Air Service is as subordinated to military and naval direction and conceptions of policy as the artillery is, and, as long as that state of affairs lasts, it is useless for the Air Board to embark on a policy of its own, which it could neither originate nor execute under present conditions.

5. The time is however rapidly approaching when that subordination of the Air Board and the Air Service could no longer be justified. Essentially the position of an Air Service is quite different from that of the Artillery arm, to pursue our comparison: Artillery could never be used in war except as a weapon in military or naval or air operations. It is a weapon, an instrument ancillary to a Service, but could not be an independent Service itself. Air Service on the

contrary can be used as an independent means of war operations. Nobody that witnessed the attack on London on 11th July could have any doubt on that point. Unlike Artillery, an air fleet can conduct extensive operations far from and independently of both army and navy. As far as can at present be foreseen, there is absolutely no limit to the scale of its future independent war use. And the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principal operations of war, to which the older forms of military and naval operations may become secondary and subordinate. The subjection of the Air Board and Service could only be justified on the score of their infancy. But that is a disability which time can remove, and in this respect the march of events has been very rapid during the war. In our opinion there is no reason why the Air Board should any longer continue in its present form as practically no more than a Conference room between the older Services, and there is every reason why it should be raised to the status of an independent Ministry in control of its own War Service.

6. The urgency for the change will appear from the following facts. Hitherto aircraft production has been insufficient to supply the demands of both Army and Navy, and the chief concern of the Air Board has been to satisfy the necessary requirements of those Services. But that phase is rapidly passing. The programme of aircraft production which the War Cabinet has sanctioned for the following 18 months is far in excess of Army and Navy requirements. Next spring and summer the position will be that the Army and Navy will have all the Air Services required in connexion with their operations; and over and above that there will be a great surplus available for independent operations. Who is to look after and direct the activities of this available surplus? Neither the Army nor the Navy is specifically competent to do so; and for that reason the creation of an Air Staff for planning and directing independent Air operations will soon be pressing. More than that: the surplus of engines and machines now being built should have regard to the strategical purpose to which they are going to be put. And in settling in advance the types to be built the operations for which they are intended apart from naval or military use should be clearly kept in view. This means that the Air Board has already reached the stage where the settlement of future war policy in the Air war has become necessary. Otherwise engines and machines useless for independent strategical operations may be built. The necessity for an Air Ministry and Air Staff has therefore become urgent.

7. The magnitude and significance of the transformation now in progress are not easily realised. It required some imagination to realise that next summer, while our Western front may still be moving forward at a snail's pace in Belgium and France, the Air battle front will be far behind on the Rhine, and that its continuous and intense pressure against the chief industrial centres of the enemy as well as on his lines of communication may form an important factor in bringing about peace. The enemy is no doubt making vast plans to deal with us in London if we do not succeed in beating him in the air and carrying the war into the heart of his country. The questions of machines, aerodromes, routes and distances, as well as nature and scope of operations require careful thinking out in advance, and in

proportion to our foresight and preparations will our success be in these new and far-reaching developments. Or take again the case of the subsidiary theatre: there is no reason why we may not gain such an overpowering Air superiority in Palestine as to cut the enemy's precarious and limited railway communications, prevent the massing of superior numbers against our advance, and finally to wrest victory and peace from him. But careful Staff work in advance is here in this **terra incognita** of the Air even more essential than in ordinary military and naval operations which follow a routine consecrated by the experience of centuries of warfare on the old lines.

The progressive exhaustion of the man-power of the combatant nations will more and more determine the character of this war as one of arms and machinery rather than of men. And the side that commands industrial superiority and exploits its advantages in that regard to the utmost, ought in the long run to win. Man-power in its war use will more and more tend to become subsidiary and auxiliary to the full development and use of mechanical power. The submarine has already shown what startling developments are possible in naval warfare. Aircraft is destined to work an even more far-reaching change in land warfare. But to secure the advantages of this new factor for our side, we must not only make unlimited use of the mechanical genius and productive capacity of ourselves and our American Allies. We must create the new directing organization – the new Ministry and Air Staff which could properly handle this new instrument of offence, and equip it with the best brains at our disposal for the purpose. The task of planning for schemes of aerial operations next summer must tax our Air experts to the utmost and no time should be lost in setting the new Ministry and Staff going. Unless this is done, we shall not only lose the great advantages which the new form of warfare promises, but we shall end in chaos and confusion, as neither the Army nor Navy nor the Air Board, in its present form, could possibly cope with the cast developments involved in our new Aircraft programme. Hitherto the creation of the Air Ministry and Air Service has been looked upon as an idea to be kept in view but not to be realised during this war. Events have however moved so rapidly, our prospective aircraft production will soon be so great, and the possibilities of aerial warfare have grown so far beyond all previous expectations, that the change will brook no further delay and will have to be carried through as soon as all the necessary arrangements for the purpose can be made.

8. There remains the question of the new Air Service and the absorption of the RNAS and RFC into it. Should the Navy and the Army retain their own special Air Services in addition to the Air forces which will be controlled by the Air Ministry? This will make the confusion hopeless and render the solution of the Air problem impossible. The maintenance of three Air Services is out of the question, nor indeed does the War Office make any claim to a separate Air Service of its own. But as regards Air work the Navy is exactly in the same position as the Army; the intimacy between normal aerial scouting or observation and naval operations is not greater than that between long range artillery work on land and aerial observation or spotting. If a separate Air Service is not necessary in the one case, neither is it necessary in the other. And the proper and indeed only possible arrangement is to establish one unified Air Service

which will absorb both the existing services under arrangements which will fully safeguard the efficiency and secure the closest intimacy between the Army and the Navy and the portions of the Air Service allotted or seconded to them.

To secure efficiency and smooth working of the Air Service in connexion with naval and military operations, it is not only necessary that in the construction of aircraft and the training of the Air personnel the closest attention shall be given to the special requirements of the Navy and the Army. It is necessary also that all Air units detailed for naval or military work should be temporarily seconded to those services and come directly under the orders of the naval or army commanders of the forces with which they are associated. The effect of that will be that in actual working practically no change will be made in the Air work as it is conducted today, and no friction could arise between the Navy or Army commands and the Air Service allotted to them.

9. It is recognised, however, that for some years to come the Air Service will, for its efficiency, be largely dependent on the officers of the Navy and Army who are already employed in this work or who may in the future elect to join it permanently or temporarily. The influence of the regular officers of both services on the spirit, conduct and discipline of the present Air Forces has been most valuable and it is desirable that the Air Board should still be able to draw on the older services for the assistance of trained leaders and administrators. Further, it is equally necessary that a considerable number of officers of both Navy and Army should be attached for a part of their service to the Air Service, in order that Naval and Military Commanders and Staff officers may be trained in the new arm and able to utilise to advantage the contingents of the Air Forces which will be put at their disposal. The organization of the Air Force, therefore, should be such as to allow of the seconding of officers of the Navy and Army for definite periods – not less than four or five years – to the Air Service. Such officers would naturally, after their first training, be chiefly employed with the Naval and Military contingents, in order to secure close cooperation in Air work with their own services. In similar fashion it would be desirable to arrange for the transfer of expert variant and petty or non-commissioned officers from the Navy and Army to the new Service.

10. To summarise the above discussion we would make the following **recommendations**:

1. That an Air Ministry be instituted as soon as possible, consisting of a Minister with a consultative Board on the lines of the Army Council or Admiralty Board, on which the several departmental activities of the Ministry will be represented. This Ministry to control and administer all matters in connexion with aerial warfare of all kinds whatsoever, including lighter-than-air as well as heavier-than-air craft.
2. That under the Air Ministry an Air Staff be instituted on the lines of the Imperial General Staff responsible for the working out of war plans, the direction of operations, the collection of intelligence and the training of the Air personnel; that this Staff be

equipped with the best brains and practical experiences available in our present Air Services, and that by periodic appointment to the Staff of officers with great practical experience from the front, due provision be made for the development of the Staff in response to the rapid advance of this new Service.

3. That the Air Ministry and Staff proceed to work out the arrangements necessary for the amalgamation of the RNAS and RFC and the legal constitution and discipline of the new Air Service, and to prepare the necessary draft legislation and regulations, which could be passed and brought into operation next autumn and winter.

4. That the arrangements referred to shall make provision for the automatic passing of the RNAS and the RFC personnel to the new Air Service, **by consent**, with the option to those officers and other ranks who are merely seconded or lent of reverting to their former positions.

There are legal questions involved in this transfer and the rights of officers and men must be protected, but no dislocation need be anticipated.

5. That the Air Service remain in intimate touch with the Army and Navy by the closest liaison, or by direct representation of both on the Air Staff, and that, if necessary, the arrangements for close cooperation between the three Services be reviewed from time to time.

6. That the Air Staff shall from time to time attach to the Army and the Navy the Air Units necessary for naval or military operations, and such units shall, during the period of such attachment, be subject for the purpose of operations, to the control of the respective naval and military commands. Air Units not so attached to the Army and Navy shall operate under the immediate direction of the Air Staff.

The Air Units attached to the Navy and Army shall be provided with the types of machines which these Services respectively desire.

7. That provision be made for the seconding or loan of regular officers of the Navy and Army to the Air Service for definite periods, such officers to be employed, as far as possible, with the naval and military contingents.

8. That provision be made for the permanent transfer, by desire, of officers and other ranks from the Navy and Army to the Air Service.

11. In conclusion we would point out how undesirable it would be to give too much publicity to the magnitude of our Air construction programme and the real significance of the changes in organization now proposed. It is important for the winning of the war that

we should not only secure air predominance, but secure it on a very large scale; and having secured it in this war we should make every effort and sacrifice to maintain it for the future. Air supremacy may in the long run become as important a factor in the defence of the Empire as Sea supremacy. From both these points of view it is necessary that not too much publicity be given to our plans and intentions which will only have the effect of spurring our opponents to corresponding efforts. The necessary measures should be defended on the grounds of their inherent and obvious reasonableness and utility, and the desirability of preventing conflict and securing harmony between naval and military requirements.

2 Whitehall Gardens SW

17<sup>th</sup> August 1917.

Transcribed by RAF CAPS from the original report held at the RAF Air Historical Branch.

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Jan Christian Smuts  
Artist (Elliott & Fry), credited: © National Portrait Gallery, London





# Formation of The Royal Air Force

# Air Force Bill.

## ARRANGEMENT OF CLAUSES.

### PART I.

#### ESTABLISHMENT OF AIR FORCE.

Clause.

1. Raising and number of Air Force.
2. Government, discipline, and pay of Air Force.
3. Transfer and attaching to Air Force of members of Naval and Military Forces.
4. Rights of officers.
5. Application of Military Service Acts, &c.
6. Air Force Reserve and Auxiliary Force.
7. Consequential amendments of Naval Discipline Act and Army Act.

### PART II.

#### ESTABLISHMENT OF AIR COUNCIL.

8. Establishment of Air Council.
9. Staff, remuneration, and expenses.
10. Style, seal, and proceedings of Air Council.
11. Provisions as to sitting in Parliament.

### PART III.

#### DISCIPLINE, &c.

12. Application of Army Act to Air Force.
13. Application of other Acts.

### PART IV.

#### GENERAL.

14. Power to alter and revoke orders.
15. Short title.

SCHEDULES.

(109)

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26656

## AIR FORCE BILL.

*HC Deb 16 November 1917 vol 99 cc739-8260*

As amended, considered.

*Mr. SPEAKER*

I have some doubt as to the first New Clause, standing in the name of the hon. and gallant Member for Rutland (Colonel Gretton)—(Air Council not to Order or Conduct Warlike Operations). That is the very object of the Bill I should think, and this seems to be a negative of the whole Bill.

*Colonel GRETTON*

On a point of Order. The matter has been raised and discussed on previous occasions. As no doubt you are aware, the Air Council has many functions, and it may be—and, as I understand, probably is—intended that, under certain circumstances, it will undertake warlike operations. I therefore submit it is in order. It is to transfer what the Air Board is doing to the Air Council, with increased powers, and the question is in what direction those powers are to be increased.

*Mr. SPEAKER*

I should like to hear what the hon. and gallant Member says, but it is very doubtful.

### **NEW CLAUSE.—(Air Council not to Order or Conduct Warlike Operations.)**

*HC Deb 16 November 1917 vol 99 cc739-41*

The Air Council shall not order warlike operations or make war by itself, but the Air Council shall transfer and attach to the naval and military forces of the Crown such Corps, Units, Officers, and men of the Air Force as may be determined in consultation and agreement with the Board of Admiralty or the Army Council, or both of them, and the Board of Admiralty and the Army Council may attach and transfer such Corps, Units, Officers, and men to any part of the Force subject to their orders, respectively.—[Colonel Gretton.]

*Colonel GRETTON*

I beg to move the Clause. I wish to explain to the Committee that the two Clauses standing in my name are part of the same subject. Very late on the Committee stage it was explained to the Committee that the duty of the Air Council will be to supply and hand over to the command of the Army and Navy, as the case may be, all the aircraft which is required for the conduct of naval and military operations, but there is a third question still remains which has not been definitely explained to the House. The Air Board has hitherto been a Board of Supply only, but the Army Council is to provide machinery and undertake the training of personnel as well as the supply of apparatus. So far there has been no criticism offered on

that principle. The Air Council under this Bill, as it now stands, will have power to order warlike operations and undertake them independently either of the Army or the Navy, and it is a matter upon which I desire, if possible, to obtain some information from the Government. I put before the Committee arguments which I think will not be refuted and cannot be, that one of the main principles which leads to success in war is unity of command, and that violation of that principle always leads to weakness in the conduct of war, if not to disaster.

I am not going to discuss strategy or tactics, but so far as the principle of command is involved in naval and military operations, that is provided for by the explanation given by the Government. It will be the duty of the Army Council to provide all that the Army and Navy require. The Government have not yet explained whether the whole of the Air Service in every part, including the Antiaircraft Service is to be handed over to the Air Council. No doubt some explanation will be given on that point before we part with the Bill in this House. The point which arouses apprehension is that a third command is intended to be established by this Bill. We already have the Army Council, and we have a separate command in the Navy acting under the Lords of the Admiralty and the officers appointed by that Board. Even this division of command has great difficulties, and may lead to still further difficulties in the future, but this Bill proposes to set up a third War Council, and it opens up new problems and difficulties which will cause considerable apprehension. It would appear that the naval force, when acting in conjunction with land operations, should be in command of the military officer, and the same would appear to apply to the officer, commanding the naval forces dealing with a large area of the sea. The problems involved in the unity of command are very great. We suffer in this country from the fact that we have no supreme War Staff manned by men whose whole training and career have been spent in the study of problems of war and how to conduct war successfully. In this country the War Cabinet is a civilian body.

*Mr. SPEAKER*

The hon. and gallant Gentleman is now wandering all over the place, and he is not confining himself to the subject-matter of this Clause at all.

*Colonel GRETTON*

Then I will bring any remarks directly back to the point. It will be difficult to combine the warlike operations of the Air Council with the warlike operations ordered by the Army Council and the Board of Admiralty. That is the difficulty I am anxious should be avoided. The difficulty of a third command which this Bill apparently proposes to set up is bound to create this difficulty, and there is no machinery to overcome it. Unless a strong reason is given to the contrary, it would appear that the Air Forces should be at the disposal of the Army Council or the Board of Admiralty, and that this new Air Council should be a board of training and supply, and the actual operations of war should be entrusted to either the military or naval authorities. Those are the considerations I wish to place before the attention of the House.

*Mr. BILLING*

I beg to second the Amendment. If this proposal were carried out it would defeat those purposes of the Bill which are beneficial to the Service.

*Mr. SPEAKER*

The hon. Member has just given a very good reason why this Amendment is out of order, and I must decline to put it. The other new Clauses, standing in the name of the hon. Member for East Herts (Mr. Billing), should come as Amendments, but not as new Clauses.

### **CLAUSE 1.—(Raising and Number of Air Force.)**

*HC Deb 16 November 1917 vol 99 cc741-7*

It shall be lawful for His Majesty to raise and maintain a force, to be called the Air Force, consisting of such number of Officers, Warrant Officers, non-commissioned Officers, and men as may from time to time be provided by Parliament.

*Mr. BILLING*

I beg to move, after the word "the," to insert the word "Imperial."

I am encouraged to move this Amendment by the remarks of an hon. Member which indicated that there is an idea in the mind of the Government to eventually include on the Council of the Air Service representatives from overseas. There are people in this country who resent the word "Imperial," but I am suggesting it in connection with this Bill in the sense of the unity of the Empire and quite distinct from any other meaning which may have been attached to it. I consider that if the Air Service is to develop on such lines as will render it of value to the Empire it is essential that they should have co-operation, assistance, and guidance of those men who are guiding the forces and destinies of the Dominions generally. If that is the case it is quite possible and reasonable that this word should be embodied in the very title of the Bill itself. It would be a graceful compliment to our men from overseas, because, whatever critics may say, they have certainly not failed us in this War. They have come forward not only in the trenches and on the seas, but more particularly in our Air Services. I am sure that the hon. and gallant Member (Major Baird) on the Front Bench will echo what I say when I tell the House that a very considerable number of our pilots, numbering some of the most gallant among them, men who have attained great prominence as expert pilots and fighting airmen, have been drawn from the Colonies themselves.

When this Air Service develops as it must, it will be absolutely essential that we should have bases throughout the Empire. It may be suggested that these bases should be organised by the Dominions themselves, but we shall have to use them not only for our fighting forces but also in peace time, because it will be impossible to keep up the establishment of a vast number of airmen in peace time unless they are given something to do. There are no facilities in the Air

Service like there are in the Army and the Navy for keeping the men in training. The question of materiel is even more important. The life of an aeroplane is so short that it is quite feasible, unless the machines are employed for something more than mere flying from aerodrome to aerodrome, that it will be impossible to keep them up to date. That is why I think it would be an excellent thing if this name were embodied in the Bill so as to throw out the suggestion to the Dominions that it is the wish of the Government eventually, if not at the present time, to make this Air Service a comprehensive unit for the whole Empire, and by so doing to encourage the formation of bases throughout the Empire to be used in times of peace for mail carrying and various other Imperial duties of an Imperial Government. I strongly recommend this Amendment, not in any sense of Jingoism, but purely as a means, and a very simple means, of paying a graceful compliment to the Colonies, which I am sure they will appreciate, and of putting the hall-mark on the statement of the hon. and gallant Member in Committee, that the only reason they did not wish to limit the numbers on the Council was that they might have the opportunity of having representatives from the Colonies and the Dominions upon it. Surely there can be no reasonable excuse or justification for refusing to accept this Amendment, and I hope there will be Members who are sufficiently interested in our Imperial destiny to second the Motion.

*Colonel Sir HAMAR GREENWOOD*

I beg to second the Amendment, and it is so seldom that I find myself in accord with the hon. Member that I do with special pleasure. I second it primarily because the Air Service is, in fact, an Imperial Air Service. Australia has its own Air Service, but Canada has not. The British Government have already circularised the Canadian Forces to supply airmen and officers for the Air Service. That at once makes it, as a matter of fact, the Imperial Air Force, and it is a misnomer to describe it as an Air Force. I think the word "Imperial" is more akin in this connection than the word "Royal," used in connection with the Navy, and I hope that the Government will adopt the term, which has a significance, outside this country, of a great national import.

*The PARLIAMENTARY SECRETARY to the AIR BOARD (Major Baird)*

This Amendment obviously commands the greatest possible sympathy; but there is this difficulty, that, in order to accept it, it will be necessary to consult the Dominion authorities, and we have not been able to do so.

*Sir H. GREENWOOD*

What! In order to use the word "Imperial"?

*Major BAIRD*

Yes, the military forces of Canada and Australia are practically autonomous. Australia has got its own pilots. Canada, it is true, has not; but I know, from personal experience, that there is a great desire for a Canadian squadron. It is quite easy to understand that the men of those great Dominions would like the deeds of their fellow citizens to be identified with the Dominion from which they come. That does not in the least dispose of the very desirable view put forward

by the hon. Member who moved this Amendment, that we should unify the whole of that Service just as we desire to unify the Service as it applies to Great Britain, by abolishing the imaginary high-water mark which at present unnecessarily divides the airmen operating with the naval and military forces. It is impossible to controvert the desirability of including the Dominions, but I hope the Amendment will not be carried, because, although we are entirely sympathetic, we are really not in a position to take them over, and if it were pressed it might lead to misunderstanding.

*Mr. LYNCH*

I can hardly support the elaborations of my hon. Friend (Mr. Billing), in moving to insert in this Bill the word "Imperial." I am surprised to find that a man so up to date should by some mental hiatus seem to be about ten years behind hand in this regard. In the course of his excellent speech he kept referring to these Dominions as "colonies." Nothing could be more behind-hand than to dub them as "colonists." They are not colonists; they are self-substantial men, who, I hope, have a great future before them, and my hon. Friend seems to miss the very A, B, C of the question, when he falls into such an elementary pitfall. If he had been in this House a few years ago he would have known that I introduced the question of the title "Dominions," but, with the usual supercilious style of the Front Bench, I was sneered at for months until the so-called "Colonies" and Dominions backed up my demand, and they were forced at last with bad grace to give way. The word "Imperial" should stink in the nostrils of history and of all except those who are saturated with pro-German sentiments. There is one, and only one, great example of an Empire since the Roman Empire which, under the word "Empire," has fallen into rottenness and corruption, and that is the German Empire. The word "Imperial" reeks of a sentiment which was prevalent here before the War, especially in Tory circles, and it found voice at the beginning of the War. It was said, "No; it is not the German Empire which will rule the world with their Germanic ideas and their German Kaiser; it is we, the great English people, who will dominate the world and set our heel on other nations and trample them down under the great spirit of Imperialism."

*Mr. SPEAKER*

I am afraid the hon. Member is wandering from the Amendment. This is a very small Amendment, and lies within a very small compass. The hon. Member must confine his remarks to it.

*Mr. LYNCH*

All this arises from the word "Imperial." If I am wrong in wandering, my hon. Friend (Mr. Billing) was also wrong in introducing this word, and his speech wandered as far from the mark as you, Sir, say I am wandering now. I intend to continue to protest against the use of the word "Colonies," preferring to call them Dominions until we can proceed to a word of greater glory as opposed to this miserable and imitative idea of Imperialism, which is unworthy of us and certainly unworthy of the Dominions, whose destiny it is to be a federation of free republics.



*Mr. BILLING*

May I take this opportunity—

*Mr. SPEAKER*

The hon. Member is not entitled to speak again.  
Amendment negatived.

*Mr. BILLING*

Am I not in order in rising to withdraw an Amendment?

*Mr. SPEAKER*

The hon. Member did not say that.

*Mr. BILLING*

I said I would take this opportunity and then you called me to order.

*Mr. SPEAKER*

I took the opportunity of putting the Question.

*Mr. BILLING*

Can I withdraw the Amendment?

*Mr. SPEAKER*

The Amendment has been negatived.

*Mr. BILLING*

I beg to move to leave out the word "Force," and to insert instead thereof the word "Service."

The term "Air Force" is an unhappy one, because it does not roll easily off the lips and its initials do not help in any way. I should like to qualify the suggestion that this body is to be purely a force. It is rather more a service than a force. It is a service which, I hope, is going to bring victory to our arms. I do not know of any other means of getting it in the present condition of the world. After the War I trust it is going to be a force in a punitive sense only, and that it will be more of a service to mankind than a force for the purpose of making war. Although the aeroplane itself is the most punitive weapon that has ever been placed in the hands of man to wield, it is also, from that very cause, most likely to bring to this world universal peace, because the only way to keep people quiet, whether it is an individual or a collection of individuals, or a collection of nations, is to have in one's hand a punitive weapon by which to exert authority in the interests of justice and peace. [An HON. MEMBER: "In other words, force!"] This country, whether it be an Empire or purely a country, is not going in times of peace to spend the vast sums of money which are and will be necessary to keep up the establishment of any force worthy of the name, and one likely to keep us on even terms with potential enemies, without

turning it to some other use in peace time. The life of an aeroplane is only about four days in war. In peace time possibly it becomes obsolescent in from six to twelve months. We are passing through stages of development in aviation, and shall be for the next ten years, which render that certain. It is necessary that whatever force or service we have shall keep up with the very latest types of machine in ever respect.

Despite the fact that this War has been going on for three and a half years, I hope the future will bring more years of peace than of war. Therefore, it would be better to call this a Service, because we look to it in times of peace to serve mankind in a constructive capacity and in times of war to serve the nation in a destructive capacity. Before very long the aeroplane, in the hands of capable men, with a nation or nations united behind it, will make war so terrible that no statesman or body of statesmen will dare to commit any country to a state of war. Its effect will be at once so sudden and so complete, its powers of destruction so enormous, that it will be able to lay cities in ashes in a night. Although the aeroplane comes to us as a weapon of force, we shall live to regard it as a winged messenger of peace. Great developments will take place, but they will be developments in the interest of humanity, and the function of the aeroplane will be, in the first place, to serve mankind, and, in the last resort, it will be used for punitive measures. I hope that the hon. Member in charge of the Bill will accept the Amendment. We have used it in the Navy as the Royal Naval Air Service is never called the Royal Naval Air Force. The Royal Flying Corps was never called a force. The destinies of these two great Services, which have rendered such extraordinarily valuable assistance, are going to be merged in this new force. I trust it will be called by a name which will fall kindly from the lips and which will suggest that it will work for the service of mankind rather than its destruction.

*Mr. LYNCH*

I beg to second the Amendment. My hon. Friend has often good ideas, and in this deserves encouragement.

## **CLAUSE 2.—(Government, Discipline and Pay of Air Force.)**

*HC Deb 16 November 1917 vol 99 cc747-9*

*Mr. SPEAKER*

The next two Amendments on Clause 2, standing in the name of the hon. Member (Mr. Billing), dealing

*Major BAIRD*

I did not feel sufficiently impressed by the Amendment to think it worth while to change the Title of the Bill. This is essentially a force that we propose to raise. We hope it will be a very formidable force. The hon. Member (Mr. Billing) referred to the existing Royal Naval Air

Service and the Flying Corps. Both these are very good names. Now that we have taken over both of them, either would have just cause to resent it if you gave the united force the name of the other. These are little things which people have to pay attention to. It appeared more reasonable to adopt a name which is not in use by either branch of the Air Force at present and to call it what it really is, an Air Force. I trust the Amendment will not be pressed.

*Mr. BILLING*

I do press it.

Question put, "That the word 'Force' stand part of the Bill."

The House divided: Ayes, 90; Noes, 0.

*[record of vote abridged]*

### **CLAUSE 3.—(Transfer and Attaching to Air Force of Members of Naval and Military Forces.)**

*HC Deb 16 November 1917 vol 99 cc749-78*

*[record of debate abridged]*

### **CLAUSE 6.—(Air Force Reserve and Auxiliary Force.)**

*HC Deb 16 November 1917 vol 99 cc779-84*

*[record of debate abridged]*

### **CLAUSE 8.—(Establishment of Air Council.)**

*HC Deb 16 November 1917 vol 99 cc784-812*

(1) For the purpose of the administration of matters relating to the Air Force and to the defence of the Realm by air there shall be established an Air Council consisting of one of His Majesty's Principal Secretaries of State, who shall be President of the Air Council and of other members who shall be appointed in such manner and subject to such provisions as His Majesty may by Order in Council direct.

(2) His Majesty may, by Order in Council, fix the date as on which the Air Council is to be established, and make provision with respect to the proceedings of the Air Council and the manner in which the business of the Council is to be distributed among the members thereof.

(3) On the establishment of the Air Council the Air Board constituted under the New Ministries and Secretaries Act, 1916, shall cease to exist, and all the powers, duties, rights, liabilities, and property of that Board shall be transferred to the Air Council, but nothing in this: Sub-section shall affect any orders, instructions, or other instruments issued by the Air Board, and all such instruments shall have effect as if issued by the Air Council.

(4) His Majesty may, by Order in Council, transfer from the Admiralty or from the Army Council or the Secretary State for the War Department, to the Air Council or the President of the Air Council such property, rights, and liabilities of the Admiralty or Army Council or Secretary of State as may be agreed between the Air Council and the Admiralty or the Army Council, as the case may be.

3.0 P.M.

*Mr. BILLING*

I beg to move, at the, end of Sub-section (1), to insert the words "It shall be lawful for the Board of Admiralty and the Army Council respectively to nominate an associate member for the Air Council, which members shall have the right to take part in all, discussion and vote on all measures."

It has not been made very clear exactly what are the powers of the Air Service. It has not been made very clear whether the Air Council will retain control, either direct or indirect, of the members of the Air Service who are attached to the Grand Fleet or to the Army respectively; and it has not been made clear at all whether the guns and machines and the flying officers of the Navy who decide not to avail themselves of transfers or attachment are to be permitted by or under the Admiralty to carry out the functions of gun-spotting or scouting for the Grand Fleet. There is nothing in this Bill, so far as I can see, to prevent the Lords of the Admiralty building an aeroplane and asking one of their officers to fly it in the interests of the Grand Fleet. This Amendment is down to provide that on the Air Council which it is proposed shall have control over, or at least a certain right of interference with, the aeronautical impedimenta, on sea or land, with the Army in the field or the Grand Fleet respectively, the Army and the Navy shall have a representative on that Council to make representations to the Council in the interests of the Grand Fleet and the Army respectively. I utterly fail to see if this Amendment is not accepted on what grounds it is rejected. Surely, on the ground of common sense, in starting a new Service such as this, it would be as well to have the service in an advisory capacity of a senior officer of the Army and Navy respectively on all matters of strategy and on all matters of the ordinary conduct of their force, because—so far as I can see nothing that has been stated from the Front Bench has led us to consider the contrary—anybody may be a member of this Air Council. It is even suggested and advocated by the representative of the Government that certain tradesmen shall form part of this Council, and shall busily continue their work of directors of a firm who are trading with the Council. Tradesmen are very fine fellows in their way, but when it comes to strategy or the administration of affairs

of a great new Service, I should not recommend tradesmen only; I should say that we must have the advice and assistance, as associate members, if you wish—I distinctly provide in my Amendment that they should be associate members and not permanent members—of high officials of considerable experience from the two Services respectively.

One hon. Member referred this afternoon to the attitude of Lord Northcliffe so far as this Air Council is concerned. Hon. Members may have varying opinions as to the ability and methods of Lord Northcliffe, but one thing I am perfectly certain about is that he possesses energy and enterprise. He may have good reasons for refusing the position, but I am confident that if he had accepted it he would have been most anxious to have had naval and military associates on that Council. The fact that he has refused the position suggests to me that they have refused to give him a free hand. I am in favour of seeing the Air Minister, for better or worse, with a free hand, subject always to such advice as the Council could render to them. Nothing can be said against having associate members attached to this Council. To suggest that it would cause friction is nonsense. I say that it will defeat friction, intrigue, and inefficiency in their early stages. Let us assume that the Admiralty are anxious for another squadron of machines or for the development of one particular type of machine in the interests of the Grand Fleet. The Grand Fleet have suffered at the hands of German airships. Up to recently they have been blind. We are proposing to take all that away from the Grand Fleet again, to transfer it all to the Air Service, and we leave it to the new Air Minister to blind the Grand Fleet. He will not do it, of course, but he will have his own ideas. There are two schools in the Air Service, the lighter-than-air school and the heavier-than-air school. A lot of confusion will arise. I can almost hear now the arguments that will be put forward by the airship experts of the Admiralty, when the Air Service is transferred, to show that the Air Council should supply the Navy with lighter than air machines. I can equally hear the arguments put forward for heavier than air machines.

I suggest that this Council should have upon it one naval representative who can attend the deliberations of the Council and put forward the views of the Admiralty, while the consultation is taking place and before a definite decision is come to, because the tragedy of officials is that, having decided, rightly or wrongly, they think that they are becoming smaller men instead of greater men in the opinion of others if they withdraw their opinion in face of evidence which justifies that withdrawal. The Army and the Fleet will require extraordinary assistance from the Air Service. They will actually constitute the Air Service during the first few months, if not the first year of its career, because, despite the transfer and calling it by a different name, of the men, Officers, machines and materials employed under the direction of the Air Service about 75, or, at any rate, 60 per cent. will be in the hands of the Army until such period as all these delicate questions of control, distribution, machines, the use to which they are to be put, and the development experiments which are necessary for a complete understanding of the possibility of the employment of aeroplanes in connection with naval and military forces are settled. It would be a tragedy if all these things are placed in the hands of a Council which had no naval or military adviser upon it. If it were purely and simply in the hands of the

Council to have the direction of a great raiding squadron, possibly this Amendment would not be so important, but as it is proposed that this Council shall affect and is requested to work in harmony with the two great Services the Army and Navy, I consider that it will be a very serious matter if this Amendment is lost.

*Mr. HARCOURT*

I beg to second the Amendment.

*Major BAIRD*

I cannot accept this Amendment. The Government are fully alive to the necessity of keeping the closest possible touch between the Army and Navy and the Air Forces. It has been stated quite clearly that the main business of the Air Council would be to co-ordinate the Air Forces of the two Services. The hon. Member did not appreciate the competition of the Air Council as it is now proposed. This Council will discharge its duties in relation to the Army and Navy, and obviously means will have to be taken to keep the closest possible touch between all three Services. I do not think that the method suggested by the hon. Member is necessarily the best method. There is nothing whatever to stop the Air Council inviting the Admiralty and the War Office to send representatives to consult with them. Undoubtedly consultations will be of daily, indeed, hourly occurrence, but it is essential in the interests of efficiency to leave it to the Air Council to decide the best methods to adopt.

Question put, "That those words be there inserted in the Bill."

The House divided: Ayes, 0; Noes, 143.

*[record of vote abridged]*

*[record of debate abridged]*

## **CLAUSE 11.—(Provisions as to Sitting in Parliament.)**

*HC Deb 16 November 1917 vol 99 cc812-26*

*[record of debate abridged]*

Motion made, and Question proposed, "That the Bill be now read the third time."

*Mr. LYNCH*

I desire to place myself deliberately on record as saying that this Bill has failure stamped on its face. Even now I would advise the Government to take that view, tear it to shreds, and bring in a new and an effective Bill. The majority of the few Members who have been present during this Debate are prospective or possible office-holders under the Bill. I know of no occasion during the last three years or more that have elapsed since the beginning of this terrible War—which, remember, up to date the Allies are not winning—I know of no measure presented by

the Government, no matter how futile it has proved, which has not met the approval of the majority of the House, and which has not been presented by the member of the Government with that same air of unctuous rectitude with which they have ushered in this Bill.

I have a right to speak upon this subject, because years ago, and for many months absolutely alone, I have asked, implored, demanded again and again from the Government that they should produce a Bill which would constitute an Air Ministry. I have been received even with derision.

*Mr. PRINGLE*

Counted out !

5.0 P.M.

*Mr. LYNCH*

A Nemesis has arisen, but that Nemesis has not come to cover me with the impression that it stands in accusation before the Government. To touch upon past history for the moment, I was impelled to this course by a clear vision, which has been fully justified, of the great and imminent peril which was presented by the possibility of an Air Service on the part of the Germans. I implored the Government to wake up in time and to recognise this great peril and to prepare something effective to meet it. But my appeal fell upon deaf ears; deaf ears, but always with a show of profound wisdom and total omniscience, which again and again I have discovered to exist on that bench with abysmal incapacity. What I will say now is this: If at one time an Air Service of even 10,000 aeroplanes had been created it might have proved decisive in this War; but time rolls on, months roll by, and whereas at one epoch a fleet of 10,000 planes might have retrieved the position now ten times 10,000 planes may prove insufficient.

Remember what the Germans are doing. They at last have wakened up to all the possibilities of air attack. Luckily for all of us they were hypnotised by their great Zeppelin "idea," an idea which though it has rendered large service has yet proved disappointing to their hopes, but now they have changed their methods entirely; they have determined, to use a popular phrase, to go nap on an air service. They have not begun by bringing in a ramshackle Bill, such as will break the impulsion of the man placed in charge of the measure and which in many respects bears the aspect, in a great crisis, not of meeting a menacing external problem but rather as being one of those measures with which we are familiar, which are intended to satisfy this House for the moment and to be a sop to the cerberus of the Press. The Germans have at the head of their business one man of considerable experience, of real enthusiasm, of great driving power, and they have instructed him to the full with all the powers for executing boldly, decisively, and quickly the conceptions which emanate from his brain. I see nothing in this Bill that will meet the machinations of Hoepfner at the head of the German air service.

Remember this. That great as has been the peril with which we have already been menaced, I at any rate see the possibility—I hope it is only a possibility—which far exceeds in magnitude and danger anything which we have yet experienced, and we do not get rid of this possibility by the opium dope of optimism. We are dealing with something analogous to the forces of nature, where our own state of mind has no influence on the result. We have been faced with the great external problem which is becoming more and more menacing, and when I kept pressing again and again for this measure I hoped that at length, having wakened up to the dread reality the importance of which cannot be magnified, this Government would have realised that this was perhaps the one avenue that remained to final victory. I hoped that, recognising this, those in charge of affairs would rise to the height of the occasion and plank their very existence on great, bold, decisive, and adequate measures. I thought they would recognise the futility, to say nothing else, of those incessant attacks of which they have been so proud on the Western front, that they would abandon their attempts to break through the Hindenburg line; that they would close that chapter, and save the consequent waste of men and material, and by the economy so effected have acquired greater power to concentrate on the Air Service. I had hoped that they would have created something in the style of a Napoleon Bonaparte. Whenever such a name is mentioned in this House it creates an impression of a Triton among the Minnows. But remember that, after all, he was the representative of a country which has been considered decadent up to the last three years, and that he lived a hundred years ago. What is the meaning of that greatness of a hundred years ago? What is the meaning of civilisation and enlightenment; and what is the meaning of your continual boasts in history if, at the great crisis, you are unable to produce a Man. You have not produced that man, and you have not produced adequate measures to face that great peril which is now menacing your very existence

Consider another aspect of this question. Who is going to be the Secretary of State? Whom are you going to entrust with the execution of this measure which is vital to the very safety of the country? What names are there mentioned? Is it the name of a great engineer? Is it the name of any man who has already stood forward before the public as one possessing bold ideas, great energy, great intellectual powers? That does not seem to be your method for searching for a man. You search for some journalist who has either the power to menace you or who has the talent to "boom" you. Are you going to put Mr. Bottomley in charge of this measure? [Laughter.] That suggestion excites laughter, but it is quite on a par with all the previous acts of this Government in the formation of successive Cabinets in the crises where the life of the nation have been threatened. Or if not Mr. Bottomley, will you put Mr. Smillie in charge of this measure? I do not know that either Mr. Bottomley or Mr. Smillie know anything about aeroplanes. It is possible that they may have studied these problems, that they may have devoted their great powers to the study of these problems, and that they are well acquainted with all that is necessary to fill such a post. The point is that they would not be chosen for that competence or for that efficiency, they would be chosen for Parliamentary reasons in order to secure this Government from attacks, or to bolster up still further, by Machiavellian methods, the majority which they enjoy in this House. I would remind the House, and particularly I would remind the country—because, if my words should even fail



to go home now they will return with twentyfold force six months from this date, and will sink into the minds of people outside—it is one thing to satisfy this House, it is one thing to have a powerful Press tuned to action, just as Queen Elizabeth tuned the pulpits, to sound your praises in chorus; it is one thing to create an optimistic spirit; it is one thing to bolster up the reputations of men who are essentially small men and incapable men—all that lies on one side of the question; on the other side, once again, is that great menacing exterior problem which you have never faced frankly, sincerely, and resolutely, which is pressing on your attention again and again, which is becoming more and more urgent, and which I say this Bill is totally inadequate to meet. In order to put my opinion definitely on record I would vote against this Bill—

*Major BAIRD*

rose in his place, and claimed to move, "That the Question be now put."

Question put, "That the Question be now put."

*Mr. BILLING*

(seated and covered): The Closure has been put before any but one Member has had an opportunity of speaking on this Bill. During the whole course of this Bill, from Committee stage to Report stage, the discussion has been kept as carefully as possible within the strict procedure, and, if not, any matter was at once ruled out. In Committee stage the Chairman of the Committee ruled out my new Clauses, because he said they ought to have been Amendments. When we came to the Amendments, he ruled them out because they ought to have been new Clauses. The whole political trickery that it is possible to put into motion has been put into motion on this Bill, and now Members are coming from the smoking rooms and the tea rooms and crowding into the Lobby to vote, although they have not the least idea what they are voting for.

*Mr. SPEAKER*

That is not a point of Order.

*Mr. BILLING*

On the point of Order. May I ask you whether, before Members have even had an opportunity of signifying their desire to speak by rising, it is in order for a man to be put up by the Government after the first opening phrases of the first Member who rises to address the House on the Third Reading? I consider it a most improper proceeding.

*Mr. SPEAKER*

The hon. Member will have an opportunity of voting against it.

*Mr. BILLING*

Am I to understand that all this legislation is to be so conducted that there is to be no criticism, and that the only method which an hon. Member has to register his protest against this abominable form of Government is to vote against Bills for the conduct of the War?

*Mr. SPEAKER*

The hon. Member has occupied a great part of the day in making protests. Almost the whole time has been taken up to-day by his speeches.

*Mr. BILLING*

May I ask your ruling on this matter? The only reason I have taken up the time of the House is that other Members have neither the intelligence nor the patriotism to attend the Debate. There was not a London Member present.

*Mr. SPEAKER*

Is the hon. Member prepared to tell or not?

*Mr. BILLING*

Yes.

The House divided: Ayes, 136; Noes, 0.

*[record of vote abridged]*

Question put accordingly, and agreed to.

Bill accordingly read the third time, and passed.

The remaining Orders were read, and postponed.

Whereupon Mr. Speaker adjourned the House without Question put, pursuant to Standing Order No. 3.

Adjourned at a Quarter after Five o'clock.

<http://hansard.millbanksystems.com/commons/1917/nov/16/air-force-bill>

# Air Force Constitution Act, 1917.

[7 & 8 GEO. 5. CH. 51.]



## ARRANGEMENT OF SECTIONS.

A.D. 1917.

### PART I.

#### ESTABLISHMENT OF AIR FORCE.

Section.

1. Raising and number of Air Force.
2. Government, discipline, and pay of Air Force.
3. Transfer and attaching to Air Force of members of Naval and Military Forces.
4. Rights of officers.
5. Application of Military Service Acts, &c.
6. Air Force Reserve and Auxiliary Force.
7. Consequential amendments of Naval Discipline Act and Army Act.

### PART II.

#### ESTABLISHMENT OF AIR COUNCIL.

8. Establishment of Air Council.
9. Staff, remuneration, and expenses.
10. Style, seal, and proceedings of Air Council.
11. Provisions as to sitting in Parliament.

### PART III.

#### DISCIPLINE, &c.

12. Application of Army Act to Air Force.
13. Application of other Acts.

### PART IV.

#### GENERAL.

14. Power to alter and revoke orders.
15. Short title.

#### SCHEDULES.

A

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34—67

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**AIR MINISTRY WEEKLY ORDERS.**

AIR MINISTRY,  
10th April 1918.

The following Orders are hereby promulgated for information and guidance and necessary action.

By Command of the Air Council,  
**W. A. ROBINSON.**

**34.—Telegram from His Majesty the King on the Inauguration of the Royal Air Force.**

The following telegram from His Majesty was received by the President of the Air Council on the occasion of the inauguration of the Royal Air Force :—

Lord Rothermere,  
Air Ministry, Strand.

“To-day the Royal Air Force, of which you are Minister in Charge, comes into existence as a third arm of the Defences of the Empire. As General-in-Chief I congratulate you on its birth, and I trust that it may enjoy a vigorous and successful life.

“I am confident that the union of the Royal Naval Air Service and the Royal Flying Corps will preserve and foster that esprit de corps which these two separate forces have created by their splendid deeds.”

GEORGE, R.I.

1st April 1918.

The following reply was sent to His Majesty by the President of the Air Council :—

“Lord Rothermere, with his humble duty to Your Majesty, begs leave on behalf of the Royal Air Force, to convey an expression of their heartfelt appreciation of the gracious message addressed to them by their General-in-Chief.

“Lord Rothermere is confident that the assurance of your Majesty's interest and confidence will assist every officer and man in the R.A.F. in the task of continuing the great traditions of the R.N.A.S. and R.F.C., traditions which, as your Majesty has personally seen, have never been more gloriously maintained than in the struggle now proceeding.”

Telegram from His Majesty the King on the Inauguration of the Royal Air Force



Lord Rothermere and Air Vice Marshall Sykes, et al

### 617.—Light Blue Uniform for Officers.

1. Approval having been given for certain changes to be made in R.A.F. uniform, A.M. Monthly Order No. 162 is amended, so far as Officers' uniform is concerned, as laid down below.

2. Officers in possession of khaki uniform of the pattern authorised by the above Order may continue to wear same until it becomes necessary to renew it. Light blue uniform of the pattern laid down below must then be provided.

3. Light blue uniform, already authorised by above quoted Order for evening wear, may be taken into use forthwith for general wear, but must first be modified to conform in detail to the patterns described below.

4. No specific grant in respect of blue uniform will be made.

#### 5. DESCRIPTION OF LIGHT BLUE UNIFORM FOR OFFICERS.

**CAP.**—Of the same design as the present R.A.F. khaki cap, but with light blue crown.

**CAP BADGE.**—For all ranks below Major-General as at present. Officers of the rank of Major-General and above will wear a special Cap Badge, consisting of a wreath of laurel leaves, surmounted by crown and lion, with gilt metal bird superimposed on the laurel wreath.

**RANK DISTINCTIONS ON CAP.**—The vertical bars now worn on either side of Cap Badge by Officers below rank of Major will not be worn on blue caps.

Field Officers will wear one row of gold oak leaves and General Officers will wear two rows on peak of cap as at present.

**JACKET.**—The pattern is the same as that at present authorised for khaki, but the material is of light blue cloth.

**Buttons.**—The same design as at present authorised, but flat, and of gilded metal, without "rope" edge.

**Buckles.**—The same type of buckle will be worn on belt, but with two prongs instead of one.

**Badges of Rank.**—The "Bird and Crown" at present worn on cuff is abolished. Badges of rank are as at present authorised, but in gold lace instead of worsted braid.

**Note.**—Second Lieutenants will now wear the "half row" of gold lace.

#### *Distinctive Badges.*

**Pilot.**—"Wings" of the present pattern but in gold and silver embroidery.

**Observer.**—"Single Wing" of the present pattern, but in gold and silver embroidery.

**Service Chevrons.**—Will no longer be worn in R.A.F.

**Wound Badges.**—Gold-embroidered stripes of the pattern worn in Navy and Army.

**TROUSERS.**—Of the pattern at present authorised, but of light blue cloth.

**BREECHES.**—Of the pattern at present authorised, but of light blue material. Strappings if worn will be of the same material as breeches.

6

**SHIRTS AND COLLARS.**—Blue or silver grey shirts and collars, with black ties, may be worn for working wear. White shirts and collars with black ties may be worn at option.

**FOOT-WEAR.**

(a) *With Trousers.*—Black shoes or black boots with black socks.

(b) *With Breeches.*—Black boots and light blue puttees or brown boots and brown gaiters or brown field boots. Black field boots may continue to be worn as laid down in A.M. Weekly Order 331 of 1918.

**GREATCOAT AND WATERPROOFS.**—As at present until further Orders.

Approved patterns of all items referred to above can be seen on application to A.Q.S. 5 Branch, Air Ministry, Room 701.



973, 974

FOR OFFICIAL USE ONLY.Not to be communicated to anyone outside H.M. Service.**AIR MINISTRY WEEKLY ORDERS.**

AIR MINISTRY,

27th August, 1919.

The following Orders are hereby promulgated for information and guidance and necessary action.

By Command of the Air Council,

*W. A. Robinson*

**973.—New Titles for Commissioned Ranks.**

(C. 95592.)

1. His Majesty the King has been pleased to assume the title of Chief of the Royal Air Force.
2. His Majesty, on the advice of the Secretary of State for Air, has approved of new titles for the commissioned ranks of the Royal Air Force.
3. The titles of officers of the Royal Air Force and the corresponding titles and ranks of the Navy and Army will be as set out below.

Air Force.	Navy.	Army.
Marshal of the Air.	Admiral of the Fleet.	Field Marshal.
Air Chief-Marshal.	Admiral.	General.
Air Marshal.	Vice-Admiral.	Lieut.-General.
Air Vice-Marshal.	Rear-Admiral.	Major-General.
Air Commodore.	Commodore.	Brigadier-General.
Group Captain.	Captain.	Colonel.
Wing Commander.	Commander.	Lieut.-Colonel.
Squadron Leader.	Lieut.-Commander.	Major.
Flight Lieutenant.	Lieutenant.	Captain.
Flying Officer (or Observer Officer).	Sub-Lieutenant.	Lieutenant.
Pilot Officer.	Midshipman.	2nd Lieutenant.

4. The new titles, which are to be brought into use forthwith, will apply to all officers of the Royal Air Force, whether permanent or temporary, attached to, or seconded for service with, the Royal Air Force.
5. The grading of officers will be shown, as at present, by abbreviations denoting actual employment and sub-classification.

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6. The object which has been held in view in the selection of new titles is to preserve and emphasize the principle of the independence and integrity of the Royal Air Force as a separate service among fighting services of the Crown. Hitherto, the titles borne by the officers of the Royal Air Force have been exclusively military in character, and as such they are not suited to a Force which has not only to serve the special services of the Army, but also those of the Navy, and in addition has a strategic and tactical sphere of action independent of the other two fighting services.

7. The scheme is framed on the principles—

- (a) that the ranks should as far as possible correspond with actual functions;
- (b) that the ranks should as far as possible correspond with equivalent status in the three services; and
- (c) that there should be no repetitions of titles apart from the prefixes in the higher ranks.

8. A distinction is preserved between the regimental officers and officers of General rank. Officers of General rank in the Royal Air Force are "Air Officers," and the expression "Air Officer" corresponds with the expression "General Officer" in the Army or "Flag Officer" in the Navy.

9. Attention is drawn to the amendments to King's Regulations contained in Weekly Order 974 of 1919.

**REVIEW**  
OF  
**AIR SITUATION AND STRATEGY**  
FOR THE INFORMATION OF THE  
**IMPERIAL WAR CABINET**  
BY  
THE CHIEF OF THE AIR STAFF

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AIR MINISTRY  
*June 27<sup>th</sup>, 1918.*

## CONTENTS

### I

General conclusions and recommendations in regard to Air Force possibilities and requirements.

### II

Employment of Air Force attached to Armies.

### III

Employment of Air Force attached to Sea Forces.

### IV

Employment of Air Force as a Strategic Striking Army.

### V

Employment of Air Force for Home Defence.

### VI

Methods necessary to develop Air Power.

## APPENDICES

- A. Employment of Aircraft in land operations in war.
- B. Duties of Aircraft attached to the Navy.
- C. Outline Map, showing Submarine Base, Munitions and Political targets.
- D. Comparative Statistics.

## I GENERAL CONCLUSIONS AND RECOMMENDATIONS IN REGARD TO AIR FORCE POSSIBILITIES AND REQUIREMENTS

History has shown that although the fundamental principles of strategy do not change, the methods of their application vary constantly. That Commander is successful who is able to recognise quickly the needs for new methods and to create and apply them without delay. In formulating strategy the first consideration, therefore, is to weigh any new factors which may have emerged. There are three new factors: the national aspect, the air, and the submarine.

This war, unlike previous wars, is in the fullest sense a war of nations. The entire population, and the whole weight of the resources and industries of the opposing nations, are thrown into the balance. The success of the armies or fleets entirely depends upon the energy and morale of the nation supporting them. As the outposts of an army are to the main body, so is the trench line of to-day to the nation.

What may be termed "battering-ram tactics" both on the part of the enemy and on ourselves appear to have been the prominent feature of the strategy of the war. On both sides the resources of the opposing nations have been thrown into the crucible. Armies have been piled up against armies. The national production of material and munitionment of the one side has been countered by approximately equivalent effort on the other.

There has been an unparalleled expenditure of the resources of the two civilisations. At the present time this competition is still in progress. The avowed aim of our strategy to-day, as well as that of our opponents, may be summed up in the words "national attrition". There is no need to dwell here upon the ultimate results of such warfare, but there is urgent need to consider whether there is any alternative; whether victory may be achieved by any other means.

The second great new factor is the air.

The Air Force has shared in the enormous mutual expansion referred to, but without appreciable margin for what may prove to be its most important function and sphere of utility: really long-range action. It has been an auxiliary arm, co-operating with the army and navy, aiding the artillery, substituting older methods of reconnaissance, &c. It is true that this defensive rôle has been carried out offensively, that is to say that effort has invariably been made, and with a large measure of success, to carry the war into the enemy's country; nevertheless, on a general view, the strategy of the Air Force has been confined to what the French aptly term the "zones of the armies", to protective work on the seas, and to home defence; in a word, the operations of the Air Force hitherto have been essentially defensive.

This offensive-defensive air strategy has been valuable from a strategic viewpoint because it has entailed a maximum pressure upon the enemy and has placed down to battle zones most

of the enemy's aerial resources. The net result has been that he has not been able to spare air force for strategic attack on any considerable scale. This is a clear gain and its great value is obvious, but it must be borne in mind that by offensive action alone can decisive results in war be obtained.

The superior industrial resources, and consequent powers of munitionment of the Allies, have now brought within reach the possibility of definitely changing the character of air strategy from the defensive to the offensive by adding the direct long-range offensive to the present defensive rôle. It is the intention of the Air Staff to bring about this change with the least possible delay, and to carry out a vigorous offensive against those root industries upon which depend the entire naval and military endeavour of the Central Powers. This strategy will in fact be a form of "strategic interception". This consists in holding down the enemy's forces in the field, while simultaneously striking at his lines of communication, bases of supply well in rear, and in addition aiming to break down the moral of his nation.

"Strategic interception" has not been frequent in history owing to the great relative skill demanded of the leader, combined with great mobility and efficiency of the troops under his command. It is the ideal strategy for the new arm – the Air Force.

The present war certainly can only finally be won on land. Territory must be occupied, and towns held by troops. The necessity of maintaining adequate air forces to co-operate with our navy and armies is not lost sight of. That is an essential component of the strategy outlined. But it is urged that we have it within our power to ensure sufficient defensive air strength and to build up at the same time a strong long-range arm, a striking force to carry out such an offensive as may indeed pierce into the moral and physical centres of the enemy's being.

Trials are being carried out with an aeroplane which has an estimated range of 1,100 miles, ie 550 miles each way, and a carrying capacity of 4,000 lbs. Reduce these estimates for practical purposes to 800 miles and to 3,000 lbs respectively and we still have a weapon which can achieve great results. But, apart from this machine (the trials of which are not yet completed) we have in action at the present moment a machine, which if produced in sufficient numbers, and handled scientifically, can completely dislocate, operating from its present base, some 40 per cent of the total iron and 50 per cent of the total chemical industries of Germany.

A review of the possibilities of strategic attack by long-range striking forces of aircraft results in the inevitable conclusion that such attacks, if carried out in sufficient strength, will achieve the following results in the shortest time:

- (a) Dislocate the Munition industries which lie at the root of all German military endeavour, and thus paralyse the German military machine.

(b) Deal a heavy blow at the submarine, and so afford a tremendous assistance to a more complete sea supremacy.

(c) Bring about far-reaching moral and political effects in Germany, the heart and brain of the Central Powers.

The conclusions arrived at are:

That the development of air power affords the best and most rapid return for the expenditure of national resources of man-power, material, and money.

That, as the offensive is the dominant factor in war, so is the strategic air offensive the dominant factor in air power.

That the air power of the Allies, if developed, organised, and co-ordinated, can be accepted even now as the most probable determining factor for peace.

### **Recommendations**

1. That priority shall be given to men and material for the Royal Air Force.
2. That Naval and Military Air requirements shall be cut down to a minimum consistent with the maintenance of air supremacy in the battle zones, in order that the long-range Striking Force of air power shall be developed as rapidly as possible.
3. That every effort shall be made to induce the Allies to fall into line with this policy.

## **II**

### **EMPLOYMENT OF AIR FORCE ATTACHED TO ARMIES**

The supreme necessity of aircraft to an army, whether in attack or defence, in modern warfare, is a point which does not at this time require to be reviewed.

The Royal Air Force is called upon to co-operate with armies in an ever-increasing number of rôles – Reconnaissance, photography, observation of artillery fire, location of hostile batteries, contact patrols with infantry, counter-attack patrols, bomb attacks on communications, and – a rôle which has recently much increased in importance – machine-gun and bomb attacks on enemy troops and transport by large concentrations of machines flying at low heights, anti-tank defence, inter-communication – these duties are indispensable to an army in the field, and are regularly carried out.

It is not possible within the scope of this paper to describe in any detail the large and ever-

increasing work of the Royal Air Force co-operating with the armies in the field. A fuller review of this aspect is given in Appendix "A".

Aircraft are at present co-operating with our armies in France, Italy, Salonica, Palestine, and Mesopotamia. In India there is a small nucleus of air force consisting of about 1½ squadrons available to co-operate on the frontier. It is interesting to glance at the growth of the Air Service in these various theatres. In 1914 we had in France a total of four squadrons, to-day there are 74, with their innumerable necessary auxiliary units. Elsewhere in 1914 there was nothing except a single flight of aeroplanes which was collected locally in Egypt. Egypt has formed the nucleus of expansion of the Middle East. There are 11 training squadrons and flying schools in that country, and this number is now being increased to a total of 21. There are also large repair bases, a considerable aircraft depôt, two aircraft parks, and three wing repair sections. In Palestine there are five squadrons, in Salonica three squadrons, and in Mesopotamia three squadrons. With the exception of Palestine, which is dependent upon Egypt for supply, these theatres have their own aircraft parks and other echelons of supply and repair. Egypt has also detached flights during the past two years to co-operate with the King of the Hedjaz in Arabia, with the Egyptian Army in Darfur, and with troops operating against the Senussi in the Western Desert.

The squadron which carried out so much useful work in East Africa was withdrawn last summer. The greater part of the personnel for this squadron was supplied by South Africa.

Italy is a comparatively new theatre. A brigade of the Royal Flying Corps accompanied the British troops which were sent there last September. This brigade was shortly afterwards reduced to a wing of four squadrons. It has been of the greatest value to the Italian armies and to our own troops in Italy during the present fighting.

### **III EMPLOYMENT OF AIR FORCE ATTACHED TO SEA FORCES**

At the outbreak of war, the total strength of the Naval Wing, RFC, was a heterogeneous collection of 41 aeroplanes and 51 seaplanes, located at six different stations in Great Britain. Bases were shortly after established at Ostend, Antwerp, and Dunkirk, but with the exception of fitting out five makeshift seaplane carriers, which carried out one or two raids, no serious co-operation with the Navy was attempted in 1914.

Numerous additional stations were, however, established along the coast for patrol purposes, and a number of inland stations were provided for training and for the defence of London.

It was not until the Dardanelles Campaign, where the whole of the air work was carried out by Units of the Naval Wing, that any serious aircraft co-operation with the Fleet was attempted.

Turning to the present, as requires the Fleet, aircraft are now recognised as an essential auxiliary.

It may be laid down that already the importance of aircraft in a Naval action is that the Fleet provided with the more efficient and larger force may, although numerically weaker in surface vessels, at least escape defeat and possibly gain a victory.

There are now 14 aircraft carriers, and an ever growing number of battleships and cruisers are being fitted to carry one or more aeroplanes for reconnaissance of fighting work. The machines fly from the decks or tops of turrets. The total number of aeroplanes and seaplanes allotted to the Grand Fleet is 350. In addition, large flying boats are employed from Bases on the North and East Coasts for reconnaissance of the Heligoland Bight, or on patrol work over the northern barrage. At present 52 kite balloons are employed with the fleet on anti-submarine work and spotting for gun-fire, and this number is increasing.

The second great function of aircraft with sea forces is to assist in the anti-submarine campaign. The successful results obtained have led to the establishment of some 45 aeroplane and seaplane stations round the British Isles. The aggregate strength of those is 43 flights of seaplanes, and 30 of aeroplanes.

There are also 9 large and 7 small airship stations, with a total of 76 airships of all types. These, except for the provision of personnel, are not under the control of the Air Ministry. It is the intention of the Admiralty to try and increase considerably the number of airships employed.

In the Dunkirk-Dover group eight aeroplane squadrons are at present employed, their work consists principally in bombing the submarine bases on the Belgian coast and in assisting to maintain the Dover barrage.

The present strength in the Mediterranean amounts to a total of six squadrons of aeroplanes and seaplanes. These are employed mainly on anti-submarine work, but reconnaissance and attacks on the Austrian bases and Dardanelles are also carried out. An airship station is established at Kassandra, and one is projected for Malta. A certain number of kite balloon stations have been established and more are projected with a view to the development of convoy escort work.

As regards the future it would appear that, owing to minefields and submarines, fleet action is very much hampered. It is hoped that the development of aircraft co-operation will give the fleet greater power of manoeuvre and thus facilitate its offensive rôle. The development of long range bombing attacks upon the enemy fleet bases will also have far-reaching results.



## IV

### EMPLOYMENT OF AIR FORCE AS A STRATEGIC STRIKING ARM

The first strategic striking force came into being in October last in the shape of three squadrons. It was established in response to a popular demand for air raid reprisals. These squadrons have been used chiefly against the German ironworks in the Lorraine basin and against the German chemical industries in the vicinity of Mannheim. The force is still too small to achieve important material results, but the moral effects of these reprisal raids has been considerable. It is also to be noted that these attacks have caused a marked increase in anti-aircraft defences, entailing the immobilising of personnel and materiel. This small force has been taken as one nucleus upon which, in accordance with the new policy of the Air Staff, it is proposed to build up a proportion of a great strategic striking force. Arrangements are also being made to form, as soon as possible, a second portion of this striking force which will operate from a base in Norfolk and will have a still wider range. It is hoped that considerable results will be obtained by the first of these forces by the end of this year and that both will be in really effective operation by June 1919.

The objectives of those forces may be classified as follows:

- A. Attacks on sources of munition supply, with the object of crippling the enemy's land forces operating in every theatre of war, but firstly and more particularly on the Western Front.
- B. Attacks on the submarine equipment factories and submarine shipbuilding yards, with the object of striking the submarine menace at its root.
- C. Numerous attacks by small forces on all the larger cities of Germany with the object of obtaining the most widespread dislocation of municipal and industrial organisation.

Although it is convenient to bear in mind these three aims, the means of carrying them out will necessarily interact, and it will be difficult to assign any particular operation wholly to one or another.

As regards A, it is considered that the most important objective is to cripple the resources of the German armies in the field by attacks on root industries, which constitute the "bottle neck of production".

These industries in their order of importance are:

- (a) The Chemical industry.
- (b) The Iron and Steel Works.

(c) Machine Shops, &c.

A glance at the accompanying map (Appendix "C") [not reproduced] will show their positions. Two of the principal areas are within reach of the small strategic striking force now beginning to operate from Ochey. It is anticipated that all will be within reach of the new "V" type of Handley-Page machine which is about to appear. A few notes on these industries will be useful.

(a) *The Chemical Industry* which supplies all high explosives, propellants, poison gas, &c. The Mannheim and Frankfort Groups produce 50 per cent of Germany's total output, Leverkusen produces from 15 per cent to 20 per cent. These works, for many reasons, could not be duplicated out of range. They are particularly vulnerable and are not numerous. It is estimated that if the policy advocated by the Air Staff is followed, we shall be in the position completely to dislocate this industry by June 1919.

(b) *Iron and Steel Works.* A very large proportion of these are situated in the Briey-Longwy and Saar basins. They are within easy reach of the striking force operating from Ochey. The blast furnaces cannot be concealed and constitute beacons to guide night bombing formations.

(c) *Machine Shops.* These are situated particularly in the Westphalian district, which contains such towns as Essen (the main German Arsenal), Dusseldorf, Duisburg, Ruhrert, Oberhansen, Dortmund, Crefeld, Elberfeld, Bochum, Barmen, Hagun, Mullheim, Ruhr, and many other small towns – the whole concentrated in a small area.

In addition to the above main groups of targets, there are others, the destruction of which would cause dislocation of the German military machine. Among these may be quoted the Bosch magneto works at Stuttgart, where it is estimated 50 per cent of all magnetos used for aviation purposes are produced.

The bulk of aero-engines are made at Mannheim and Stuttgart.

With regard to B, Strategic attacks against the submarine menace. Practically the entire manufacture of accumulators for submarines is centred in two small groups of factories at Hagen and Berlin. An effective attack on those two factories would, it is estimated, entail a set-back to German submarine production for a period of at least four months.

A further series of targets consists of submarine bases and shipbuilding yards in the Heligoland Bight, namely: Wilhelmshaven, Bremerhaven, Cuxhaven, and Hamburg. All those would be within reach of the "V" type Handley-Page squadron operating from Norfolk.

As regards C. Widespread attacks to obtain dislocation. The aim of such attacks would be to sow alarm broadcast, set up nervous tension, check output, and generally tend to bring

military, financial, and industrial interests into opposition. For instance, the destruction of mercantile shipping and of the vast accumulation of merchandise at Hamburg would probably result in considerable pressure being applied to the military authorities. The wholesale bombing of densely populated industrial centres would go far to destroy the morale of the operatives. The bombing of Berlin would plunge the whole of Central Germany into darkness, and would result in a widespread and far-reaching demand for anti-aircraft defences – anti-aircraft guns, machine guns, balloon barrages, searchlights, &c, a demand which could only be complied with at the expense of the armies at the front. Such an operation would also entail a national outburst of criticism against the military air service administration.

After careful study of all the above considerations, and the present programmes of production and personnel supply, the following lines of action for the strategic bombing of Germany have been decided upon.

A certain amount of strength is necessary before a radical dislocation of industries is possible, and though this amount cannot be made available before the spring of next year, it is urged that much may and must be done this year. The advantage of attacking this year may be summarised as follows: The approach of winter will bring about a decline in the moral of all belligerents. Strategic attacks upon Germany will have their maximum moral effect at such a period, and will react favourably upon the Allies. If the present German effort fails the reaction in Germany will be very great. We should aim to synchronise strategic air attacks with this reaction.

The greatest effort will therefore be made to speed up in every possible way the development of the striking force in order to be able to strike before the winter.

It is proposed broadly that at first the Ochey force shall operate against the chemical industrial groups of Mannheim and Frankfort, and against the steel industries in the Lorraine basin. When the long-distance bombers begin to operate from England, attacks will be made on Hamburg and Berlin, and possibly upon Hannover, Cassel, and Madgeburg. These attacks will continue until sufficient strength is forthcoming to undertake systematic attacks upon root industries.

*Striking Balance.* See the accompanying map (Appendix "C") [not reproduced] Our most suitable bases for attacks on Southern Germany are situated in the Ochey and Verdun areas. The drawback to those areas is their very close proximity to the line. It is therefore proposed to select forward landing grounds in these localities and to construct the main bases further back at a safer distance from the local hostile bombing forces. The base in Norfolk has been decided upon for the following reasons. It is nearer Northern Germany, and machines operating from this base will not have to cross the line, and will consequently not be open to hostile aircraft attack, to the same extent as operating from a base in France. The machines are so large that the wings cannot easily be carried by rail, and a base in Norfolk will therefore be easier to

supply. The unstable conditions in France render it inadvisable to increase the already difficult cross-country communication to the Nancy area. The Norfolk base is well placed to meet all eventualities. It affords facilities for co-operation with the Army in France if that should become necessary. In the event of our retirement from France, the Strategic Striking Force in Norfolk would be our sole offensive arm, and would be in the best position to carry out its work. It is also well placed to co-operate with the Navy should occasion arise.

*Strategic Air Routes.* It is intended that, in case of urgent need, Strategic Striking Forces shall be available to co-operate with the Army, and, when possible, also with the Navy. The Strategic Forces of the Allies should be mobile in order that they may concentrate for attack on any objective. With this end in view, it is proposed to arrange for a chain of aerodromes, well behind the lines, which will form strategic air routes.

## **V EMPLOYMENT OF AIR FORCE FOR HOME DEFENCE**

The defensive measures hitherto devised against hostile aircraft attack consist of the following:

- (i) Defence squadrons.
- (ii) Anti-aircraft guns, assisted by searchlights.
- (iii) Balloon barrages.
- (iv) Reduction of lighting.
- (v) Protective works and camouflage.

The first three forms of defence are valuable, but absorb very large numbers of men and quantities of material. The personnel alone, employed in London defence, is equivalent to approximately two divisions – this includes the personnel of the 11 squadrons detached for the defence of the Capital. When it is remembered that the large amount of material and personnel is immobilised owing to the possibility of an occasional raid, it will be seen that the balance of advantage is on the enemy's side.

Defensive measures on this scale for all the principal cities and industrial centres in the United Kingdom could only be created at the expense of the armies in the field and of the Strategic Striking Force. It is therefore obvious that we should not develop a defensive system on these lines. The alternative – and this affords an additional reason for building up the Strategic Striking Force – is to destroy the enemy's aircraft bases and to attack his aircraft factories and supply and repair depôts. The Allies are beginning to lead in aircraft production, both as regards quality and quantity. If the special measures, already indicated in this paper are taken,

the greatly superior industrial resources of the Allies, and particularly of America, will ensure so large a preponderance in the striking arm, as to leave Germany with very little margin for air raids. If the British and American programmes in view can be realised, and to ensure this unanimous support is required, the combined American and British striking force will be able in June 1919 to deliver hundreds of tons of high explosive at a blow. With such a force, it should be possible to keep down the German air offensive, by occasionally diverting forces for that purpose.

Though Germany has been proved in many ways to have an advantage by being on interior lines, yet from the point of view of air raids we hold a marked advantage in the wide dispersion of our Munition Industries. They have sprung up since the outbreak of war, and are distributed throughout the Kingdom. As a whole they are far less vulnerable than those of Germany, which, as already shown, are centred on three densely packed area, two of which are within easy striking distance of a force operating from the Oche district.

There is one other consideration in the anti-aircraft defence of Great Britain which is now engaging our attention. Under the present organisation aircraft attached to the navy are responsible for defensive measures over sea, while Home Defence Squadrons are responsible for defensive measures inland. There is in this a great tendency to work in watertight compartments. Full advantage has not been taken of the great mobility of aircraft, and in many cases there is still insufficient co-ordination. With centralised control, which must be complete to be effective, it will be possible by a certain measure of re-organisation, and by the substitution of the better types of machines which are now becoming available, to connect up our defence and thus obtain fuller value for the expenditure of the Air Force employed.

## **VI METHODS NECESSARY TO DEVELOP AIR POWER**

Economy both of our present establishment and of our future resources, in order that all surplus to actual naval and military requirements may be utilised to build up the Striking Force, is the first measure in view. To carry this into effect it is imperative that the allocation of all available aircraft resources shall in the first place rest with the Air Ministry, and that it shall supervise generally the use to which allocations are put. The necessity for this is the justification for the step taken by the Government in creating a separate air service and Ministry to allocate the resources and view the air problem as a whole.

It cannot be objected that this policy implies interference in naval and military spheres. We wish rather to be in the position of expert advisers to the Admiralty and War Office. The necessity for this lies in the fact that both the value and use of aircraft in war constitute a constantly varying factor. The Navy is in a position to estimate the battle value of any type or combination of warships, and the Army can build up its calculations on the known values of its various components, batteries, brigades, divisions, army corps, &c. In both services, experience

has provided a more or less exact basis for calculation. But this is not the case with regard to air force. Here calculations must be built upon an unstable basis, upon a complicated organisation which is essentially technical in nature and in a state of flux. Let us take, for instance, the aeroplane unit, which is a squadron. There is no common multiple to which the value of squadrons may be reduced. For technical reasons, squadrons may consist of varying numbers of machines. A squadron of "V" type Handley-Pages consists of six machines; a squadron of twin-engined Handley-Pages, of 10 machines; a squadron of, say, DH9s, of 24 machines. In bomb-carrying capacity a single "V" type Handley-Page aeroplane is the equivalent of about 10 DH9s, while the range of the Handley-Page is three times as great as that of a DH9. This is the general comparison to-day, but tomorrow a technical alteration, eg, the installation of another type of engine may at once alter the battle value of a type. I have chosen as an example a general comparison between two types of bombers. But consider the various types which have now been ordered, and it will be seen how difficult the problem is. There are day bombers and night bombers, fighter reconnaissance machines, artillery machines, scouts, &c. In each category there is a large number of types and each type is constantly changing in battle value. The same applies to other types of aircraft – seaplanes, flying boats, and dirigibles. Development is so rapid that it is difficult now for experts to keep up-to-date in appreciating the actual value in the field of each of the ever-changing types. It is submitted that it is not possible for the Navy or Army to do so. The procedure which we wish to establish is that the naval and military authorities shall tell us what work is required and that we shall allocate the amount of air force necessary to carry out the work. Only on these lines is it possible for the Air Ministry to ensure the maximum economy in the use of aircraft resources which it controls. Otherwise wastage must occur, and wastage entails delay in building up the decisive arm – the Striking Force.

Our experience has established within comparatively close limits, the numbers of aircraft that are necessary for the service of the Navy, and of the Armies in the Field. With this knowledge, combined with a knowledge of the tendencies of development and the rate of production, it should be possible to prepare a combined programme to cover requirements in all categories and from thence to consider the development of an Aerial Offensive Force whose size and power need only be limited by the extent of the Empire's resources.

As so rightly stated in the paper circulated by Sir Robert Borden – the Royal Air Force is an Imperial Service. The energetic co-operation of the Empire in this effort is an imperative necessity if success is to be achieved. Canada already supplies a very substantial proportion of our fighting pilots. This splendid effort must be maintained, and if possible, increased. Australia has four squadrons in the Field. South Africa has her representatives in almost every air formation which crosses the lines. India has not yet been developed, though a beginning, a very small beginning, has been made. We have already taken up this matter with the Indian Government with a view to rapidly expanding the existing organisation in order that we may draw upon India's vast resources of personnel and material. In this connection, it should be noted that the personnel of a squadron is drawn from different trades, among which are

carpenters, sailmakers, blacksmiths, coppersmiths and acetylene welders. Many thousands of excellent workmen are ready in India to fill these requirements. It would be strange also if a people which has produced some of the finest horsemen, polo players, cricketers and sportsmen in the world could not supply a large quota of pilots and observers. If properly organised and developed, India could undoubtedly relieve some of the squadrons which are employed in the Middle East.

We have in India a potential reserve which could with assistance develop air force to cope with the possible menace to its frontier, and with the danger in Persia which the CIGS referred to in his statement. On the other hand, while touching on this subject, I should like to indicate that any large German development in the East would be chiefly dependent upon her home munition supply, and should not be possible if the programme advocated in this paper is approved and carried into effect.

There are at present in the East, including existing Training Units and those in course of formation no less than 31 squadrons, which is nearly half the strength of our total air force in France. Egypt is training on an average 120 pilots a month, but nearly 30 per cent of this output is absorbed in the various theatres administered by the Headquarters, Middle East, in Cairo. Our attention is so concentrated on the struggle across the narrow seas, that few know or realise how extensive are our Air Commitments elsewhere. Our air frontiers in the Middle East are vast. Apart from the squadrons in India, the aeroplanes of the Middle East Brigade alone have flown over the mountains of Macedonia, the plains of Mesopotamia, the forest clad highlands and bush-covered swamps of East Africa, and the deserts of Arabia, Sinai and Makar. Our northern air frontier in the Middle East ranges from Macedonia to the Persian border, our southern air frontier from Darfur to Dar-es-Salaam. It is India's great task to take up some of this responsibility, and to develop the air defences of her own frontiers, in order that the policy may be pursued which has already been adopted by the War Office – the concentration of all available strength in the decisive theatre. We intend to start an aeroplane factory in India as soon as possible in order that she may become self-supporting as regards aeroplane supply. Engines are the great difficulty, and in this we hope America will help us out. An aeroplane factory has already been started in Egypt, and is about to begin work in a small way. Energetic steps have been taken to expand and speed up this source of supply, and also to draw upon Egyptian man-power to develop the important training centre in that country. The Egyptian climate, particularly during the winter, when weather conditions place us at a disadvantage at home, is a valuable asset of which full advantage is beginning to be taken. In concluding this review of the East and Middle East, I would mention that steps have been taken to start building seaplanes and flying boats in Malta.

From the above review, it will be seen that our aim is to render the East and Middle East, as far as possible, self-supporting, in order that we may utilise all the remaining available air resources of the Empire nearer home.

If properly organised and developed, there is no doubt whatever that the Air Forces of the Empire will remain the dominant factor in aerial warfare during 1919. We must also aim at a co-ordination of effort of all the Allies and help America in every possible way to develop her air power. Our resources, as well as those of our European Allies, are to a large extent limited by the size of the armies already in the field, and by the amount of man-power and warlike material necessary to maintain them. America on the other hand is still largely unfettered regarding her policy for the future, she has already enrolled large numbers of men, but the inevitable commitments of replacing wastage are not yet within measurable distance of hampering her expansion in other directions. Potentially, America may represent 50 per cent of the Allied Air Force in 1919. It must be our aim to help to bring this force into being so that the Allies will be in a position to deliver by June 1919 a really smashing aerial offensive against the German vitals.



## APPENDIX A

### EMPLOYMENT OF AIR FORCE ATTACHED TO ARMIES

The work of aircraft attached to armies may be summarised as follows:

- (a) Reconnaissance and Aerial Photography.
- (b) Observation of Artillery Fire.
- (c) Contact Patrol Work.
- (d) Aerial Fighting.
- (e) Bomb Attacks.
- (f) Low Flying Attacks on Ground Objectives.

To deal with these in the above order:

(a) Reconnaissance may be either local, ie, of trench systems and gun positions, or distant, ie of back areas, including dépôts and lines of communication to a distance of approximately 100 miles behind the enemy's lines. Aerial photography plays a very important part in both types of reconnaissance. Photographic maps have been made of the entire trench systems of the enemy. These are kept up to date by constant photography from the air, and by this means any alteration or development in the enemy's defences is traced. Similarly, hostile gun positions are kept under constant photographic survey. Suspected gun positions reported by aerial reconnaissance are photographed and carefully analysed under the microscope. Aerial photography also plays an important part in more distant reconnaissance. The principle upon which these are carried out consists in visiting the more important concentration centres which contain road and railway junctions. By comparing the reports received, it is possible for the General Staff to draw conclusions as to the trend of enemy movements. Aerial photographs of such centres are considered with the reconnaissance reports, and are extremely valuable in judging as to the reliability of the latter and in supplying additional information. A proportion of the photographic work, particularly in the nearer zones, is carried out by fast single-seater machines flying at a great height, but information has often to be fought for, and formation flights of six or more machines are also used. The machines employed are of the fighter reconnaissance type, and much offensive and defensive work is entailed.

(b) *Observation of Artillery Fire.* This is carried out by two-seater machines, and the normal method of directing fire is by wireless. The work has grown increasingly complex

and highly trained personnel is essential. Both the Pilot and Observer are trained to direct the fire of the batteries, but the work is usually carried out by the Pilot, while the Observer looks out for hostile aircraft.

(c) *Contact Patrol Work.* This work consists of keeping touch between the principal components of an army and between these components and the various Commanders concerned. It is generally carried out by two-seater machines which fly at heights varying from 2,000 to 500 feet. The work is difficult and requires careful training both of Pilots and Observers. The operations referred to in the above three categories are carried out by what are termed "Corps Squadrons".

(d) *Aerial Fighting.* Although all machines are armed and fight when occasion arises, the bulk of the offensive work in the "zones of the armies" is carried out by special squadrons formed for that purpose. These squadrons consist of fast single-seater machines which operate in flights of six or more. The functions of these squadrons are:

- (1) To drive off the enemy's fighting machines and thus enable to corps squadrons to carry out their work.
- (2) To prevent the enemy's "corps" machines operating, and to carry out a vigorous offensive against the enemy's machines of all descriptions wherever encountered.

The bulk of the work of these fighting squadrons is carried out over or a few miles beyond the enemy's lines. These squadrons are numerous and form a large proportion of the strength of the air force in the field; the proportion is two single-seater fighter squadrons to one corps squadron.

(e) *Bomb Attacks.* Systematic bombing both by day and by night has developed very extensively during the past year. By day the work is usually carried out by formations of both single-seater and two-seater machines, flying at from 10,000 to 20,000 feet. In the battle area it is necessary for the formations to be escorted by fast single-seater fighters. For more distant work, the formations are escorted over the "Line" and met and escorted on the return journey. A very considerable amount of bombing is also carried out by night, this work is performed by special short-distance night-flying squadrons, and an escort is necessary. The objectives by day are troops, convoys, dumps, and other targets of tactical importance. By night the principal objectives are enemy aerodromes, railway stations, trains, billets, &c. These are frequently attacked from a low height.

(f) *Low Flying Attacks on Ground Objectives.* These are carried out by single-seater machines such as "Camels". Light bombs are used in conjunction with machine gun fire, and the machines attack their objectives, which are generally troops or transport, from

heights as low as twenty feet. Low flying attacks of this nature are also made on enemy aerodromes, with a view to dislocating his arrangements for aircraft co-operation.

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Air Ministry,  
Hotel Cecil, Strand, W.C. 2.,  
18th July, 1919.

His Majesty the KING has been graciously pleased to approve of the award of the Victoria Cross to the late Captain (acting Major) Edward Mannock, D.S.O., M.C., 85th Squadron Royal Air Force, in recognition of bravery of the first order in Aerial Combat:-

On the 17th June 1918, he attacked a Halberstadt machine near Armentieres and destroyed it from a height of 8,000 feet.

On the 7th July, 1918, near Doulieu, he attacked and destroyed one Fokker (red-bodied) machine, which went vertically into the ground from a height of 1,500 feet. Shortly afterwards he ascended 1,100 feet and attacked another Fokker biplane, firing 60 rounds into it, which produced an immediate spin, resulting, it is believed, in a crash.

On the 14th July, 1918, near Merville, he attacked and crashed a Fokker from 7,000 feet, and brought a two-seater down damaged.

On the 19th July, 1918, near Merville, he fired 80 rounds into an Albatross two-seater which went to the ground in flames.

On the 20th July, 1918, East of La Basse, he attacked and crashed an enemy two-seater from a height of 10,000 feet.

About an hour afterwards he attacked at 8,000 feet a Fokker biplane near Steenwercke and drove it down out of control, emitting smoke,

On the 22nd July, 1918, near Armentieres, he destroyed an enemy triplane from a height of 10,000 feet.

Major Mannock was awarded the undermentioned distinctions for his previous combats in the air in France and Flanders:-

Military Cross. Gazetted 17th September, 1917.

Bar to Military Cross. Gazetted 18th October, 1917.

Distinguished Service Order. Gazetted 16th September, 1918.

Bar to Distinguished Service Order (1st). Gazetted 16th September 1918.

Bar to Distinguished Service Order (2nd). Gazetted 3rd August, 1918.

This highly distinguished officer, during the whole of his career in the Royal Air Force, was an outstanding example of fearless courage, remarkable skill, devotion to duty and self-sacrifice, which has never been surpassed.

The total number of machines definitely accounted for by Major Mannock up to the date of his death in France (26th July, 1918) is fifty.

- The total specified in the Gazette of 3rd August, 1918 was incorrectly given as 48, instead of 41.

## Major Mannock, No. 85 Sqn<sup>1</sup>

"The Squadron moved down to ST. OMER and the writer frequently met Major MANNOCK, who eventually took over command of the Squadron and thus had some opportunity of gauging his methods and work. Perhaps there was no greater loss both from a war and a peace time point of view, for MANNOCK was exceptional in that he was above all a leader and many as were the aircraft he himself shot down, he secured to others success which they would never have attained except through the agency of his leadership. There was often great difficulty in bringing enemy single-seaters to battle. Direct methods led to their retirement; their approach to the line was timed when patrols had gone home, or were in another part of the sector. To ensure contact called for foresight and thought. Often MANNOCK would work for half an hour or more, his patrol blindly following, to get east of an enemy formation and so force battle: never, except to rescue some overwhelmed formation, would he attack without the greater advantages in his favour. Rapid, yet thorough appreciation of the situation preceded every move. Of a nervous and imaginative temperament, he grasped the situation, summed up every factor, laid his plan of action and allowed nothing to interfere with it. Secure in the loyalty of his followers, who had implicit faith in his leadership and who knew that both success and safety lay in keeping close to him, he raised air fighting and team work to a higher level than ever before and deserves to be recognised as the greatest leader the Flying Service produced. Diffident of his own merits, never exaggerating his own achievements nor making claims of a doubtful nature, his record is in danger of being lost and his example obscured by that of the more striking individualist. Those who were privileged to meet and work with him will, however, never forget what is owing to him.

Eventually he was brought down in a manner which his own prudence had warned others against; by ground fire, due to following a 2-seater which he had already shot down in flames.

The full version of this essay is available at:

<http://www.airpowerstudies.co.uk/apps/documents/>

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<sup>1</sup> Extract from an essay entitled 'Service Experiences' by Squadron Leader G.B.A. Baker, M.C. as published in 'Air Publication 1308: A Selection of Lectures and Essays from the Work of Officers Attending the Fifth Course at the Royal Air Force Staff College 1926-27'. First published by the Air Ministry, April 1928.

## **Synopsis of British Air Effort during the War 1914 – 1918**

At the outbreak of war, the British Air Service consisted of a Naval Wing, administered by the Admiralty, known as the Royal Naval Air Service, a Military Wing, under the control of the War Office, known as the Royal Flying Corps, and a Central Flying School. The strength of the Naval Wing in August, 1914, was 91 aeroplanes and seaplanes, (of which only about half were fit for war service), 7 airships and 130 officers, and 700 other ranks. The Military Wing, comprising 4 aeroplane squadrons and an Aircraft Park, had a strength of 179 aeroplanes, 146 officers and 1,097 other ranks. In August, 1914, the mobilised strength of the British Air Service consisted of 276 officers and 1,797 other ranks. The total aircraft fit for active operations and regarded as first line strength, was approximately 110. The French were slightly better off with 120 aeroplanes ready for service in the field; the Germans entered the war possessing nearly double that number, namely 232 aeroplanes.

When the war ended, the Royal Air Force was incomparably the strongest air force in the world. It included 30,000 officers, 261,175 men, 22,647 aircraft of all kinds and 103 airships (a first line strength of 3,300 aircraft). There were 274 aerodromes overseas and 401 in Britain; there were 188 service squadrons (99 on the western front, 14 in the Middle East, 4 in Italy, 16 in the Mediterranean and 55 at home) and about 200 training squadrons.

(By comparison the German strength in aircraft at the armistice was approximately 20,000 while, in August, 1918, the French strength in serviceable aircraft stood at 15,342. The first line strength of the two countries was 2,390 and 4,511 respectively, at the termination of hostilities.).

Ranged behind the service was a great aircraft industry employing 347,000 persons – more than 3 times the number similarly employed in Germany and as compared with 186,000 in France. The productive capacity of the British industry was some 100 completed aeroplanes a day in October, 1918. All told throughout the war, Great Britain manufactured 55,093 airframes and 41,034 engines. Of her Allies, France built 67,982 airframes and 85,317 engines; Italy is said to have manufactured 20,000 airframes and 38,000 engines, while America, in the course of her 21 months' participation in the war, produced for her own use 15,000 airframes and 41,000 engines. Germany up to January 1919 had built 47,637 airframes and 40,449 engines.

### **Co-operation with the Army**

The four Royal Flying Corps squadrons which crossed to France for service with the Expeditionary Force between the 12<sup>th</sup> and 15<sup>th</sup> August, 1914, had a strength of 105 officers, 775 other ranks, 63 aeroplanes, and 95 M/T vehicles. The first British air reconnaissance was made on the 19<sup>th</sup> August. During the first year of the war, the British air strength increased with the expansion of the Expeditionary Force and by the date of the Battle of Loos, September, 1915, there were in France twelve squadrons comprising 161 aeroplanes and four kite balloons.

Meanwhile, hostilities in other theatres of war had created fresh demands on aircraft resources. In the Dardanelles in 1915, aeroplanes, seaplanes and kite balloons of the Royal Naval Air Service worked with the Navy and Army before and during the operations on the Peninsula, while a small seaplane unit also gave vital assistance in the destruction of the German cruiser "Königsberg" in the Rufigi Delta. The operations against the Turks in Sinai called for air co-operation from the Royal Flying Corps in Egypt. From a small beginning, an extensive air organisation was built up, not only for active operations, but also for training purposes, and from the middle of 1916 onwards, Egypt became the centre of air organization in the Middle East. The campaign against the Turk in Mesopotamia also absorbed both Naval and Military strength before the end of 1915. During the early months of 1916 the campaigns in German East Africa and Macedonia made further calls on the Royal Flying Corps.

By the 1<sup>st</sup> of July, 1916, the opening day of the Battle of the Somme, the strength of the Royal Flying Corps in France had grown to 27 squadrons, representing 421 aeroplanes and 14 balloons. In the other theatres of war, one squadron (South African) and a naval unit were working in German East Africa, one squadron was at Salonika, two squadrons of the Royal Flying Corps, and one naval seaplane unit (with three seaplane carriers) were working from Egypt or off the coast of Palestine.

After three years of war the strength of the Royal Flying Corps on the 4<sup>th</sup> August, 1917, was as follows:-

Theatre of War	Squadrons			
	Service	Training	Aeroplanes	Pilots
Home	31	69	1937	1945
France	52	-	846	1064
Egypt & Palestine	4	5	267	109
Salonika	2	-	98	54
Mesopotamia	2	-	42	21
East Africa	1	-	15	21
India	1	-	45	30
Canada	-	15	257	53
	93	89	3507	3297

In the last year of War the Squadrons of the Royal Air Force not only co-operated in the series of defensive and offensive actions by the British forces but they also took a direct part in some of the battles in which the French and Americans were engaged.

There were daily reconnaissances, close and distant, to report upon the enemy's dispositions, almost a routine of flights in co-operation with the fire of the artillery, photography of the

German defensive areas, contact patrols flying low down over the infantry, keeping a watch over their movements in battle, sweeps in the air which led to many conflicts, bitterly waged, with German fighting formations, and, above all, a relentless bombing and machine-gun offensive which had a cumulative effect upon the German morale.

By the end of the War the original four squadrons of the Royal Flying Corps had multiplied twenty-five times to a total of 99 Squadrons and 6 Flights. In the course of the last 30 months the service accounted for more than 7,000 enemy aircraft, dropped some 7,000 tons of bombs, flew over 900,000 hours, fired over 10½ million rounds at ground targets, brought down nearly 300 kite balloons and took over half a million photographs in the Western theatre alone.

### **Co-operation with the Navy**

Air co-operation with the Navy was necessarily more complicated and presented a different problem from that which faced the Royal Flying Corps. An enormous amount of energy and experimental work was necessary before the natural difficulties, attendant upon operating aircraft over large stretches of the sea, could be overcome. It was in fact, not until 1917 that the patient and often disheartening work of research and experiment of the two previous years was brought towards fruition. Meanwhile on the opening of hostilities, the duties of naval aircraft were mainly confined to coastal and cross-Channel patrols from stations which had been established along the East coast. On the 1<sup>st</sup> September, 1914, the Admiralty assumed responsibility for the air defence of Great Britain and, as part of their policy, opened an air offensive against the German Zeppelin bases. As a result, during the first year of the war, 4 Zeppelins were destroyed and one seriously damaged by naval pilots. Throughout the remainder of the war, 5 further Zeppelins were shot down by pilots of the Royal Flying Corps and 9 others destroyed by naval aircraft.

It was, however, largely the menace of the unrestricted German submarine campaign which commenced in February, 1917, that exerted a dominating influence on naval air policy throughout the remainder of the war. The critical situation in regard to Allied shipping in April, 1917, did much to accelerate the growth of naval aircraft, from that time onwards. The development of the large flying boat met at first with considerable success against the submarine and, during the summer of 1917, five "U" boats were destroyed by bombing from this type of aircraft unaided by surface vessels. Two further submarines were sunk during the year through the agency of aircraft. One was sighted by a kite balloon and destroyed by depth charges; the other by bombs from a float seaplane. Small airships for convoy escort and kite balloons for towing from surface craft were also developed. For use of the Grand Fleet special aircraft carriers were constructed and fighting and reconnaissance aeroplanes were carried in cruisers and capital ships. By the end of the war, no less than 100 aeroplanes were allocated to fighting ships of the Grand Fleet. In the Mediterranean as well as over the North Sea naval aircraft waged an unceasing war against hostile submarines and maintained a bombing offensive against the Turkish communications in Asia Minor and the Red Sea.



## **Independent Air Force Bombing**

Up to the spring of 1917 the expansion of the air services had been more or less gradual and their work in the war was regarded as purely ancillary to the naval and military forces. From that time onwards, however, the growth of the air weapon was intensified not only in the British air services but also in France and Germany. Aircraft came to be regarded more and more as a strategic striking arm independent of land and sea forces. This outlook led in due course to the formation of a separate service – Royal Air Force – and the establishment of in the middle of 1918, of an independent bombing formation, known as an Independent Air Force, for attacks on industrial areas in Germany. During the 6 months of 1918 when this force was operating, no less than 543 tons of bombs were dropped by day and night over the Rhineland area. Apart from the damage inflicted, the attacks had a depressing influence on the morale of the workers and of the population generally. The effect on the output of war material was important, as was also the immobilising of fighter aircraft for defence and the allocation of a large number of ground troops to anti-aircraft batteries, search lights and balloon barrages.

## **Eastern Theatres of War**

While the bulk of the air strength was concentrated in the main theatre – the Western Front – British aircraft were also taking part in the operations in Egypt, Palestine, Mesopotamia, Persia, East Africa, Arabia, Macedonia, Italy, Mediterranean and India.

In Palestine in 1918, the Royal Air Force achieved a mastery in the air which was virtually complete. By September, when Allenby made his great offensive, air reconnaissance by the enemy had almost ceased. The chief Turkish telephone exchanges were destroyed by bombing and the dislocation in the communications which followed rendered the German and Turkish commands almost impotent in the battle. Perhaps more important was the bombing of Turkish retreating armies in the defiles, notably the Wadi-el-Fara, where as the result of air action the road became blocked with a mass of panic stricken men and animals and the Turkish 7th Army ceased to exist as a fighting force.

On the Macedonian front there was similar, though less devastating, bombing of the retreating Bulgars in the Kryesna and Kosturino passes.

In Italy, where in November, 1917, four Royal Flying Corps squadrons had been sent to co-operate with the British forces, after an Italian defeat at Caporetto, the Royal Air Force helped, in June, 1918, the Italians' air service to stem the Austrian advance, notably by an effective bombing of the Plave bridges. They helped again, mainly by bombing and machine gun attacks, in the final offensive which broke the Austrian resistance.

## **Production**

The various extensions in the use of aircraft, including its development as an independent weapon, led to a demand for a greatly increased rate of production. This was only brought about by an expansion of the industry and a re-organisation of industrial man-power generally.

On the outbreak of war, the bulk of the aircraft was supplied by eight private firms and the remainder were produced by the Royal Aircraft Factory. The Aero engine industry in Great Britain was practically non-existent. By August, 1916, 491 firms were engaged on the production of aircraft, engines and accessories, representing a total labour strength of 60,073. During that year (1916) 6,150 aeroplanes and seaplanes and 5,364 engines, were produced in this country. By November, 1917, the aircraft and engine industry had grown to 771 firms employing 174,000 men, women and boys. During that year the production was absorbing labour to the extent of 347,112 hands employed in 1,529 firms. The production for 1918 rose to 32,000 aeroplanes and seaplanes and 22,088 engines.

### **Assistance to America**

During 1918 Great Britain, in addition to providing for her own requirements in aircraft, had also to give considerable assistance to the American forces in Europe, both for training air personnel and in aircraft equipment. In all, some 700 American pilots passed through British schools and graduated at our aerodromes. Ten American squadrons were also partially trained in Canada. Ground personnel to a maximum of 15,000, coming from America untrained, were also attached to training units in England for three to eight months. Large numbers of aeroplanes were also supplied and, when the question of producing the Liberty engine was considered, every facility was given and all our experience placed at the disposal of the American Government. Some 95 officers were sent to the United States to assist in an advisory capacity.

### **The Air Effort of the Dominions**

The assistance given – especially in personnel – by the Dominions to the air forces of the Empire during the war was considerable. In 1915 the Dominion Governments, fore-seeing the inevitable development of air co-operation in land and sea warfare, made offers to organise their own flying formations and encouraged their young men to volunteer and take up flying. The Australian Flying Corps, which was established in 1915, provided four squadrons for service in the field. The first arrived in Egypt in April, 1916, and played an important part in the Palestine operations. The remaining three Australian squadrons served in France, where the first arrived in August, 1917. The strength of the Australian Flying Corps in November, 1918, amounted to over 250 pilots and over 3,000 other ranks.

Over 8,000 Canadians served as officers in the air services and, at the Armistice, there were nearly 2,500 in the Royal Air Force, while 1,200 Canadian cadets were undergoing training in England and Canada. Some 300 New Zealanders also served as officers in the air services.

South Africans also formed the greater part of the personnel of No.26 Squadron which provided the aircraft during the operations in German South-West and German East Africa. In all, some 3,000 South Africans were commissioned in the flying services.

## **Air Force Casualties**

The casualties suffered by the Air Force during the war amounted to 16,623. Of this total, 6,166 (4,579 officers) were killed, 7,245 (5,369 officers) were wounded and 3,212 (2,839 officers) were missing. By comparison, the total German air casualties were 15,906 (6,890 officers).

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## EXPERIENCES IN THE WAR, 1914-1918 AN ESSAY

by

*Squadron Leader K R Park, MC, DFC*

### PART I – WAR EXPERIENCE WITH THE FIELD ARTILLERY

Though during two years' active service with the artillery I carried out no close co-operation with the RFC, I had opportunity of observing its work on three fronts. As I hoped, and on several occasions endeavoured, unsuccessfully, to transfer to the RFC, I took a keen interest in its activities; as far as was possible from the ground. I shall therefore devote the early part of this essay to the point of view of the ground observer.

#### 1. Egypt, 1915.

During the Turkish attack on the Suez Canal in February 1915 several British aeroplanes were daily seen flying above the lines. Though we all took keen interest in the aeroplanes, it did not occur to any of us that they were in any way connected or concerned with the operations. Complete ignorance existed, except perhaps at GHQ, as to the duties and capabilities of the aeroplanes.

I have since learnt that those "mysterious" aeroplanes accurately located, and reported the enemy columns several days before the attack.

During the two months training for the Gallipoli campaign we remained in the same complete ignorance as to aircraft and their duties.

#### 2. Dardanelles.

Neither during nor after the landings on 25 April was it known by units that the RNAS had previously photographed all the landing places and fixed field defences on Gallipoli. For some weeks after the landing every aeroplane seen flying over land or sea was believed to be piloted by Commander Samson. The few aeroplanes occasionally seen were not believed to have anything to do with the land operations. It was not until well on in the campaign, when a Taube dropped darts and some small bombs, that the troops realised that the aeroplanes were taking an interest in the fighting. From this time on, everyone with a rifle opened fire on any aeroplane seen approaching from enemy side.

Aeroplane markings were not known to exist until late in the campaign.

- (a) **The Landings.** It is not known what information the aeroplanes supplied to GHQ before the landings, but the covering forces would have welcomed air photos or details of

enemy defences on various beaches. Such information was not given each covering force. Bad maps made air photos essential to Artillery as well as the Infantry.

The Naval supporting fire during the first three days would have been immeasurably more effective if directed by aircraft flying over the shore.

(b) **After the Landings.** The ships' guns failed effectively to interfere with enemy reinforcements, ammunition, and supply columns. With efficient aerial observation, Turk communications could have been seriously interfered with by ships' guns.

Owing to Turks holding the commanding high ground everywhere on shore, batteries needed aerial observation.

(c) **Naval Supporting Gunfire.** Some months after the original landing, RN Forward Observing Officers established OP's ashore to direct ships' guns against enemy batteries, columns and defences. These officers obtained poor results under shore conditions of fire observation. I believe that proper aerial observation would have secured far better results than numerous FOO's.

From my battery's OP's (on flanks) we quite frequently watched ships "plastering" open tracts of country in vain endeavour to silence Turk batteries. The "Olive Grove" and "Chocolate Hills" batteries, which were out of range of our land artillery, enfiladed the beaches at Anzac, causing heavy casualties for many months. Both these batteries were engaged, not a dozen but scores of times by ships of varying sizes and of varying armament. Nearly five months after the original landing, when I transferred from Anzac to Cape Helles, both the above batteries were still in action.

I could quote numerous instances of ineffective bombardments of shore targets by both large and small ships during the whole campaign. On no occasion did I see an aeroplane flying over or near a target which was being engaged by ship's guns.

(d) **"AA Defences"** were not attempted until four or five months after the original landing. At about that time experiments were tried out, using standard 18pounder Field Guns, but these were not a success. That even at the evacuation in January 1916 we had no organised "AA" Defences proves how little importance was attached to aircraft by our higher command.

(e) **Army Co-operation.** During the whole campaign there was no attempt at co-operation of aircraft with Infantry. The Suvla Bay operations were admirably suited for co-operation of this kind. Even seaplanes flying up and down the shore line could have kept the Corps Commander (on board ship) in touch with the situation ashore.

I do not suggest that the miserable failure of the Suvla Bay Corps would have been prevented; but given proper aerial co-operation the failure would have been lessened in degree.

The inadequate naval force supporting this particular operation did not use any aircraft for observation of its fire. The Artillery support, or lack of it, was the main cause of failure.

**Counter Battery work**, in its most elementary form, was commenced in August at the Helles end of the Peninsula. Both Corps HQ and the heavy artillery were sceptical as to the value of this form of shooting. I do not know what measure of success was attained by the close of the campaign; hostile guns were engaged, but I did not hear of any enemy batteries being put out of action. On my divisional front the hostile batteries increased both in number and activity during the last phase of the operations.

Until attempts at CB work were commenced it was not generally known that there were any aeroplanes working for the Army.

Vague reports of seaplanes attacking Turk ships in the Sea of Marmora were heard, but no one knew what duties the Flying Units were engaged on.

The most frequent complaint of the heavy artillery was that "No sooner had the battery commenced ranging than away home flew the aeroplane". It was usually said: "Oh, there they go home for afternoon tea again". Remarks of this kind were passed on, and coupled with everyone's ignorance of the work being done by the Flying Wing, helped to discredit their good work in the campaign.

Officers who talked of transferring were openly ridiculed for wanting to join "A Ragtime Show". So strong and lasting were these early prejudices that in my own division, as late as the autumn of 1916, an officer who suggested applying for transfer was laughed at, and asked: "Was he tired of the war". This attitude was not confined to battery messes, and to those of us who had friends in the RFC, and who knew what good work was being done, it was uncommonly annoying. Even after the issue, in 1916, of an Army Order stating that all applications for transfer were to be forwarded, an experienced subaltern of my Division could not get a transfer, unless wounded, and invalided to England, where he was "struck off" the strength.

HQ, Med Exp Force or Corps HQ may have issued Bulletins or summaries of the work carried out by Flying Wing, but lower formation, such as Brigades, did not get these. Up to the evacuation, regimental officers remained in complete ignorance as to the valuable work, long distance reconnaissance and bombing, done by the Flying Wing.

### **3. Egypt, 1916.**

After the evacuation of the Gallipoli Peninsula my Corps (VIII) was sent to Egypt for re-equipping and retraining. My own Division, 29th, was sent to Suez, where there was a Flight of the RFC.

The tactical training, which was carried on intensively for two months, did not include any work with aircraft. Further, no account was taken of the effect of aerial observation. Though it was generally known that we were training for the Western Front not the slightest account was taken of possible action of enemy aircraft. Another subaltern and I requested to be allowed to fly over the Brigade, when it was in position under cover, so as to find out how much could be seen from above. Our request was "turned down" and we were told observation from the air was all "Stuff and nonsense". This is typical of the attitude of our higher command towards everything connected with the RFC. This attitude was the basis of the ill-will entertained towards the RFC later on in France. Moreover this had a direct bearing on the work of co-operating with the RFC in 1916, and was partly the cause of the failure of early attempts.

### **4. France, 1916.**

On coming into the line in April we were greatly surprised at the activity of the RFC. For the first time we actually saw aircraft at work on a battle front; to see machines flying about all day was indeed a novelty, after seeing usually two in a week in the Dardanelles.

For the first time our field batteries saw aerial photographs of enemy defences; these aroused some interest, but were not taken seriously.

When siting, digging, and covering our new gun emplacements we were informed by troops experienced on the Western Front that concealment from aerial observation was necessary. Having no previous experience of this kind of precaution on other Fronts the whole matter was considered rather a waste of labour and material. However, during the building of our gun pits some of us became convinced of the power of aerial observation. An enemy aeroplane flew high overhead when a battery close on our flank was firing. The following morning, though no enemy aeroplane was within sight, a German howitzer battery accurately shelled the position, which had to be evacuated. From that time onwards elaborate precautions were taken to camouflage gun lines, wagon lines, and OP's.

Most of our camouflage was designed for concealment against ground observation as no one in our Brigade knew what could or could not be seen from the air. In June 1916 a pilot of No 8 Squadron flew me over my Brigade's gun positions at about 3,000 feet. All positions were plainly visible on account of great quantities of newly-turned earth, new tracks, and many shadows cast by high emplacements. The batteries would have been less conspicuous if merely sited in the open. I reported the matter, but no action was taken to conceal gun positions.

Previous to the Somme Battle it was not generally known that the RFC was carrying out duties other than Artillery Co-operation. Their bombing, distant reconnaissance, and fighting activities were not heard of by formations lower than Corps HQs. The few combats seen from the ground prior to 1<sup>st</sup> July were commonly believed to be incidental. The fighting at this time must have taken place either well above the clouds or some distance behind the enemy lines, as from the ground little was seen of it. During the three months immediately before the Somme Battle I did not see or hear of any aeroplane being shot down on the Ancre sector.

**1st Somme Battle.** A Corps Squadron near Doullens (Marieux), was doing the counter battery work of our front. Presumably the concentration of heavy artillery was too great for this Squadron to cope with on so narrow a front. Some of our heavies dropped shells into our own front and support trenches. Rightly or wrongly (probably the *latter*), the Infantry and Field Artillery FOOs blamed the RFC for this misdirected shelling.

Many heavy batteries were firing from the map, in the absence of observation, during the last days of the bombardment. On the evening of 30<sup>th</sup> June I was obliged to observe for a 9.2 How Battery, and at same time carry out wire-cutting with my own battery's guns (Beaumont Hamel).

The counter battery work was bad, resulting in the failure of the attack on the Ancre in 1916. The 1<sup>st</sup> July attack on the Ancre was a complete failure; the Infantry of my own division did not even capture the enemy's first line trenches. The wire entanglements held up the advance, and afforded good targets to enemy machine gun posts and field guns, all of which had been believed destroyed by heavy gun bombardment.

The RFC was reported to have stated that the wire entanglements had been so "opened up" as to offer unrestricted passage to Infantry. Certainly an assault was made on that assumption. Owing to the complete failure of this attack there was no advance, and no contact Patrol work on this sector of the Somme Battle.

The troops who took part in this attack were very bitter, having suffered heavily without gain and heaped abuse on the Heavy Artillery, who in turn blamed the RFC. For months after this failure the Infantry were hostile towards all Artillery, and not well disposed towards the RFC. The highly coloured Press accounts of the work of the new arm, RFC, in the Somme Battle did not increase the goodwill of the troops on the Beaumont Hamel sector. The newspapers did not mention our reverses in this large offensive, naturally any failures were un-recorded by the Press.

**Ypres Sector.** Whilst the Somme offensive was in full swing my division was withdrawn, and sent North into a quiet part of the line for a rest.

The extravagant claims made by the Press as to "Our complete supremacy of the Air", "German Flying Corps driven from the air", and similar sensational statements had an unfortunate



effect on this part of the Western Front. Though RFC officers probably never made any such extravagant claims the troops on the ground got the idea that the new Corps was claiming and getting undue praise for its share in the fighting.

Just when the Press was full of these statements, the German aircraft on the Ypres Front appeared, from the ground to be having very much their own way. Enemy Balloons and aeroplanes were unusually active, the latter over and often on our side of the lines. Balloons were so close up to the front line as seriously to hamper the fire of our batteries, and all movements by daylight. Frequently, one might safely say daily, our low flying (Corps presumably) aeroplanes were dived on, and driven behind our own lines. Had people on the ground known that all available squadrons had been withdrawn for concentration South, very little harm would have been done. These facts were not known, and all that people cared about was the fact that the German aeroplanes were annoying everyone and appeared to be superior to our own aircraft, whereas the newspapers continued to declare that "The German Flying Corps was completely demoralised on the Western Front", and many similar declarations. The effect on officers, and other ranks, though lasting, was not good.

**Somme Battle** (3rd phase). On coming into the SOMME area a second time it was a pleasant change to hear the infantry praising the work of the RFC. The infantryman was loud in praise of Contact Patrol machines, and ground strafing aeroplanes, which had done good execution during the second phase of the battle. The heavy gunners actually admitted that aerial observation was now very important for counter battery work.

The RFC seemed to be really coming to the fore in October. The country round Delville Wood was strewn with wrecked British aeroplanes, which helped to dispel the popular belief that the RFC had a "cushy job".

Previous to this Army and Corps Commanders may have realised the value and extent of the RFC's work, but the fighting troops had certainly not done so. During this offensive the troops actually saw and heard the low-flying aeroplanes taking part in the fighting. Like many others, until now, I had never even seen a crashed aeroplane.

At this time a number of combats took place, mostly over our side of the lines or just on the enemy's side, and the troops took great interest, few having ever before seen an aerial combat. Whilst these combats took place high up, the German low-flying two seaters seemed seldom molested, and daily flew over our side of the lines. On many occasions these machines flew low over the lines of batteries sheltering in the long valleys behind Flers. All our gun lines were laid bare. In the valley south of Flers were three rows of guns and medium howitzers, about 100 pieces in all. Within a week from the first German two-seater flying low over that area the valley was thickly strewn with wreckage of gun carriages, limbers, ammunition wagons, and horse teams. There were no alternative gun positions, and moving guns in such a quagmire was all but impossible. Not only did the German aeroplanes discover our main gun positions,

but what roads we were using for ammunition supply. There being only two roads along which wheeled vehicles could approach (owing to shell holes) we were partially cut off from our wagon lines owing to the intense shelling, kept up on the roads, eventually having to bring up shells on pack saddles.

I feel safe in assuming that those few low-lying German machines caused more losses to the British forces than all our high flying scouts did to the enemy. Our advance was not merely held up, but stopped, owing to lack of artillery support to our infantry.

In attempting to withdraw my own section of guns from this position, I was fortunately wounded and sent home. After a short spell as instructor at the RHA Dépôt, Woolwich, I managed to effect a transfer to the RFC.

### 5. General Deductions.

(a) **Egypt, Winter, 1914-15.** The Army authorities neither realised nor took advantage of the usefulness of aircraft. The fighting troops were, both during and after the operations, kept in complete ignorance as to the employment of aircraft.

(b) **Dardanelles, 1915.** Higher Command (Army) failed to take advantage of aerial reconnaissance before, during and after the landings. The available aircraft were not used to best advantage, *ie*, direct assistance of land operations, during this campaign. The Army was prejudiced against the flying units, and probably for this reason, lacked confidence in its aircraft.

The complete ignorance in which fighting troops were kept concerning the work of flying units during the whole campaign does not seem purely accidental.

The Army was dangerously short of aircraft units.

The Navy, though equipped with inefficient seaplanes, did not make the best use of its aircraft. Far too much reliance was placed on direct observation of fire from ships or FOO's ashore.

(c) **Egypt, 1916.** Higher and lower commands did not take advantage of the short training period in educating fighting troops concerning the employment of the new arm (RFC and RNAS). Concealment from the air was ignored. During three months training both gun and wagon lines were sited as if observation from the air was impossible.

(d) **France.** Much ignorance existed in the army regarding the employment of aircraft until the first battle of the Somme. This ignorance caused strong prejudice against the new arm, and retarded the education of older arms in the co-operation with aircraft.

The circulation of summaries containing figures relating to number of photos taken, number of hostile batteries located and engaged, tons of bombs dropped, does not convey much information to the Army formations. Low-flying aircraft alone impress the ground troops with the importance of and great help rendered by their air forces.

Until troops have been attacked from the air they do not practice proper concealment from aerial observation.

Successful fighting at high altitudes does not counter-balance the bad moral effect caused by a few low-flying enemy machines flying unmolested over our troops. To tell troops that (a) the ascendancy over enemy air forces has been attained; (b) the moral of enemy fighting squadrons has been lowered; (c) our scouts are driving the enemy as far back as their aerodromes, is to invite ridicule, as long as our corps machines are *seen* being driven across the lines frequently.

Air Force officers were (and still are) inclined to neglect the view point of those on the ground.

## **PART II – WAR EXPERIENCES WITH RFC, 1917-18**

**As Pilot.** On reporting to the Air Board prior to departing for BEF I was informed I would be posted to a Bristol Fighter squadron; that being the type I had specialised on.

I landed at Boulogne in June, along with a large batch of reinforcement pilots. A RFC officer met us, and gave posting orders to about half the party. Several officers were posted to squadrons having machines which they had not flown. This caused acute disappointment, as we had not been warned of such a contingency when in England.

Three of us who were to proceed to the Pool at IAD were handed slips stating we were pilots of day bombers, though we had all three been specialised as fighter pilots.

**Pilot's Pool.** On arriving at the Pool we were surprised to find a large number of new pilots awaiting posting; some had left England several weeks before our departure. None of these officers had been up in a machine since landing in France, and were discontented with being kept unemployed. Most of these officers had not seen any active service, and were easily demoralised by their forced inactivity on the ground. Rumours of heavy casualties were exaggerated in a stupid manner in this dispirited community.

The second day of my stay I got in touch with 48 Squadron; the only Bristol unit then in France; and before a week had passed was applied for and posted to that unit.

During my five days at IAD I learnt a lot about types of aeroplanes and engines I had not previously seen. The Dépôt offered excellent facilities for new pilots to learn much about rigging and aero engines.

**Summer, 1917.** On joining, one was struck by the

- (1) Smallness of aerodrome.
- (2) Cheery offensive spirit of officers.
- (3) Uncomplaining efforts of mechanics who worked daily 14 hours.
- (4) Enthusiasm of all ranks.
- (5) Good discipline (of the unconventional type).

New pilots on arrival were sent up in a machine, usually the oldest and worst in the unit, and made to show what could be done in the matter of “stunting” and landing. This test passed satisfactorily, a week or more was spent waiting to be taken on patrol. During this time no flying practice was possible owing to the shortage of machines. This resulted in a new pilot going on his first patrol after having had only one or two short flights in three, or in some cases, five weeks. This circumstance added to the following, to my mind, explains why some new pilots did not survive their first month across the lines:

- (1) Lack of training in formation flying.
- (2) Inexperience of flying at high altitudes.
- (3) Complete lack of experience in fighting tactics.

In the winter, 1916-17, very little formation flying was taught in some training squadrons, and owing to clouds no high flying was practiced.

A new pilot's enthusiasm and keenness alone governed the extent of his knowledge of fighting and gunnery. The whole energies of Flight Commanders and experienced pilots were absorbed, or appeared to be, by their offensive patrols at this period. The spirit was: “I had to buy my experience over the lines, so why shouldn't these new hands do the same”.

Though I had known two of my Flight Commanders in England before the squadron went overseas, I was never able to find out what their tactics were on patrol.

There were no thought-out tactics, as far as I know, in the different flights or in the squadron.

During my three months as pilot, before getting a flight, I was never able to find out before leaving the ground more than:

- (1) Position in formation of each pilot.
- (2) Area to be patrolled.
- (3) Height of commencing patrol.
- (4) Time of leaving ground and landing.

As to the intention of the leader: if EA were met above, below, east, on same level, in larger, even or smaller, numbers – all was left to be decided on the spur of the moment. The result was we seldom fought in any formation, but immediately became split up and fought a *"Dog Fight"*. This haphazard method of fighting worked excellently as long as most members of a patrol could handle their machines and guns aggressively. The inexperienced invariably went down followed by EA, who in turn were often shot down by the experienced pilots. Unintentionally the poorer and newer pilots acted as good bait for the enemy scouts.

These tactics would have been fatal to single seater fighters; indeed, they failed miserably in the spring of 1918, when we had less skilled and less offensive pilots.

In spite of our poor tactics the squadron, between June and September, made a great success of "Hun getting".

From April to August the squadron (48) had been employed almost exclusively on offensive patrols, and prided itself on its fighting record. In August, on the Nieuport Sector, photography and long reconnaissance were commenced in addition to offensive work. Our new duties caused much heart-burning amongst the more offensive element in the squadron. The spirited pilot, who had excelled on OP did not bring back such good photographs or full reports as the duller pilot, who had perhaps never crashed a "Hun". Pilots who failed to secure good photographs on account of pursuing "Huns" were severely censured.

Photography and long reconnaissance had, by late Autumn, become as important as "Hun getting", though the squadron carried out two or three offensive patrols daily, OP's were frequently ordered to take photographs or do long reconnaissance. These additional duties greatly hampered our fighting and lowered the morale of the squadron appreciably.

**German "AA" Batteries** during the Summer of 1917, on the Belgian coast, did good execution, achieving great moral, if not material, results.

On our arrival in early July we were greatly surprised at the extreme respect shown to enemy "AA" guns on this sector.

Though the "AA" fire had been much overrated, it was admittedly more accurate than on any other part of the Western Front. On one patrol of six BF, the leader's and one other pilot's machine was rendered unserviceable by hits by fragments. On several occasions machines were compelled to forced land through engine trouble caused by fragments of "AA" shells. Much extra work was caused by minor damage to wings, but no machine ever received a direct hit.

**German Scouts**, when we arrived on the Nieuport Sector, were numerous and over-confident. This was undoubtedly due to the defensive policy which our scouts had adopted for some time on this sector. The enemy AA batteries seemed to work in close co-operation with his aircraft in giving warning and indicating targets.

So over-confident were enemy scouts that pairs or even single scouts at first dived fearlessly onto our Bristol fighters. We believed ourselves mistaken for the Naval Day Bombers, DH4s, who had been operating on this front for some months.

Our first eight weeks were most successful as the enemy scouts were slow to learn the difference between a handy 2-seater and a clumsy day bomber. Whenever our patrols crossed the line they met with enemy formations, usually not much superior in numbers, and at first equally eager for a combat. Ideal conditions of which we took full advantage whilst they lasted.

From the eighth week onwards the enemy scouts were cautious, in larger formations, and on the defensive. We could not get to close grips unless we either sat over his aerodromes or flew purposely under his formations, enticing him to dive on our tails. There were, of course, occasional aggressively minded scout formations met with. These usually came up from the south-east, and could be relied on to attack hard and continue fighting until one or other side was routed.

The above period well illustrates the surprise effect obtained, firstly, by new methods; offensive v defensive tactics; secondly, by means of a new type of fighting machine, *ie*, Bristol Fighter.

Gotha raids on England were being carried out by daylight in July and August. As a counter to these raids it was decided to send up patrols of fighting squadrons located on the Belgian Coast. The intention being that all machines available, on warning of a raid being received from England, would "take-off", climb out to sea, and intercept the enemy raiders on their return journey.

All Officers and machines not actually on patrol were kept "Standing by" to take the air at immediate notice on days favourable for enemy raids. Not more than a dozen "warnings" were given in any one month, and the results were not up to expectations. On only two

occasions were Gothas attacked, and then by single Bristols, which did little damage to enemy formations. One Gotha was reported crashed, and another driven down in Belgium.

The weather at above time was fine, and all officers were carrying out two high Offensive Patrols a day. Though everyone was "full out" to shoot down a Gotha, the extra strain of "Standing by" was responsible for the early fatigue of a number of our best pilots and observers. Several of our most successful observers (and pilots too) who were sent on "HE" were passed as unfit for flying duties on arriving in England. It may or may not have been a coincidence that in early September most of our best and most successful fighters became so fatigued that they had to be sent home for a rest.

Whilst the fighting squadrons were being worked at high pressure, the day bombing DH4s on the Belgian Coast were having a very slack time. The pilots and observers of the day bombers averaged in summer two short distance raids every three days, and in the autumn even less flying. Their flying personnel naturally did not become fatigued and remained in Belgium.

**Escorts.** During 1917 the day bombers on Belgian Coast were provided with close escorts by Bristol Fighters on all raids. These close escorts were continued long after our fighting squadrons had attained a decided local superiority on this sector of the front.

If attacked by enemy scouts on the homeward journey the DH4s, having much superior speed, would quickly draw away from their escort. This suited us very well, as we were then left free to turn and engage the enemy formation. The only case I know of our charge (DH4s) losing machines was through their moving away from their escort, and being dived on by enemy scouts carrying out OP near the front line. As the DH4s carried double rear guns they could develop in good formation a sufficient concentration of fire to ward off most scout attacks, but they relied chiefly on their great speed for protection.

**Night Flying.** As the Gotha raids on England decreased night bombing of Dunkirk increased, and in late August my squadron was instructed to commence night flying. This with a view to sending up machines against enemy bombers, which came over every clear night at this time of the year. Only one pilot had previous experience of night flying, so training was commenced at dusk each evening. The daily routine of Offensive Patrols was not modified to allow "time off" to those pilots practicing night flying. It was represented to Wing HQ that pilots would very soon become fatigued if day and night flying were persisted in. Fortunately, before night flying had become a regular routine, higher authority decided against night operations.

The aerodrome "Bray Dunes" was a small one; bounded on the West by low sandhills having a thick belt of wire entanglements reaching the edge of aerodrome; bounded on the North and South sides by small, deep canals, and bounded on the East by an unbroken row of high trees. In daylight Bristols and Sopwith triplanes were not infrequently seen standing on their noses

in one or other of the three canals. A severe "crash" brought our night flying attempts to a sudden close.

These extra duties came at the end of an exceptionally strenuous two months' offensive, and had a bad effect on the spirit of the whole squadron.

**Autumn Activities.** From September to December the squadron's efforts were divided between Offensive Patrols, Escorts to DH4s and Corps Photo-machines, Photography, Reconnaissance and Gotha patrols. Unfortunately, all except about six of our experienced pilots had gone on HE by October. An epidemic of fatigue set in at the end of the summer and deprived us of our best officers.

**Winter, 1917-18.** With the exception of the flight-leaders and sub-leaders we were a new squadron when, in December, we moved down from the coast to the Arras Sector. Here we were kept out of the line in rest, when all we required was plenty of offensive patrols to break in our new teams (flights). For weeks we daily drilled in formation and mock combat, but no amount of this peace training could instil the proper offensive spirit as well as real fighting. I had trained my own flight during the early winter on the coast when EA were scarce and over-cautious. Much too scarce!

**St Quentin.** The period from late December to February was uneventful on this sector. The EA were on the defensive, seldom in strength and usually as far back as their aerodromes. Obviously the Germans were resting, and training for the coming offensive.

The period was most disheartening, as there was not nearly enough fighting to give the new pilots and observers training. The new people could not be sent alone or in pairs on patrol as the EA were quite aggressive when superior in numbers. Higher authority began to attach great importance to distant reconnaissance, and back-area photography. In view of this, and in the absence of enemy formations, aerial fighting began to be looked on as of secondary importance.

**Armament.** The cold was severe and was the cause of much gun trouble; the Lewis guns seldom functioning after flying at over 13,000 feet.

In three successive combats my observers' gun was out of action; the last occasion resulted in my being shot down over St Quentin – forced landing on our side of the lines. (My ammunition for Vickers had been expended).

Though we fought the Bristol as a scout, we often relied on the rear gun in breaking off a combat.

**Spring.** In February I returned to England for a rest. At the end of March I was recalled to BEF to take over command of my old squadron. During my short term of duty at home I



attended the instructors' course on Avros at Gosport, and was amazed at the progress in methods of training.

On returning to France I found my squadron had moved back to Bertangles (near Amiens), and the German advance was on the wane. The squadron was, like all others on the Somme, exerting every ounce of energy on stemming the tide of the enemy advance, which had only just been checked.

The daily routine consisted of:

- (1) Continuous reconnaissance of back areas.
- (2) Attack of ground targets with bomb and machine gun.
- (3) Attack of enemy low-flying machines, which had been attacking our troops.

The weather was bad for flying; clouds often being only 300 to 500 feet above ground. Mist, rain and strong winds, though adverse, did not stop the work of even distant reconnaissance.

**Reconnaissance** was continuous during this critical period, and was carried out by single machines in spite of activity of EA. Army HQ was kept informed of movements in back areas throughout.

**Ground Strafing.** Officers frequently flew six hours a day, making five trips to bomb and machine-gun enemy columns. This work was expensive in machines.

**Aerial Fighting.** There were not many organised offensive patrols during the retreat period, but combats between the low-flying machines of either side were frequent. The Bristol was slow and clumsy for this low fighting, and was not more than a match for a triplane (*Fokker*).

**Spring.** The casualties during the Retreat had been moderately heavy, and we commenced the spring air offensive with a big percentage of new pilots and observers. There was not remaining one pilot who had the benefit of the previous summer's or autumn's fighting on the coast.

The Germans launched a further offensive at the juncture of British and French lines, and all squadrons in 22nd Wing were again turned on to "ground strafing".

From April onwards conditions on the ground in front of Amiens became more and more stable, and the squadron's routine was:

- (1) Distant reconnaissance.

- (2) Back area photography.
- (3) Offensive Patrols.
- (4) Escort duties.

## Summer.

1. **Reconnaissance.** The Brigade Intelligence Officer was attached to the squadron, and was of much assistance in training observers in these duties.
2. **Photography.** From the time the line became stable, until the IV Army August offensive, the whole back area of this front had to be continually photographed. A photographic officer, and section, were attached to my squadron for this work.
3. **Offensive Patrols** were re-commenced in May, and carried out throughout the summer. Owing to the importance attached to duties 1 and 2, fighting became, unfortunately, of secondary importance.

In carrying out duties 1 and 2 combats were frequent. Reconnaissance and photos had often to be obtained in flight formation, but on these occasions the enemy scouts had the initiative, having no secondary objective.

Though our ascendancy over EA was as real as in 1917, our casualties in 1918 were much heavier. This often puzzled me, for in 1917 we had been employed to a greater extent on purely offensive patrols, and accounted for more than double the number of enemy aircraft.

For the following reasons our squadron losses in machines were much heavier in 1918 than in 1917:

- (1) Lack of pilots and observers experienced in fighting.
- (2) Necessity of single-machine missions.
- (3) Secondary importance of fighting due to large amount of Army reconnaissance and photography.
- (4) New officers not of as good material as previous year.
- (5) Superior performance of enemy scouts.

**Enemy Fighting Tactics.** The Fokker Triplane employed new methods of attack in the early Summer.

Formations of these machines allowed themselves to be dived on by Bristols, then, as our machines “zoomed up” the Fokkers literally “stood on their tails”, shooting from almost directly below in a blind spot. We lost two good leaders and several experienced pilots by these new German tactics. In close-in fighting (dog fights) the Triplane out-maneuvred our Bristols, but were not a match in formation fighting, where the rear guns were of great advantage.

On one occasion when leading a squadron patrol I saw 30 Fokker triplanes and biplanes completely routed over their own aerodrome by my Bristols.

From June onwards the enemy patrolled in large formations, and on numerous evenings in July and August I saw combats take place between 40 EA and from 30 to 40 British scouts. Combats between these large numbers usually commenced at high altitude. During battle periods the enemy brought all his fighters down low for ground strafing, leaving the higher atmosphere almost clear of his machines.

Enemy fighting tactics were superior to those used by him during 1917. This was evidenced by the way his higher patrols co-operated and supported the lower formations.

Pairs or small groups of enemy scouts were not met as in the previous summer.

**Our Tactics** had been improved, and single or pairs of machines could not usefully patrol far over the enemy territory. Our machines flew in larger and more compact formations so as to develop greater volume of fire.

I found it difficult to handle a whole squadron of Bristols in formation – clumsy and inflexible. When the three flights were occasionally available for OP the two lead groups of six machines worked under the general direction of the lower and leading group. This method gave greater flexibility, but poor control; especially when one wished to make a simultaneous attack on a large enemy formation flying level and on a flank. As the Bristol has only one front gun it is necessary, in attacking end on, to bring as many guns as possible to bear on the objective, before the enemy can develop a superiority of fire.

During July and August I usually carried out a late reconnaissance or close patrol alone each evening so had excellent opportunities of studying both our own, and the enemy's tactics. The co-operation of our numerous fighting formations always struck me as being inferior to that of the enemy. Whereas his formations kept within easy support distance of one another, ours dispersed considerably, and were frequently attacked by greatly superior numbers.

I frequently saw a patrol of SEs or Camels engaged in a close fight with superior numbers of EA, when other British formations, perhaps higher and a mile or two distant, were quietly patrolling their allotted areas.

Some evenings the enemy would concentrate his formations below 13,000, and give our inferior numbers at that height more than they could cope with. Our patrols would keep at their usual high altitude, not knowing what was going on lower down, owing to the evening haze prevalent over the Somme.

There appeared to be very little co-operation between the different fighting units on this particular sector, also further north.

On leaving the ground the leaders of our formations usually knew merely that such-and-such squadrons would be out on patrol between such-and-such hours.

On several evenings in July and August two, or even three, British Scout squadrons were seen patrolling a line parallel to an equal number of enemy scouts. Our separate formations hesitated to initiate the attack, each leader presumably being uncertain whether other friendly formations would follow. Perhaps each leader thought another formation was in a better position to attack and so waited for some other squadron to attack. Meanwhile the enemy drew away east.

It may have been that each squadron was naturally confident it could look after itself on patrol, also that it did not wish to share its honours with its neighbours.

Nevertheless, I am confident that even more EA would have been accounted for if there had been co-operation between fighting units both on the ground and in the air.

Had the German pursuit flights not co-operated very closely they would have been driven beyond their aerodromes in the summer of 1918 – destroyed in detail.

By the above I do not mean that we should have adopted the “Circus” system, but co-ordinated the efforts of fighting units working on a particular sector.

### **Reinforcements – Officers**

**Pilots** sent out from England were better trained in all respects than during 1917, but were not of as good a type as previously. As my squadron's work did not consist solely of fighting, I presume it was not considered that the best pilots were needed. The work was more exacting than purely fighting. New pilots required two or three weeks' training in formation and high flying, in recognition of types of machines, and aerial firing before being sent on patrol. Map reading had also to be taught very thoroughly before reconnaissance or photography work could be entrusted to a new pilot.

In 1917 it seldom happened that a pilot was sent home for further training or as unsuited for the work, but such incidents were far too frequent in 1918. I had occasion to get rid of several officers who were temperamentally unsuitable for flying.

Officers who had transferred from army units at the front were full of enthusiasm for their work, and without exception became efficient flying Officers.

**Observers.** The best observers were undoubtedly those with experience at the front with the army. Few pilots had confidence in the very young observers, coming to France for the first time, until they had several months' experience over the lines. Fortunately, in the Spring and early Summer, half our new observers were of the war experienced type.

Observers required training on joining, and for some weeks after commencing war flying, in the following:

- (1) Aerial firing on ground target.
- (2) Map reading and reconnaissance.
- (3) Gunnery on range, and in armoury.
- (4) Recognition of EA and allied machines.
- (5) Photography.

For training in (4) I had a complete set of models (to scale) of enemy, and of the most common French types of machines.

The Photographic and Intelligence Officers were of great assistance in training new officers.

**Transfer to HE.** In some commands there was a recognised number of flying hours after which officers were considered due for a rest, and were sent home to England. This resulted in officers believing themselves *entitled* to transfer home on completion of so many flying hours, quite irrespective of the work done. When the average officer was within 50 or less hours of his qualifying period his thoughts were divided between HE and his work.

I was strongly opposed to the above practice, as it was a most unfair one, and introduced several obvious evils. Unfortunately, this practice prevailed until late in the summer, when officers were recommended for transfer to Home Establishment if their work showed they had *earned* a rest. Many "full out" pilots did more real work in their first two months than "luke warm" ones did in six months' of duty.

### **Armament.**

**Vickers** guns gave little trouble. The most common causes of trouble were:

- (1) Conversion set for speeding up rate of fire.

- (2) Faulty feed to gun – belt causing cross-feed.
- (3) Maladjustment of sights.

**Lewis** guns gave more trouble than Vickers. The most common troubles were stoppages through:

- (1) Broken extractors.
- (2) Faulty magazines (worn).
- (3) Faults in feed mechanism.
- (4) Low temperature at high altitudes.

**CC Gear** gave a certain amount of trouble mainly through:

- (1) Faulty needle valve in Reservoir Base.
- (2) Air locks in pipe line.
- (3) Faulty springs in trigger motor (A type).

**Enemy Night Bombing** became more frequent as the summer advanced, and every clear night his machines passed overhead on their way to the coast. When in August Bertangles received attention there were very fortunately only four squadrons in occupation – earlier there had been eight. In July I had commenced sandbagging hangars and quarters and completed this work early in August.

During the first week in the latter month bombs fell near my hangars on two occasions, no casualties being caused.

On the evening of the 25<sup>th</sup> August the enemy carried out a pre-arranged bomb raid on our aerodrome putting my squadron out of action.

At about 2100 hrs the first EA crossed the aerodrome at between 6,000 and 7,000 ft, dropping three bombs. The first fell and detonated in a hangar containing six Bristols fully loaded with petrol, ammunition, and 25lb bombs – the second and third exploded in the centre of aerodrome.

Immediately the hangar burst into flames and well illuminated the squadron's camp, hangars, &c.

The first machine circled and unloaded the balance of its load of bombs, hitting another hangar full of machines and the transport lines. Between the two hangars hit was one which I had for some time been using for the station or Wing cinema and concert hall. This hangar was protected by a sandbag wall four feet high, and as all the occupants remained seated no one was hit by flying splinters from the first or second salvo of bombs. As the 200 (or may have been 250) Officers and men streamed out into the aerodrome the second bomber was heard approaching. This, coupled with the intense heat of the burning hangars on either side, caused a complete panic.

Stupidly the crowd stampeded towards the approaching machine and a number of men were hit by two bombs which fell short.

Before the panic-stricken crowd (mostly visitors) got clear of the camp a bomb fell in its midst killing several officers and wounding others, also setting the quarters alight.

Assisted by my EO, and a number of Australian privates bivouacked on the edge of the aerodrome, I managed to draw seven machines clear of the burning hangars; all were now on fire.

Whilst attempting to get machines into the open the third and fourth bombers dropped more bombs on the hangars and camp, wounding several of the small rescue party. In all the bombers secured thirteen direct hits on hangars, quarters, transport, offices and workshops. Fortunately the bombs were small ones or our casualty roll would have been very big.

The squadron's losses (*below*) were light compared with those amongst visitors and passers by, many being wounded by splinters:

- 2 Officers killed;
- 7 Officers wounded;
- 7 O ranks wounded (? 2 killed).

The casualties amongst visitors were 6 killed and 14 wounded.

All transport was destroyed.

Seven or eight Bristols were rescued, but these were mostly damaged and unserviceable.

The effect on everyone's nerves was very marked for some months later, and I had none of my previous difficulty in getting people to build earth walls round quarters and hangars.

I believe my loss in officers was more than stated above, as on being withdrawn to rest I had 14 new pilots and observers posted to me.

After the above the efficiency of the other ranks fell, as also did that of many of my officers, and the month of September was full of up-hill work. Unluckily, Boisdingham, where we moved for rest, was on the route used nightly by enemy bombers proceeding to and from the coast. The squadron's nerves grew steady at a slow pace, even here.

**Period in Rest.** Three weeks were devoted to air and ground training before work across the lines were commenced on the Lille Sector (Armentières).

**O.P.s.** No 20 Squadron, BF, whom we relieved, had instilled such respect into the enemy scouts that when three flights went on patrol no hostile machines were met. Flight patrols were decided on, so as to entice the enemy scouts to close.

This he did immediately, though in superior numbers and from above. Two of our flights, with new leaders and several new pilots, were engaged separately on successive days, and roughly handled in the ensuing *mêlée*. On the occasions when I went out with the whole squadron we could not get close quarters with enemy formations, which were not large (9 to 12 scouts).

When I sent out single flights again, they returned minus at least one machine, and without having the better of the combat. I tried sending 3 or 4 groups of three under the most experienced leaders, flying alone above or below so as to see their tactics. On several occasions when below I sighted EA below us, and signalled to the groups to follow to attack from above; sometimes one group, sometimes two groups came down, but I had usually to fire so many signals that the EA got suspicious and fled east before we could close on them. The conditions were different, though more favourable than in the south.

During the whole of October the majority of the combats were indecisive, and we lost many machines through lack of co-operation by leaders, who were too slow in appreciating a situation.

**O.P.s, Autumn.** By the end of October my new patrol leaders were trained and able to co-operate well, but the EA were now learning caution and were not so easily closed on. In November, leaders, pilots and observers had acquired confidence in themselves, and the old offensive spirit was running high in the squadron. Unfortunately enemy formations became more scarce, and by the second week in November one could scour the country without meeting a single enemy patrol.

Groups of three, pairs, and even single machines patrolled well behind enemy lines without success so we devoted our attentions to "shooting up" ground targets. There was keen and genuine disappointment at the withdrawal of enemy scouts, and more so when news of the Armistice was received.



## General Deductions

**Pilots Pool.** It is essential for new officers to be kept interested and fully occupied and it is most desirable that facilities for flying be provided as even two weeks is a long time for a new pilot to be on the ground.

Interest and occupation, but no flying was provided in 1918. Reinforcement pilots should, when possible, be sent to the type of machine and work in which they have specialised.

**Pilots for Fighter Reconnaissance Squadrons must** receive as good training as those for scout squadrons, and ought to be of as good a type.

Fighting in 2-seaters is as difficult and complicated as fighting a single seater machine.

**Tactics.** The poor fighting tactics of 1917 were greatly improved in 1918. In the latter year there was a lack of co-operation between fighting Squadrons on same sectors. Even at close of war there were no really proved and generally accepted tactics for aerial fighting and the whole was matter of individual taste.

Our ascendancy over the German air service was gained mainly through the courage and dash of the individual patrol leaders, not through superior tactics. Against an enemy of equally high morale we shall be forced to study tactics on the ground instead of leaving decisions and methods to be devised on the spot. Co-operation between leaders of formations will be much easier in future owing to perfection in Radio Telephony.

**Fatigue of Flying Officers.** Battle periods showed that officers could carry out many more hours at low than at high altitudes. Two high patrols a day rendered Officers inefficient at the end of five Summer months, and necessitated their being withdrawn for a period of rest. In the Autumn, winter and early spring, when flying was at lower altitudes, pilots could stand up to longer periods, eight or nine months.

Continuous flying at over 16,000 feet, without oxygen, renders 50 per cent of Officers unfit for flying till after a long rest on ground duties.

Unless carefully checked the highly strung "enthusiast" wears himself out by extra voluntary patrols just when he has become most valuable to his squadron.

The practice of making squadrons find their Flight Commanders from amongst their pilots has great disadvantages. The average good pilot has not sufficient experience successfully to handle a Flight till he has been four or five months with his squadron. He gets promoted usually a month or at most two months before his efficiency begins to fall off. In 1918 certain squadrons did not get a fair chance owing to the constant change of Flight Leaders due to having to fill all vacancies from within the unit.

I am of opinion that only 50 per cent of the Flight Commanders should have been supplied by promoting pilots doing their first tour with a squadron.

**AA Fire** can play an important part in lowering the morale of flying personnel. When coupled with a Defensive Policy "AA" Fire does greatly assist in obtaining local ascendancy; as obtained by the Germans on Belgian coast in early summer of 1917.

**Escorts**, when necessary, must be carried out by aircraft having superior or at least equal speed to the formation being protected. Close escorts are not as effective as offensive patrols over selected areas where opposition is likely to be encountered.

**Ground Strafing** is carried out best by small, fast, and handy scouts having two or more fixed guns firing forward. If two-seaters are to be employed they should be armoured and carry additional guns.

**Night Bombing** has a lasting and cumulative moral effect on non-fighting, and fighting personnel. Continuous bombing by night needs to be followed up by day bombing to put an aerodrome completely out of action.

In future European wars squadrons will have to be dispersed to a greater extent on the ground. Further, when siting hangars and camps more careful consideration must be given to bombing attacks. The introduction of aircraft not requiring hangars for protection will greatly simplify protection from air attacks.

Transcribed by RAF CAPS from original staff paper from the Joint Services Command & Staff College (JSCSC) and held in the JSCSC Library.

The original, electronic version of this paper is available at:

<http://www.airpowerstudies.co.uk/apps/documents/>



# The Independent Force

AIR MINISTRY,  
Strand, W.C.2.  
13th May, 1918.

Sir,

I am commanded by the Air Council to inform you that they are of the opinion that the time has arrived to constitute an Independent Force, Royal Air Force, for the purpose of carrying out bombing raids on Germany on a large scale. This will be organised as a separate command of the British Royal Air Force under Major-General Sir H.M. Trenchard, who will work directly under the Air Ministry.

It is highly desirable that Maj. General Trenchard should be able to deal direct on this subject with the necessary French Military Authorities. It is therefore requested that the French Government may be informed of the arrangement and it is hoped that they will see their way to issue such orders as will enable the necessary facilities to be placed at the disposal of the Royal Air Force, so as to ensure the carrying out of this bombing in the largest possible way.

In view of the fact that those long distance bombing operations will, in the near future, partake more of an international character, it is proposed that the broad lines of action should be laid down by the Supreme War Council on the advice of the Military Representatives at Versailles.

I am to add that the Air Council feel sure they can count upon the French Government to help them in this very necessary and important work to the utmost.

I am, Sir,  
Your obedient Servant,

(Sd.) W.A. ROBINSON.

The Secretary,  
War Cabinet,  
2, Whitehall Gardens,  
S.W.1.

## INDEPENDENT BOMBING COMMAND

(Copy of Minute handed to Prime Minister),  
1.6.1918.

### SITUATION

1. Great Britain has decided that the dislocation of German industrial effort by long range bombing is of such importance in the ultimate issue of the war that, in addition to the fulfilment of the naval and military requirements a portion of her resource in man and material should be allocated for this purpose.
2. Our arrangements are in an advanced state; the nucleus force is in existence and is being rapidly strengthened. This force has been constituted as an Independent Air Force, as in as much as man and material have been allocated to it in the same manner as to the units attached to the naval and military forces.
3. The importance attached by us to the force, may be gauged from the fact that an officer of General Trenchard's standing has been appointed to its command.
4. The resources of America are so great that some portion of them can legitimately be devoted to this purpose.
5. Accordingly, it has been suggested that the greatest and most rapid effect will be obtained by constituting the Force on an Inter-Allied basis.
6. The Inter-Allied Aviation Committee held yesterday discussed the constitution of the Force and formulated the following questions, without reaching a final agreement:-
  - (a) Should an independent inter-allied force be created for long-distance bombing?
  - (b) Should this force, if created, be subject to the Commander-in-Chief in the field or to the Supreme War Council?
  - (c) (i) Should this force have a single Commander?  
(ii) If so who should be the Commander?
7. With regard to question (a) the opposition of the French to the constitution of an independent command may be due to their lack of confidence in the effectiveness of the policy. I do not propose to argue this point, as you are fully aware of my views. Their opposition may be due to their logical objection to the constitution of an independent Air Command in France. I, however, am convinced that the only means of obtaining success in these operations

is to entrust the responsibility to a force under a single commander, whose sole thought and purpose should be devoted to this end. It is, of course, understood (to quote the words of my Cabinet Memorandum) that "any representations of the generalissimo to the effect that the military situation at any given time requires the cooperation of heavy bombing forces, would receive every consideration, but independence of action must be secured, otherwise the risk will be run that purely army needs might interfere with the policy of long range bombing."

8. The answer to question (b) really depends on the interpretation placed on the words "subject to". France and America desire that the Commander should be under Foch. I, being convinced that the independence should be genuine and complete, maintain that he should be responsible solely to the Supreme War Council.

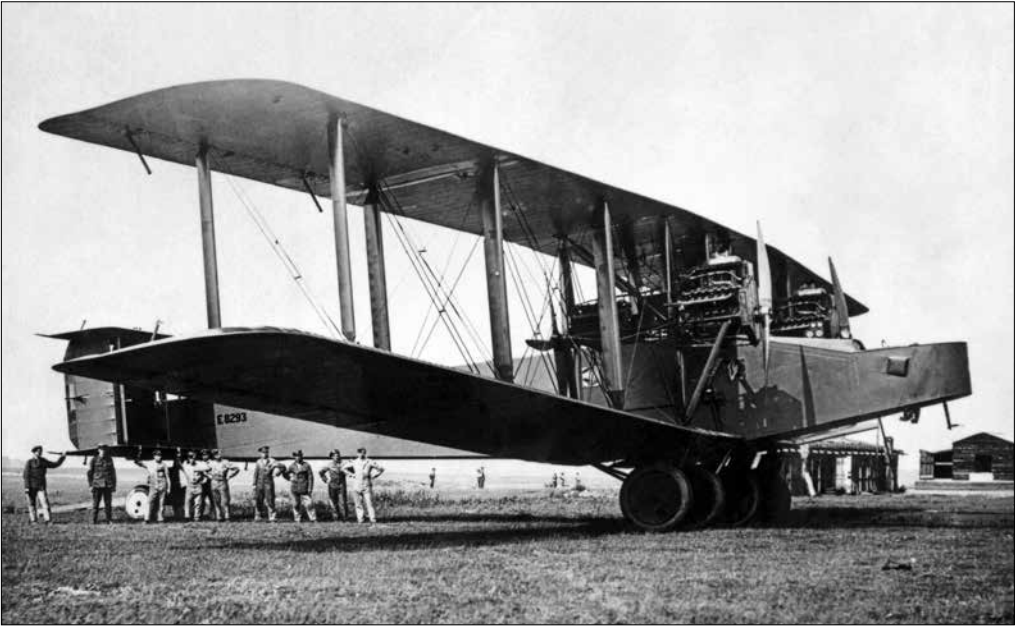
9. As to question (c) I have dealt with the question of the single command and in my opinion General Trenchard should receive the appointment.

10. As the French aviation authorities appear to be deeply concerned as to the strengthening of their serial forces with the armies, and their enthusiasm for the policy is somewhat lukewarm, I shall be content that the French contribution should be but small, or even none at all, leaving the force to be solely Anglo-American in its composition.

11. Logic may be on the side of the French rather than on ours; but success in such operations as these depends on practical consideration rather than on those of logic, and it is after a close study of these that my conviction has been reached.

F.H.Sykes

1.6.18.

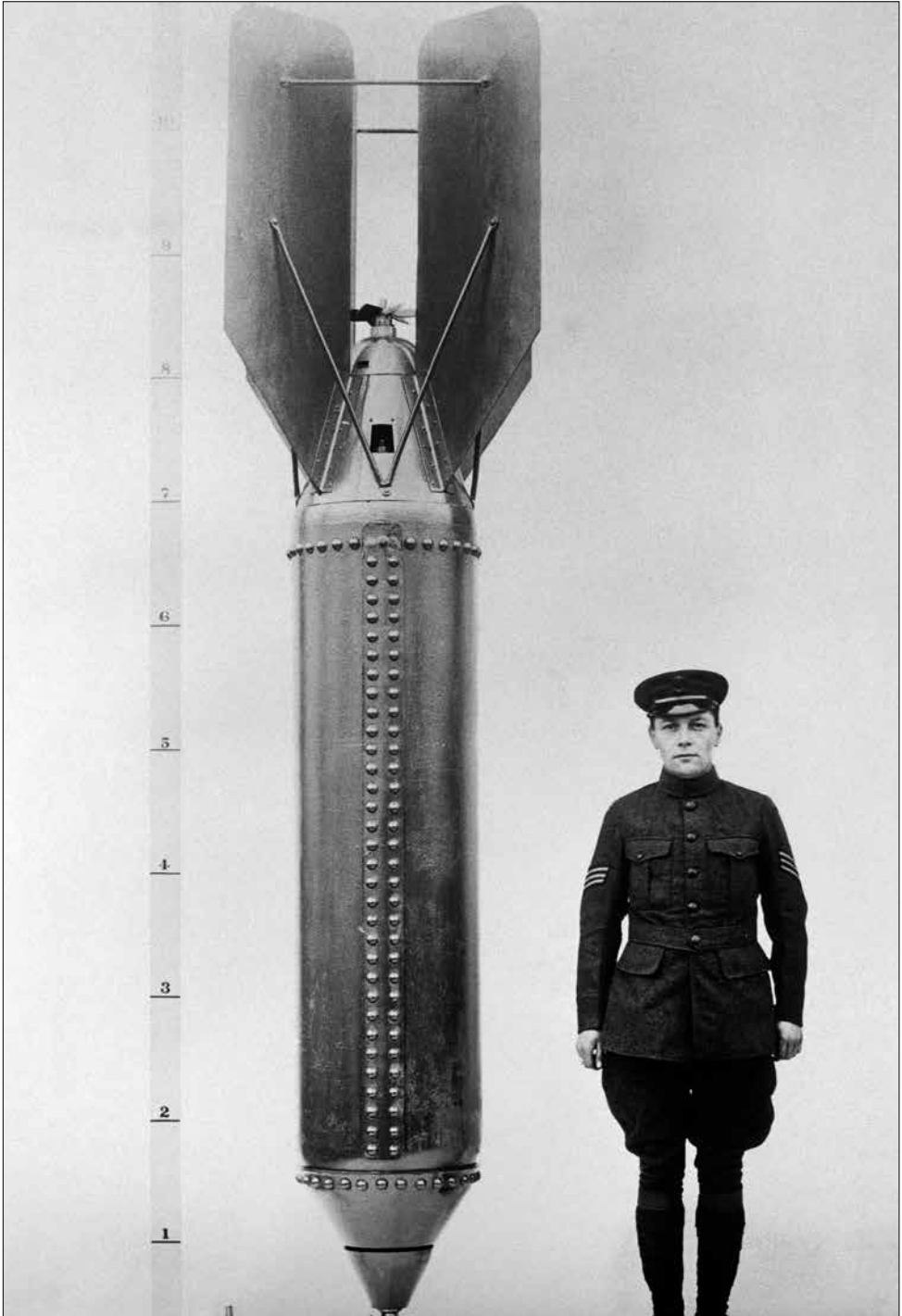


Handley Page V/1500 bomber, E8293, of 274 Squadron at Bircham Newton, Norfolk, in 1919



The crew of a Handley Page V/1500 bomber of 274 Squadron which completed a round-Britain flight in 12hr 28min in August 1919 at Bircham Newton, Norfolk





1650lb SN Big Bomb scaled by figure

Numb 31101

TENTH SUPPLEMENT  
TO  
**The London Gazette**

Of TUESDAY, the 31<sup>st</sup> of DECEMBER, 1918

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WEDNESDAY, 1 JANUARY, 1919.

*Air Ministry,  
1<sup>st</sup> January, 1919*

The Secretary of State for the Royal Air Force has received the following Despatch from Major-General Sir H M Trenchard, KCB, DSO, Commanding the Independent Force, Royal Air Force:

MY LORD,

I have the honour to submit the following report on the work of the Independent Air Force from the 5<sup>th</sup> June to the signing of the Armistice on the 11<sup>th</sup> November, 1918.

I have also mentioned in the earlier part of this report the work done in the attack on Germany by the squadrons from a base south-east of Nancy before the establishment of the Independent Air Force.

In May, 1918, you informed me that you considered it advisable to constitute an Independent Force to undertake the bombing of the industrial centres of Germany.

You further intimated to me that you intended to place the whole of the British effort in attacking Germany from the air under my command, and that it would be available to carry out this work from England, as well as from the eastern area of France.

On the 29<sup>th</sup> May, 1918, I proceeded to the Nancy area, where the 8th Brigade, RAF, under the local command of Brigadier-General C L N Newell, consisting of:

No 55 Squadron, De Hav 4, 275 hp Rolls Royce;  
No 99 Squadron, De Hav 9, 200 hp BHP;  
No 100 Squadron, FE 2b, 160 hp Beardmore;  
No 216 Squadron, Handley-Page, 375 hp Rolls Royce;

was already established under Field-Marshal Sir Douglas Haig.

With the exception of No 99 Squadron, this Force had been in this area since the 11<sup>th</sup> October, 1917.

I took over from Field-Marshal Sir Douglas Haig the tactical command of this Force on the 5<sup>th</sup> June, and the administrative and complete control on the 15<sup>th</sup> June, 1918.

From the 11<sup>th</sup> October, 1917, to the 5<sup>th</sup> June, 1918, this small Force had, in spite of a very severe winter, carried out no less than 142 raids. Fifty-seven of these raids were made in Germany, and included night and day attacks on Cologne, Stuttgart, Mannheim, Mainz, and Coblenz. Long-distance raids had also been carried out against Namur, Charleroi and Liege, in order to help in attacking the enemy's communications to the Western Front.

It should be remembered that No 216 Squadron (at that time RNAS) was hastily formed, and was not equipped until October, 1917. No 100 Squadron was only equipped with short-distance machines, and No 99 Squadron only joined in May, 1918.

No 55 Squadron was equipped solely with short-distance machines, which had an air endurance of 3½ hours only. But the squadron itself rectified this to the best of its ability by adding extra petrol tanks to the machines, which gave them an air endurance of 5¼ hours.

The work during last winter called for exceptional efforts of endurance and perseverance on the part of the commanders, pilots and observers.

Preparatory work on the construction of aerodromes, with a view to accommodating a larger force, had been undertaken before my arrival, and had been handled with zeal and tact by the General Officer Commanding the 8th Brigade. The work accomplished by General Newell formed a foundation upon which I was at once able to build in making arrangements to accommodate an increased number of squadrons.

In aviation it is essential that the technical and administrative controls should be under one command, as the work to be carried out nearly always entirely depends on the administration of the Force. As it had been decided to separate the tactical control of this Force from the

British Armies operating in France, it was therefore necessary to separate the administrative control as well: and, in my opinion, it became likewise necessary to constitute all the administrative services on an independent basis, in order to make the Air Force completely independent.

This involved the formation of a large staff to deal with the multifarious matters connected with the formation and the maintenance in the field of an aerial force.

In addition to this, the Anti-Aircraft Defence and Searchlights came under my command.

By the 20<sup>th</sup> June the staff for the above-mentioned services had been assembled and organised and were capable of maintaining the Independent Air Force.

I take this opportunity of mentioning that the Independent Force was operating throughout in the zone of the group of the French Armies of the East under the command of General de Castlenau, to whom I am indebted for the very valuable assistance which he and his staff gave me and for advice which helped me over the many difficulties inseparable from an organisation of such a kind. In fact, without his assistance it would have been almost impossible to have made an efficient organisation.

I should also like to mention that the whole of the administrative services were provided by Field-Marshal Sir Douglas Haig from the British Armies in the field. The British Armies in the north provided me with all the personnel and material that was necessary to maintain and organise and operate the Independent Force, apart from technical aeroplane supplies.

My first work was to at once push on and arrange for the accommodation of a Force in the neighbourhood of sixty squadrons. This was a much larger task than may appear at first sight.

The country is throughout hilly and woody, and where there are any level places they consist of deep ridge and furrow, there being as much as three feet six inches between furrow and ridge.

The aerodromes had to carry heavy machines and heavy bomb loads; in order to enable this to be done, draining work on a large scale had to be very carefully carried out, and arrangements had to be made for a large installation of electrical power for workshops and lighting and petrol in order to save transport.

This work was practically completed by the 1<sup>st</sup> November, 1918.

It will be within your recollection that in the past I had referred to the necessity for equipping the British Expeditionary Force on the Western Front with sufficient aircraft to hold and beat

the German aerial forces on the Western Front; that the bombing of Germany was a luxury till this had been accomplished, but that, once this had been accomplished, it became a necessity. That is to say, it became necessary to attack what I may call the German Army in Germany, and to strike at its most vital point – its sources of supply; and the Independent Force was formed with this object.

The question I had to decide was how to use this Force in order to achieve the object, ie, the breakdown of the German Army in Germany, its Government, and the crippling of its sources of supply.

The two main alternative schemes were:

1. A sustained and continuous attack on one large centre after another until each centre was destroyed, and the industrial population largely dispersed to other towns, or
2. To attack as many of the large industrial centres as it was possible to reach with its machines at my disposal.

I decided on the latter plan, for the following reasons:

- (i) It was not possible with the forces at my disposal to do sufficient material damage so as to completely destroy the industrial centres in question.
- (ii) It must be remembered that, even had the Force been still larger, it would not have been practical to carry this out unless the war had lasted for at least another four or five years, owing to the limitations imposed on long-range bombing by the weather.

The weather during June, July and August was extremely favourable for long-distance bombing, but during September, October and the first ten days of November it could have hardly been worse for this particular work. Day after day attempts were made to try to reach the long-distance targets, but the wind was generally too strong; or, if there was no wind, heavy rain and fog prevailed by day and dense mist by night, which lasted often until ten or eleven o'clock the next morning. Often the nights were perfect, but dense white mist completely obliterated the ground, making it impossible for machines to ascend.

Besides this, there are always a large number of technical difficulties to overcome which still further interfere with the continuity of long-range bombing.

By attacking as many centres as could be reached, the moral effect was first of all very much greater, as no town felt safe, and it necessitated continued and thorough defensive measures on the part of the enemy to protect the many different localities over which my force was operating.

At present the moral effect of bombing stands undoubtedly to the material effect in a proportion of 20 to 1, and therefore it was necessary to create the greatest moral effect possible.

I also recommended, as you will recollect, that the proportion of day bombing squadrons in the Force should be slightly larger than that of night bombing squadrons, as I considered that, although day bombing squadrons suffer higher casualties than night bombing squadrons, at the same time, if day bombing is excluded, at least four-fifths of the value of night bombing must necessarily be wasted, owing to the fact that the enemy can then make his arrangements to work by day and live at a distance by night, and take many other similar defensive steps.

Also, if the bombing had been carried out exclusively by night it would not have caused the enemy to make such a large use of his men and material in defensive measures, and therefore it would not have affected the Western Front to such an extent as it did.

Though night bombing is the safer, many mistakes are made at night in reaching the locality it has been decided to bomb.

My Intelligence Department provided me with the most thorough information on all targets such as gas factories, aeroplane factories, engine factories, poison-gas factories, etc, each target having a complete detailed and illustrated plan, and maps were prepared of every target that was within reach. These were supplemented in a large way by the aerial photographs taken by reconnaissance machines.

Before it was possible to attack Germany successfully it was necessary to attack the enemy's aerodromes heavily in order to prevent his attacking our aerodromes by night, and by destroying his machines to render his attacks by day less efficacious. I considered that it was probably during the spring and early summer of 1919 that at least half my force would be attacking the enemy's aerodromes, whilst the other half carried out attacks on long-distance targets in Germany.

It was also necessary several times during the period the Force operated to carry out attacks in conjunction with the Armies on the enemy's communications.

I also had to decide, when it was impossible for squadrons to reach their objectives well in the interior of Germany, what alternative objective should be attacked, and which attacks would have the greatest effect in hastening the end of hostilities. I decided that railways were first in order of importance, and next in importance the blast furnaces.

The reason of my decision was that the Germans were extremely short of rolling stock, and also some of the main railways feeding the Germany Army in the West passed close to our front, and it was hoped that these communications could be seriously interfered with, and the rolling

stock and trains carrying reinforcements or reliefs or munitions destroyed. They were also fairly easy to find at night.

I chose blast furnaces for the second alternative targets, as they were also easy to find at night, although it was difficult to do any really serious damage to them owing to the smallness of the vital part of the works.

On my arrival in the Nancy area the 8th Brigade consisted of those squadrons shown above. Additional squadrons arrived on the dates as shown:

No 104 Squadron, De Hav 9, BHP, 23<sup>rd</sup> May.  
No 97 Squadron, Handley Page, Rolls Royce, 9<sup>th</sup> August.  
No 215 Squadron, Handley Page, Rolls Royce, 19<sup>th</sup> August.  
No 115 Squadron, Handley Page, Rolls Royce, 31<sup>st</sup> August.  
No 110 Squadron, De Hav 10, Liberty, 31<sup>st</sup> August.  
No 45 Squadron, Sopwith Camel, 22<sup>nd</sup> Sept.

It must be remembered that new squadrons could not be used for work over the line until three weeks after their arrival, as during this period they were receiving their final training, which can only be carried out at the front.

No 45 Squadron was intended to attack the enemy's scouts many miles over the line. It was necessary to re-equip this squadron with longer-range scouts after I received it, but as these machines did not arrive before the Armistice was signed the squadron was only used for attacking individual hostile machines which crossed our lines.

During August No 100 Squadron, which was armed with FE2b short-distance machines, commenced re-equipping with Handley Pages. While it was being re-equipped – which process took nearly the whole month – scarcely any work could be carried out by the squadron.

Below are a few interesting figures:

The total weight of bombs dropped between the 6<sup>th</sup> June and the 10<sup>th</sup> November was 550 tons, of which 160 tons were dropped by day and 390 tons by night. Of this amount no less than 220¼ tons were dropped on aerodromes. This large percentage was due to the necessity of preventing the enemy's bombing machines attacking our aerodromes and in order to destroy large numbers of the enemy's scouts on their aerodromes, as it was impracticable to deal with them on equal terms in the air. I think this large amount of bombing was thoroughly justified when it is taken into consideration that the enemy's attacks on our aerodromes were practically negligible, and not a single machine was destroyed by bombing during the period 5<sup>th</sup> June to 11<sup>th</sup> November.

In addition to this the following objectives were attacked:

Baalon.  
Baden.  
The Black Forest.  
Bonn.  
Cologne.  
Coblenz.  
Darmsdatt.  
Duren.  
Dillingen.  
Frankfurt.  
Forbach.  
Hagendingen.  
Heidelberg.  
Hagenau.  
Kaiserlautern.  
Karthaus.  
Karlsruhe.  
Ludwigshafen.  
Landau.  
Mainz.  
Mannheim.  
Lahr.  
Lumes.  
Luxemburg.  
Oberndorf.  
Offenburg.  
Pforzheim.  
Pirmaisens.  
Rastatt.  
Rombas.  
Rottweil.  
Sallingen.  
Saarburg.  
Saarbrucken.  
Stuttgart.  
Treves.  
Weisbaden.  
Worms.  
Voelkingen.  
Wadgassen.



Zweibrucken.

And other miscellaneous targets.

It must also be remembered that of the 109 machines which were missing, the majority dropped bombs on targets before landing. The amount of bombs dropped by these machines is not included in the above figures.

In June the longest distance flown out and back by day was 272 miles, and by night 240 miles.

In July the longest distance flown out and back by day was 272 miles, and by night 300 miles.

In August the longest distance flown out and back by day was 330 miles, and by night 320 miles.

In September the longest distance flown out and back by day was 320 miles, and by night 320 miles.

In October the longest distance flown out and back by day was 320 miles, and by night 272 miles.

A large amount of photographic reconnaissance was done by individual machines at a great height. This work was nearly always successfully carried out, and only one photographic machine was lost during the whole period of operations.

Photographs have proved time and again the efficiency of the work of the bombing machines. Captured correspondence testified to the great moral effect of the bombing attacks on Germany.

It was apparent by the end of June that the enemy was increasing the number of fighting machines opposed to us. These machines were presumably being provided from Squadrons he had withdrawn from the Russian Front and re-equipped for Home Defence work. In September and October our day bombing squadrons had to fight practically from the front line to their objective, and from there home again. In several cases they had to fight the whole way out and the whole way back. This necessitated the most careful keeping of formation in order to avoid undue casualties, as once the formation was split up the enemy's machines could attack individual machines at their leisure. When our machines were in formation he generally concentrated on the rear machines, occasionally making attacks on the machine in front.

I would like to state here that the courage and determination shown by the pilots and observers were magnificent. There were cases in which a squadron lost the greater part of its machines on a raid, but this in no wise damped the other squadrons' keenness to avenge their comrades, and to attack the same target again and at once.

It is to this trait in the character of the British pilots that I attribute their success in bombing Germany, as even when a squadron lost the greater part of its machines, the pilots, instead of taking it as a defeat for the Force, at once turned it into a victory by attacking the same targets again with the utmost determination. They were imbued with the feeling that whatever their casualties were, if they could help to shorten the war by one day and thus save many casualties to the Army on the ground they were only doing their duty. I never saw, even when our losses were heaviest, any wavering in their determination to get well into Germany.

Long-distance bombing work requires the utmost determination, as a change of wind completely upsets all calculations that may have been made before starting. It requires fine judgement on the leader's part to know if he perseveres to the objective, whether he will have sufficient fuel to carry the formation home again safely. This will be realised when it is pointed out that on several occasions the machines with only five and a quarter hours' petrol were out for five hours and thirty minutes and it only just managed to clear the front line trenches on its homeward journey. A miscalculation of five minutes would have lost the whole formation.

Ceiling was of more importance than speed for long-distance day bombing work. It was essential that squadrons should fly as high as possible, and it soon became apparent, as I had already stated, that the two squadrons with the 200 hp BHP engines had not sufficient power for this long-distance work. One squadron was re-equipped with DH 9a machines with Liberty engines in November before the signing of the Armistice, and the second squadron had started re-equipping.

The 27th Group was established in England under the command of Colonel R H Mulock, DSO, for the purpose of bombing Berlin and other centres. This Group only received the machines capable of carrying out this work at the end of October, and though all ranks worked day and night in order to get the machines ready for the attack on Berlin they were only completed three days before the signing of the Armistice.

The Daily Communiqués gave all the places which were attacked, and therefore I have not repeated those reports in this despatch.

I would, however, like to bring to your notice the following important raids which show some of the difficulties met with in long-range bombing.

On the night of the 29th-30th June, Handley Page machines of No 216 Squadron were ordered to attack the chemical works at Mannheim. Owing to the weather conditions only one machine reached the objective, on which it dropped its bombs. This machine, on the homeward journey, failed to pick up its aerodrome and landed no less than 160 miles SW of the aerodrome undamaged.

On the 5<sup>th</sup> July twelve machines of No 55 Squadron, under the Command of Capt F Williams and Capt D R G Mackay, set out to attack the railway sidings at Coblenz. Shortly after starting the squadron passed over thick clouds and steered its course by compass, but the target was obscured by clouds. The leader turned with the intention of attacking Karthaus, but as he turned the anti-aircraft barrage over Coblenz opened. Through a small hole in the clouds he could see a portion of the target, and the formation followed him and released their bombs.

On the 31<sup>st</sup> July No 99 Squadron, under the command of Capt Taylor, went out to attack Mainz. They encountered forty hostile scouts south of Saarbrucken. Fierce fighting ensued, as a result of which four of our machines were shot down. The remaining five machines of the formation reached Saarbrucken, and dropped their bombs on the station. On their way home they were again attacked by large numbers of hostile scouts, and suffered the loss of three more of their number.

Immediately after their return No 104 Squadron, led by Captain E A Mackay and Captain Home-Hay, proceeded to attack the factories and sidings at Saarbrucken, which they successfully accomplished with no losses.

On the 11<sup>th</sup> August No 104 Squadron, under the command of Major Quinzel, attacked the station at Karlsruhe, in spite of bad weather conditions, causing a heavy explosion in the station and scoring many direct hits on the railways sidings. In the course of fighting one of our machines was brought down and three of the enemy's machines were driven down out of control.

Frankfurt was attacked for the first time on August 12<sup>th</sup> by twelve machines of No 55 Squadron, under the command of Captains B J Silly and D R G Mackay. Most of the bombs burst in the town east of the goods station, and all the machines returned safely with the loss of one observer, who was killed by machine-gun fire.

The formation was heavily attacked by forty scouts of various types over Mannheim on its way to the objective and throughout the return journey. Two hostile machines were destroyed and three were driven down. The average time taken by each machine on this raid was five hours and thirty minutes, but all machines reached their objective and returned safely, though they only just cleared the trenches on their return journey, running completely out of petrol.

On the night of 21<sup>st</sup>-22<sup>nd</sup> August two Handley-Page machines of No 216 Squadron, piloted by Captain Halley and Lieut Stronach, dropped just over a ton of bombs on Cologne station, causing a very large explosion. The time taken on this raid was seven hours.

On the 22<sup>nd</sup> August twelve machines of No 104 Squadron started on a raid on Mannheim. The formations were led by Captain J B Home-Hay and Captain E A Mackay. Two machines had to land under control about five miles over the lines, after driving away eight hostile machines.

Immediately before the objective was reached fifteen hostile machines attacked the formation with great determination and resistance. The formation came down to 6,000 feet in following the leader, who was shot down under control. In the fierce fighting three German machines were destroyed. Despite constant and determined attacks by superior numbers, ten machines dropped bombs on Mannheim, causing seven bursts on a factory, where four fires were caused. A direct hit was also obtained on a large new building immediately south of the Badische Anilin Soda Fabrik Works.

On the night of the 25<sup>th</sup>-26<sup>th</sup> August two machines of No 215 Squadron made their first attack on the Badische Anilin Soda Fabrik Works at Mannheim.

The two machines, piloted by Captain Lawson and Lieut Purvis, left at eight o'clock. One pilot shut off his engine at 5,000 feet and glided in on the target from the NW, following the river. He was at once picked up and held in the beams of the searchlights, and an intense anti-aircraft barrage was put up. The machine continually changed its course, but could not shake off the searchlights, and the pilot was completely blinded by the glare. At this moment the second machine glided in, with its engine almost stopped, underneath the first machine, got immediately over the works, below the tops of the factory chimneys, and released its bombs right into the works. The searchlights at once turned on to this machine, freeing the first machine from their glare. This machine then turned and made straight for the works as low as the second machine amongst the chimneys, and released its bombs. The searchlights were turned almost horizontally to the ground and the anti-aircraft guns were firing right across the works and factories almost horizontally. In spite of this, the two machines remained at a low altitude and swept the factories, works, guns and searchlights with machine-gun fire. On the return journey both of these machines passed through rain and thick clouds, whilst lightning and thunder were prevalent throughout the trip.

On the night of the 2<sup>nd</sup>-3<sup>rd</sup> September machines of No 215 Squadron attacked Buhl aerodrome and the railway junction at Ehrang, some of the machines making two trips. In the first attack on Buhl two direct hits were obtained and three fires started, all bursts being observed on and in close proximity to the hangars. The second attack was carried out from 150 to 900 feet, machines circling around the aerodrome for fifteen minutes. Excellent shooting was made and thirteen direct hits were claimed. Three hangars were entirely demolished and a fire started. In addition motor lorries were bombed from 100 feet, and a hostile machine on the ground was attacked with good results.

On the 7<sup>th</sup> September eleven machines of No 99 Squadron, followed by ten machines of No 104 Squadron, made an almost simultaneous attack on Mannheim, where bombs were dropped with excellent results on the Badische Anilin and Soda Fabrik.

No 99 Squadron obtained at least eight direct hits on the factory, but the results of No 104 Squadron could not be observed owing to the mist and smoke. Both squadrons were attacked

on the outward and return journey and over the objective by superior numbers of hostile aircraft. The formation of No 99 Squadron were led by Colonel (then Major) L A Pattinson, and the formation of No 104 Squadron by Captain R J Gammon.

No 99 Squadron was attacked by six hostile machines fifteen miles over the lines. These were driven off. Ten hostile machines attacked about fifteen miles over the lines. They were also driven off. Fifteen hostile machines then attacked over the objective. After dropping bombs the formation turned towards the hostile machines, which apparently disconcerted them, as they became scattered. On the return journey several enemy scouts kept up a running fight, one scout attacking from in front was driven off by the leader's observer firing over the top plane.

No 104 Squadron was attacked at a long range fifteen miles over the lines. The enemy were driven off. Fifteen hostile machines heavily attacked over the objective and followed the formation back for seventy miles. Near the lines the formation was again attacked by seven hostile machines.

Over two tons of bombs were dropped at Mannheim in this raid.

On the night of the 16<sup>th</sup>-17<sup>th</sup> September seven Handley Page machines were missing. Five of these, detailed for Cologne and Mannheim, were probably unable to return in the face of a strong south-westerly wind, which increased after the machines had left the ground.

The missing machines undoubtedly attacked various objectives well into Germany before they had to land. It was reported that one machine landed in Holland with engine trouble, after having dropped its bombs on Bonn, and was interned.

On the 25<sup>th</sup> September No 110 Squadron, led by Captains A Lindley and A C M Groom, dropped over 1½ tons of bombs on Frankfurt. They were opposed by a large number of hostile machines, two of which they destroyed. Four of our machines did not return, and, in addition, one observer was killed and one observer and one pilot were wounded. This was the first long-distance raid carried out by this squadron.

On the night of the 21<sup>st</sup>-22<sup>nd</sup> October machines of Nos 97 and 100 Squadrons attacked the railways at Kaiserslautern in very bad weather. Several 1,650 lb bombs were dropped, but bad visibility obscured the results. One very large fire and five smaller ones were observed, and all these fires were seen to be still burning when the town was lost sight of in the mist.

I would like to bring to your notice the work of bombing aerodromes done by No 100 Squadron, commanded by Major C G Burge, when it was equipped with the short-distance FE 2b machines, and also with Handley-Pages. The squadron bombed aerodromes from low heights, and photographs show that a large number of sheds were hit.

The Independent Force, at the request of Marshal Foch, co-operated with the American First Army in its attack on the St Mihiel salient, and it further co-operated with the Army by attacking important railway junctions behind the French lines in the combined offensive of the 25th September.

My thanks are due to Brigadier-General B B Gordon, DSO, my Chief of Staff, who carried out his responsible duties with the most commendable smoothness and efficiency.

I also desire to thank Colonel G R M Church, CMG, my Army Troops Commander, for the admirable manner in which he carried out his very responsible duties.

Finally, I desire to express my great appreciation of the loyal work of all my own Staff, of the Commanders of Formations and their Staffs, and all the Units in the Independent Air Force serving under me, who carried out their difficult task of organising and carrying through with tact and energy the work of forming a new Air Force during active hostilities.

I have forwarded the names of officers and other ranks deserving of special mention in a separate despatch.

I have the honour to be,  
My Lord,  
Your Obedient Servant,  
(Sd) H TRENCHARD,  
Major-General,  
Commanding Independent Force  
Royal Air Force

The Rt Hon  
The Lord Weir of Eastwood,  
Secretary of State for Air,  
Air Ministry.  
London.

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# The Royal Air Force Post World War 1



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SECOND SUPPLEMENT  
TO  
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MONDAY, 8 NOVEMBER, 1920.

*Air Ministry,  
5<sup>th</sup> November, 1920*

The Secretary of State for Air has received the following Despatch from Group Captain R Gordon, CMG, DSO, in command of the Royal Air Force Expedition to Somaliland, describing events between September, 1919, and February, 1920:

*Headquarters,  
Royal Air Force,  
in Somaliland  
Berbera,  
May, 1920*

Sir,

I have the honour to forward a report on the Air side of the operations in Somaliland in January and February, 1920.

These operations consisted of:

- (a) An Air Force operation with the assistance of Military Forces.

(b) A Military Operation assisted by the Royal Air Force.

2. Opportunity was taken to test the theory that the moral effect of the new arm, with its power to carry out, without warning, a form of attack against which no counter measures could avail, would so disperse and demoralise the Dervish following that troops would be enabled to capture the Mullah's stock and destroy his forts.

3. The preliminary plan of campaign, as decided on in late September, was to use Las Khorai as a base to raid the Mullah's Headquarters at Jodali and Medishi. At the same time a subsidiary line of operations through Burao and Eil Dab was also agreed on in case the Mullah broke for the interior of the country.

4. The success of the expedition was so dependent on preliminary measures taken that, after a period spent on organising a force in London, I proceeded on 25<sup>th</sup> October, 1919, with a large portion of my staff to Egypt. After a short stay in that country, I left with my PMO and Aerodrome Construction Officer for Somaliland, and arrived there on 21<sup>st</sup> November. Since secrecy was essential, it was given out that we were prospecting for oil. On our arrival at Barbera, I proceeded at once to select a suitable site for the Base aerodrome and camp, and make arrangements for the ground so chosen to be levelled and cleared of stones.

5. On November 24<sup>th</sup>, 1919, accompanied by my PMO and Aerodrome Construction Officer, I proceeded by steamer to Las Khorai with a view to selecting a suitable aerodrome for use as an advanced Base in accordance with my previous plan. After three days' stay there I decided that Las Khorai was not suitable for the purpose for which I had intended it by reason of the great difficulties which would be presented by the landing of stores on the open beach from native boats. In addition the Monsoon blew for six hours practically every day, which, besides absolutely precluding the landing of stores being made on the beach, raised a continuous form of sandstorm some 200 feet high. As the site at Las Khorai which I had reconnoitred might, and actually did, prove of assistance in the case of a forced landing, I established a small stock of petrol and oil there.

6. Having been disappointed in my selection of a suitable site for a good advanced landing ground at Las Khorai, I decided, after conferring with His Excellency the Governor and the Officer Commanding Troops, Somaliland, to proceed to Eil Dur Elan to reconnoitre for a possible advanced Base there. I reached Eil Dur Elan accompanied by an escort of the Camel Corps on December 6<sup>th</sup>, and discovered a suitable site about half a mile from a supply of running water.

7. In order to provide for the alternative line from which it was decided to operate should the Mullah escape south to his mountain fortress at Tale after having been ousted from the north of the country, I had sites reconnoitred at Burao and Eil Dab, and work of preparation commenced.

8. As preparation on both the Eil Dur Elan and Burao Eil Dab lines were so well advanced by December 12<sup>th</sup>, I decided to cable at once for the main body of the expedition, which was assembling in Egypt, to be sent on to Berbera in HMS "Ark Royal". This aeroplane-carrying ship had been lent by the Admiralty for the purpose of transporting the personnel and aeroplanes in one complete shipment – a feat which would otherwise have been impossible.
  9. HMS "Ark Royal" left Alexandria on December 21<sup>st</sup> and arrived at Berbera on December 30<sup>th</sup>, 1919, and unloading was commenced at once. As the facilities for handling ships' cargoes at Berbera were of the most primitive nature, recourse had to be made to various improvised means. A large open lighter, completely decked in with ships' hatches, proved invaluable for the unloading of aeroplanes and vehicles, and, thanks to the whole-hearted assistance rendered by Commander P Waterer, RN, and the ship's company of HMS "Ark Royal", the whole of the aircraft material, transport and stores was discharged in a very short space of time.
  10. The erection of the aeroplanes was commenced on the 1<sup>st</sup> January, 1920, and by the 8<sup>th</sup> of January the first three were tested in the air.
  11. The Director of Public Works, Somaliland, rendered invaluable service by making the camel tracks from Berbera to Las Dureh fit for light motor vehicles, and by the 17<sup>th</sup> the aerodrome at Eil Dur Elan was complete with stores and personnel except for those who were to fly from Berbera.
  12. The eight aeroplanes which had been erected started by air from Berbera for Eil Dur Elan on January 19<sup>th</sup>, but one had to turn back owing to engine trouble, and eventually arrived the next day. By January 20<sup>th</sup>, therefore, everything was ready for the operations, which were timed to commence on January 21<sup>st</sup>.
  13. The first raid was carried out on January 21<sup>st</sup> by six machines from Eil Dur Elan against the Mullah's hutments and stock in the Medishi area. By reason of clouds four machines failed to reach Medishi, but bombed Jid Ali Fort and stock in the surrounding country with good results. One machine found Medishi successfully, and bombed the encampment there. The remaining machine, however, was forced to land through engine trouble at Las Khorai, on the sea coast.
- It was afterwards confirmed that the bombs dropped by the machine which attacked Medishi killed the Amir, on whom the Mullah was leaning, and actually singed the Mullah's clothes.
14. Combined operations were carried out during January 25<sup>th</sup>, 26<sup>th</sup>, 27<sup>th</sup>, and up till 30<sup>th</sup>, and consisted chiefly in keeping touch with the two portions of the Somaliland Field Force: (a) The Somaliland Camel Corps, with one and a half companies of 101st Grenadiers (Indian Army), operating from El Afweina in an easterly direction; and (b) the Somaliland Camel Corps who were advancing in a westerly direction from the neighbourhood of Mussa Aled some 45 miles to the north-west of Jid Ali.

Keeping touch consisted of locating the troops of each force and communicating their position by dropping messages on the Officer Commanding the Somaliland Field Force, and also in conveying despatches between the commanders of the two forces and the headquarters of the Somaliland Field Force, to which end temporary landing grounds had been constructed at El Afweina and Las Khorai. By this speedy means of communication the movements of the two forces were co-ordinated and information was rapidly passed.

Latterly, after its capture by the King's African Rifles on 24<sup>th</sup> January, machines were able to land at Baran, at which place the headquarters of the King's African Rifle force were established.

In addition, close reconnaissance of Medishi and Jid Ali was continued, bombs were dropped and machine-gun fire directed on the small isolated bodies of Dervishes and stock which were located in the vicinity. After the very slightest resistance, followed by the head-long flight of its defenders, Jid Ali Fort fell on 28<sup>th</sup> January to the King's African Rifles. The bombing from the air and latterly the Stokes gun bombardment had been too much for them.

On 29<sup>th</sup> January, Galibariboa Fort, built on the lines of Jid Ali Fort, was bombed, together with the native huts which surrounded it. Some stock was observed, but few Dervishes.

On January 30<sup>th</sup>, an important Dervish Sheik gave himself up at Jid Ali, and, at the same time, reported that the Mullah had broken south on 29<sup>th</sup> January, and was making for his mountain fortress at Tale. The Mullah had, therefore, eluded the net which the Camel Corps, operating from El Afweina, had set for him. The Officer Commanding the Somaliland Field Force at once decided to give chase, and I took immediate steps to arrange the most effective co-operation by the Air Force in this plan.

15. I had previously prepared an advanced base at El Afweina in case operations should move south into this part of the country, and I now placed it in full commission. Aeroplanes which left Eil Dur Elan on 31<sup>st</sup> January on reconnaissance were ordered to land there.

On this day the ponies belonging to the Mullah's baggage column were located near Daringahuje and attacked by aeroplane with bombs and machine-gun fire. Numerous ponies were killed and the remainder stampeded in a northerly direction. Deserters who came in afterwards reported that this column which had been attacked consisted of the Mullah's own personal following, consisting of most of his headmen, his wives and his sons, and it was the greatest piece of misfortune that the Mullah himself was not located and hit on this occasion, as he was about three miles away hiding in a nullah.

On 1<sup>st</sup> February, the Camel Corps arrived at El Afweina, and continued in pursuit of the Mullah. The first air reconnaissance over Tale fortress was carried out on this day, and a large Dervish convoy, estimated at 1,500 camels, burden and otherwise, 500 heads of cattle, and 500 sheep and goats was attacked with machine-gun fire and bombs, about five miles north of Berwaise.

The convoy was thrown into complete confusion, and set off in disorder in an easterly direction; its location being reported by dropping a message containing the information to the Camel Corps, who were then some ten miles distant to westward.

Touch was now established by aeroplane with the friendlies under Captain Gibb, who were operating against Tale from the neighbourhood of Gaolo, some fifteen miles to the south-west of Tale. This was a most important task, since the friendlies were quite in the dark as to what was happening in the north: efficient co-operation between detached forces has always been the greatest difficulty which military expeditions in Somaliland have had to contend with in the past owing to the lack of means of communication.

The hospital aeroplane, with which the expedition was supplied, was first employed on this day in conveying an officer who was seriously ill from El Afweina to Eil Dur Elan, where he was successfully operated upon.

The next day was spent in reconnaissance and in carrying information to Captain Gibb and his friendlies at Duhung to keep a look-out for the Mullah, who was still reported to be on his way south, and the following day in preparing the aeroplanes for a big raid on Tale Fortress. On 4<sup>th</sup> February, three aeroplanes left El Afweina to bomb Tale Fortress. Three direct hits with 112lb bombs and four direct hits with 20lb bombs were obtained on the large fort itself, and one direct hit with a 20lb bomb on the Mullah's private fort, situated outside the perimeter of the large fort. Waabs, or native hutments, outside the forts were set on fire with incendiary bombs, and, fanned by the north-easterly wind, the conflagration became general. In addition, the inhabitants of the waabs and the forts were heavily and effectively engaged with machine-gun fire.

16. For the next few days after this only reconnaissance and inter-communication work between the various detachments of the Somaliland Field Force, which was still in pursuit, were carried out in order to give them time to close in on Tale and reap the fruits which, after our experience of the results of bombing Jid Ali and Medishi, might reasonably be expected from further bombing attacks.

These were, however, rendered unnecessary, since Captain Gibb's friendlies intercepted the Mullah's convoy and rushed and captured Tale, while the Camel Corps, in a magnificent pursuit, destroyed the Mullah's personal following, which had escaped from that fortress.

With this striking success the campaign was ended, and, on 18<sup>th</sup> February, the machines flew back to Berbera.

17. The demoralisation caused by the suddenness of attack from the air was vividly exemplified by the comparison which can be drawn from the taking of Baran Fort by the King's African Rifles, and the precipitate flight of the Dervishes from the fortresses of Medishi and Jid Ali after they had been bombed.

In the former case Baran was not subjected to an air attack, and only fell to the King's African Rifles when surrounded and heavily bombarded with Stokes guns, and not until the last defender was killed. Medishi and Jid Ali, on the other hand, stronger forts in every way than Baran, were abandoned almost immediately after the air attacks. The utter demoralisation caused is further typified by the fact that quantities of rifles were left behind – an absolutely unheard-of occurrence in any former campaign against the Dervishes.

Tale itself, a fortress which would have otherwise cost many lives, and occupied a long time to take, fell in practically as simple a manner.

18. It is noteworthy that two days after the fall of Tale, which is a mountain fortress some 270 miles south-west of Berbera, His Excellency the Governor of Somaliland was conveyed there by aeroplane, and was thus enabled to thank the friendlies for their excellent work during the operations, and also to discuss with them on the spot matters of administrative and political importance. This exhibition of the potentialities of aircraft created the most profound impression on all the Akils and tribal leaders assembled there.

19. I wish to acknowledge the help and sympathetic support which I always received from His Excellency the Governor of Somaliland, who invariably showed the utmost resource and energy in assisting me with the solution of the many and varied problems with which I was confronted. My relations with the Somaliland Field Force were of the utmost cordial nature throughout, and I am deeply indebted to Colonel G H Summers for the assistance which, through his long experience of Somaliland and its peculiar conditions, he accorded me at all times. The constant understanding which prevailed between us was a most important factor in the attainment of smooth working throughout, and particularly in the combined operations which followed in the air attack.

The success achieved by the Air Force engaged in these operations I owe to the zeal and efficiency of my staff, and to the unfailing loyalty and support of all officers and men under my command. The conditions under which the Air Force were operating were unique, and that the many difficulties were successfully overcome is a tribute to all concerned. I have already submitted under a separate cover the names of the officers and other ranks of the Royal Air Force whose services I would specially bring to your notice.

I have the honour to be,  
Sir,  
Your obedient servant,  
(Sd) R GORDON,  
Group Captain,  
Commanding "Z" Unit, Royal Air Force

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A modified DH9 being used to transport a stretcher-bound casualty with "Z" Force in Somaliland, during 1919



## **OPERATIONS OF THE ROYAL AIR FORCE AGAINST AFGHANISTAN 4<sup>th</sup> to 31<sup>st</sup> MAY, 1919**

The information that the Afghans were about to declare Jihad was received from the North West Frontier on the 3<sup>rd</sup> May, 1919, and on the following day No. 31 Squadron was ordered to have two aircraft in readiness to take part in suppressing any aggressive movement on the part of the Afghans. When hostilities were formally declared on the 6<sup>th</sup> May, Lt. Col. F.F. Minchin, DSO, MC, who was commanding the 52nd Wing located at Murree, proceeded to Peshawar to confer with the Commander of the North West Frontier Force. Major E.L. Millar, MBE, Commanding Officer of No. 31 Squadron was temporarily attached as Liaison Officer to this force.

The Afghan forces attacked on three fronts, at Dakka, Khost and Quetta. The 52nd Wing operated in the Dakka and Khost areas, and a flight of No. 114 Squadron was engaged on the Quetta front. On the 6<sup>th</sup> May, three aircraft carried out a reconnaissance on the Afghan side of the border, and returned with several bullet holes; the height of the hills over which aircraft flew bringing them within easy range of the snipers of the Afridi tribes. The outstanding feature of the early days of hostilities was a very thorough and effective raid on Loe Dakka, apparently the advanced base of the Afghan troops in the hills about the west mouth of the Khyber Pass. In this raid 1¼ tons of bombs were dropped and 1151 rounds of ammunition were fired. Enemy casualties numbered about 600 men, the C. in C. being wounded and his brother a Mullah and the Nalik being among the killed.

On the 17<sup>th</sup> May all aircraft capable of being flown from Risalpur to Jalalabad were employed in a bombing raid. 332 bombs were dropped, mainly on enemy troops in the ridge and the rest on Jalalabad, which was heavily bombed again on the 20<sup>th</sup> and 24<sup>th</sup> May. Reports of the destruction of Jalalabad are believed to have induced large enemy forces to retire from the Dakka front without taking any offensive action. Captain Halley, with a crew of four, made a successful flight to Kabul, on the 24<sup>th</sup> May, in the Handley Page aircraft which had been flown from England to India. 20 bombs were dropped, 4 of which scored hits on the Amir's Palace. A fresh development occurred involving most of the southern tribes of the Buffer States, on the 26<sup>th</sup> May, and aircraft had to be despatched from Risalpur to Kohat. The pilots carried out their tasks so effectively, that the Afghan General was soon deprived of the support of the tribes, who live in dread of aircraft, and was driven off. Our troops attacked Spin Baldak Fort, which had to be bombarded for about 6 hours before it was captured. Aircraft operating from Chaman, near Quetta, observed this and dropped 20 bombs and fired several drums of S.A.A. into the fort.

Aircraft carrying out raids in the vicinity of Thal on the 28<sup>th</sup> and 29<sup>th</sup> to shake the morale of the enemy, found many targets and inflicted considerable casualties. The following day reconnaissance reported that the camps were apparently deserted. On the 1<sup>st</sup> June, four aircraft successfully co-operated with the Thal relieving column, and by 10 A.M. Thal was relieved. The G.O.C. later expressed his appreciation of the work performed by the R.A.F.

As a result of this co-operation the Amir Amanulla finally made a request to the Viceroy for an Armistice.

#### **SUMMARY OF OPERATIONS.**

Total number of hours flown	693 hours.
Weight of bombs dropped	20868 lbs.
Total number of rounds of S.A.A. fired	9315
Artillery co-operation flights	4
Contact patrols	2

Transcribed by RAF CAPS from original held at RAF Air Historical Branch.

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## ROYAL AIR FORCE

### PERMANENT ORGANIZATION OF THE ROYAL AIR FORCE

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#### **Note by the Secretary of State for Air on a Scheme Outlined by the Chief of the Air Staff**

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Presented to Parliament by Command of His Majesty.

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## AN OUTLINE OF THE SCHEME FOR THE PERMANENT ORGANIZATION OF THE ROYAL AIR FORCE

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### NOTE BY THE SECRETARY OF STATE FOR AIR

The scheme outlined in the following memorandum on the permanent organization of the Royal Air Force has been prepared during the course of the present year under my directions by the Chief of the Air Staff, and has in principle received the approval of the Cabinet.

The many complications of the Air Service and its intricate technical organization are not perhaps fully appreciated, even by those who take a general interest in the subject. It therefore appears desirable to lay this memorandum in both Houses of Parliament, in order that they may understand the character of the problem and the complications that are being faced.

It should be added that the financial provision which the Cabinet have approved as governing the scale of the Royal Air Force during the next few years is approximately 15 million pounds per annum. It is upon this basis that this scheme has been prepared, and it is upon this basis that it is hoped the Estimates of next year will, apart from any extraordinary expenditure which the military situation may render necessary, be framed.

WINSTON S CHURCHILL

11<sup>th</sup> December, 1919.

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### MEMORANDUM BY THE CHIEF OF THE AIR STAFF

1. *The problem confronting us.* The problem of forming the Royal Air Force on a peace basis differs in many essentials from that which confronts the older services. The Royal Air Force was formed by the amalgamation of the Royal Flying Corps and the Royal Naval Air Service, and one may say, broadly speaking, that the whole Service was practically a war creation on a temporary basis, without any possibility of taking into account that it was going to remain on a permanent basis. The personnel with few exceptions was enlisted for the duration of the war, and put through an intensive but necessarily hurried course of training. Material was created in vast quantities, but rapid development often rendered it obsolete almost before it had reached the stage of bulk production. The accommodation provided had to be of an entirely temporary character. The force may in fact be compared to the prophet Jonah's gourd. The necessity of war created it in a night, but the economies of peace have to a large extent caused it to wither in a day, and we are now faced with the necessity of replacing it with a plant of deeper root. As in nature, however, decay fosters growth, and the new plant has a fruitful soil from which to spring.

The principle to be kept in mind in forming the framework of the Air Service is that in the future the main portion of it will consist of an Independent Force, together with Service personnel required in carrying out Aeronautical Research.

In addition there will be a small part of it specially trained for work with the Navy, and a small part specially trained for work with the Army, these two small portions probably becoming, in the future, an arm of the older services.

It may be that the main portion, the Independent Air Force, will grow larger and larger, and become more and more the predominating factor in all types of warfare.

2. *Governing principles.* In planning the formation of the peacetime Royal Air Force it has been assumed that no need will arise for some years at least for anything in the nature of general mobilization. It has been possible therefore to concentrate attention on providing for the needs of the moment as far as they can be foreseen and on laying the foundations of a highly-trained and efficient force which, though not capable of expansion in its present form, can be made so without any drastic alteration should necessity arise in years to come. Broadly speaking, the principle has been to reduce service squadrons to the minimum considered essential for our garrisons overseas with a very small number in the United Kingdom as a reserve, and to concentrate the whole of the remainder of our resources on perfecting the training of officers and men.

It is intended to preserve the numbers of some of the great squadrons who have made names for themselves during the war, in permanent service units with definite identity, which will be the homes of the officers belonging to them, and will have the traditions of the war to look back upon.

There will be found in the Appendix a statement showing detailed particulars of squadrons, stations, schools, depots etc, which it is hoped to provide in the next three years at home and abroad. It will be understood that this programme is to be regarded as provisional only.

3. *Service units.* It is proposed to provide 8 squadrons for India and 3 for Mesopotamia, with the necessary facilities for repair. As regards India this is in accordance with a proposal put forward from India and now under consideration by the Government of India. The cost of the units in India will fall on the Government of India on exactly the same basis as in the case of the military garrison. Recent events have shown the value of aircraft in dealing with frontier troubles, and it is not perhaps too much to hope that before long it may prove possible to regard the Royal Air Force units not as an addition to the military garrison but as a substitute for part of it. One great advantage of aircraft in the class of warfare approximating to police work is their power of acting at once. Aircraft can visit the scene of incipient unrest within a comparatively few hours of the receipt of news. To organize a military expedition even on a small scale takes time, and delay may result in the trouble spreading. The cost is also much greater, and very many more lives are involved.

In Egypt it is proposed to station 7 service squadrons. Under existing conditions in that country aircraft are a most valuable means of communication. Distances are long and ground

communication confined to a few main routes. On the other hand the country and the climate are both ideal for flying. From a wider aspect Egypt is the Clapham Junction of the air between east and west, and is situated within comparatively easy reach of the most probable centres of unrest, and this added to its natural advantages for aviation, makes it the obvious locality for a small Royal Air Force reserve.

As regards our Naval bases and important coaling stations overseas, future developments will almost certainly lead to the necessity of providing aircraft as part of their garrisons, but in the majority of cases the need of this is not urgent under existing conditions, and for the present it is only proposed to station a small seaplane unit at Malta, and a similar unit in the Eastern Mediterranean, probably at Alexandria.

The Service squadrons quartered in the United Kingdom apart from those for co-operation with the Army and Navy will eventually number four, but not more than two of these squadrons will be formed in the next financial year. These squadrons will be employed on communication and similar duties in peace and will form a small reserve in case of need. For co-operation with the Army it is proposed to provide eventually squadrons on the basis of a flight per division for work with the troops at all stages of their training, and in addition one or more squadrons for co-operation with the artillery both during their winter training and their annual gun practice. During the next financial year it is proposed to form two squadrons in all, one at Farnborough for co-operation with the troops at Aldershot and Salisbury, and the second at Stonehenge for work with the artillery. Small units will, if necessary, be provided in addition for co-operation with the Garrison Artillery School at Golden Hill, and the Anti-aircraft School when formed.

There remain the Service squadrons for co-operation with the Fleet. It is proposed eventually to provide at home three Aeroplane squadrons and two Seaplane squadrons. To secure economy and to give the units a corporate existence and ample facilities for practice it has been decided that aeroplanes will no longer be carried normally in capital ships as was done during the war, but will only be embarked when required to take part in Fleet exercises. The Aeroplane squadrons will consist of one reconnaissance and spotting squadron, one squadron of fighter machines and one of torpedo-carrying machines. The two former will be based on the Firth of Forth where ample facilities exist for practice and for the embarkation and disembarkation of machines, a most important point. The torpedo-carrying squadron will be located at Gosport, the most suitable station for torpedo work, and it is proposed to provide a small experimental unit at the same station in order to develop fully this form of co-operation with the Navy, which is of primary importance. Of these three squadrons it is only proposed to provide one, the reconnaissance squadron, at full strength in the ensuing financial year. This is necessary in order to study and perfect the system of observation of artillery fire which from various causes was not so highly developed on the naval side as on the land side during the war. The torpedo squadron will be maintained at sufficient strength to carry on the essential research work while the fighting squadron will be formed in the first instance at a

strength of one flight only. In addition, the Admiralty proposed to keep two aircraft carriers in commission. One of these will be equipped with seaplanes for service abroad, while the other will remain at home and be used primarily for training and experimental purposes and ready if necessary to embark a flight of torpedo or other machines.

The provision of these two carriers is of the first importance since we must look forward to the time, as suitable machines develop, when fleets will so to speak take their aerodromes with them in the shape of a carrier, and the carriage of aircraft on capital ships with its attendant disadvantages and dangers will be a thing of the past.

Of the two seaplane squadrons, it is only proposed at present to form one flight only. The seaplane has obvious advantages over the aeroplane for long distance work over water, and a time may probably come when all work in co-operation with the Navy will be done by this class of machine. For this reason, if for no other, it is essential to have a few such units.

The lighter-than-air service is a difficult problem. The cost of providing such a service on a large scale in peace is prohibitive, and the use of airships in war may be said to be still in the experimental stage. It is proposed therefore to keep one airship station only, namely Howden, where sufficient accommodation exists for two rigid and a few smaller ships, and to retain as a commencement one rigid and two non-rigids only. This will allow research work and development to continue, and the use of airships in peace and war to be further studied.

4. *Reserves.* Although mobilization on a large scale is not taken into account, it is very necessary to provide a small reserve to meet any sudden call in the case of a small war anywhere in the Empire. For the next year or two there will, doubtless, be no difficulty in enrolling as many ex-officers and men as are likely to be required, and all that will be necessary will be to provide facilities for their training and practice flying.

It is intended, however, if possible, in addition to lay the foundation of a future Air Force on a territorial basis. No detailed scheme has yet been worked out, but it is probable that the eventual organization will provide for training both on a unit and on an individual basis. It is hoped that the manufacturing and commercial firms will assist by forming units of their employees. In addition there will doubtless be many individuals who will be glad to train themselves voluntarily with a certain amount of state assistance, and to undertake to serve, either overseas or at home, if called upon to do so. It is not intended to embark on the formation of any units during the next financial year, but it is proposed to commence with the training of individuals in the populous centres. This training will be carried out at the flying training wings whose functions will be described below.

5. *Extreme importance of training.* We now come to that on which the whole future of the Royal Air Force depends, namely, the training of its officers and men. The present need is not, under existing conditions, the creation of the full number of squadrons we may eventually

require to meet strategical needs, but it is first and foremost the making of a sound framework on which to build a service, which while giving us now the few essential service squadrons, adequately trained and equipped, will be capable of producing whatever time may show to be necessary in future.

Before explaining our proposals in detail it is necessary to lay down certain postulates.

Firstly, to make an Air Force worthy of the name, we must create an Air Force spirit, or rather foster this spirit which undoubtedly existed in a high degree during the war, by every means in our power. Suggestions have been made that we should rely on the older services to train our cadets and Staff officers. To do so would make the creation of an Air Force spirit an impossibility apart from the practical objection, among others, that the existing naval and military cadet and staff colleges are not provided with aerodromes or situated in localities in any way suited for flying training.

Secondly, we must use every endeavour to eliminate flying accidents, both during training and subsequently. This end can only be secured by ensuring that the training of our mechanics in the multiplicity of trades necessitated by a highly technical service, is as thorough as it can be made. The best way to do this is to enlist the bulk of our skilled ranks as boys and train them ourselves. This has the added advantage that it will undoubtedly foster the Air Force spirit on which so much depends.

Thirdly, it is not sufficient to make the Air Force officer a chauffeur and nothing more.

Technical experts are required for the development of the science of aeronautics, still in its infancy. Navigation, meteorology, photography and wireless are primary necessities if the Air Force is to be more than a means of conveyance, and the first two are requisite for safety, even on the chauffeur basis.

6. *Training of Officers.* It is now necessary to sketch very briefly the training proposed for both officers and men. Owing to the necessity of a large number of officers in the junior ranks, and to the comparative paucity of higher appointments, it is not possible to offer a career at all. Consequently some 50 per cent only of the officers have been granted permanent commissions, the remainder being obtained on short service commissions or by the seconding of officers from the Army and Navy. Great importance attaches to the last class since an interchange of officers is bound to make for closer and more intelligent co-operation between the services.

The channels of entry for permanently commissioned officers will be through the Cadet College, from the Universities and from the ranks. The cadet college will be the main channel. The course will last two years, during which the cadets will be given a thorough grounding in the theoretical and practical sides of their profession, and will in addition learn



to fly the approved training machine, at present the Avro. The college is to open at Cranwell in Lincolnshire early next year, an ideal place for the purpose, with a large and excellent aerodrome and perfect flying surroundings. It will be necessary to accommodate the college temporarily in huts erected during the war, but every endeavour has been made to render these as suitable as possible, and it is proposed to erect a permanent college in the near future. On leaving the college, cadets will be commissioned, and will undergo a short course in air pilotage and practical cross-country flying at Andover. This school will probably not be required before early 1921. As soon as the cadets have passed this course they will be posted to a service squadron, as it is most important that they should join a unit which they can regard as their home, as the sailor does his ship or the soldier his regiment, as early as possible. Subsequently they will undergo a course in gunnery, without which no flying officer can be regarded as a service pilot. The gunnery school will be established at Eastchurch, but as the bulk of our present pilots have war experience, will not be required in the next financial year. After 5 years' service, officers will be required to select the particular technical subject they will make their special study during their subsequent career, eg, navigation, engines, wireless. Short and long courses will be provided in these subjects in order to cater both for the officer who wishes to continue primarily as a flying officer with a working knowledge of one or more technical subjects, and for those who wish to become really expert in a particular branch. Technical knowledge will, *inter alia*, qualify an officer for selection for high command.

The career of officers commissioned from the Universities or from the ranks – except in the case of boy mechanics receiving commissions, whose case will be dealt with later – will be identical with that of those from the cadet college, except that they will be taught to fly at a flying training wing before joining their squadrons. Short service and seconded officers will be taught to fly at training wings and will attend a course of aerial gunnery and probably one of air pilotage. In view of their short service, it is not proposed, save in special cases, to send them through the advanced technical courses. These officers will be eligible for promotion during their service in exactly the same way as the permanent officers. The technical schools required at once are those dealing with navigation, wireless, photography and engineering. Aerial navigation is practically a new science. Any attempt has been made during the current year to work out the theoretical principles in practice at Andover, and considerable progress has been made, but it is obvious that the chief need of aerial navigation will arise when flying over the sea, where the map is of no service, and it is consequently proposed to reopen this school at Calshot in the spring of next year.

Schools of wireless and photography are now in existence at Flowerdown, near Winchester, and at Farnborough respectively, while it is proposed to commence an engineering course, at a suitable station, shortly after Christmas.

For the training of University candidates, short service and seconded officers and officers of the reserve or Territorial Force, it is estimated that seven training wings would eventually be required.

In view, however, of the fact that the short service list has been filled by officers who have already been trained as pilots during the war, it is only proposed to form two of these on a reduced basis during the next financial year to deal with the training of University candidates, a small number of reserve officers and of certain officers granted permanent commissions, with the proviso that they must learn to fly within 12 months. In view of the exceptional facilities for training in Egypt, it is proposed to locate, at least, one of the training wings, together with branch schools of gunnery and air pilotage in that country, but whether it will be convenient to do so next year cannot yet be definitely foreseen.

One other most important school in connection with the training of the officer is essential, and it will probably be necessary to start it on a small scale in 1920. This is a school for flying instructors. The first school of this kind was started during the war at Gosport, and it is hardly too much to say that it revolutionized the art of flying. The science of flight was carefully analysed and the analysis practically applied to the problem of tuition with remarkable results. It is essential in future that all instructors in training wings and all officers of or above the rank of flight commander in service squadrons should have passed through this course. A liberal amount of dual control with a qualified instructor is one of the chief safeguards against the faulty flying which is the cause of the majority of accidents.

Although it is not proposed to open it during the next financial year, an Air Force Staff College must be formed as soon as possible. It is intended to establish this at Halton in the house of the late Mr Alfred Rothschild, purchased by the Government at his death with the whole estate. The house and its surroundings are eminently suited for the purpose, and there is an aerodrome within a quarter of a mile.

7. *Training of men.* The most difficult problem of all in the formation of this force is the training of the men. Demobilization has removed most of our best mechanics, and the efficiency of the squadrons to be formed depends on the most thorough instruction of those who are to take their place. It has, therefore, been decided to enlist the bulk of those belonging to long apprenticeship trades as boys, who will undergo a course of three years' training before being passed into the ranks. With a preliminary training of the nature contemplated and the practice of their trade during their subsequent service, it is confidently anticipated that these mechanics on passing to civil life will have no difficulty in securing recognition as skilled tradesmen. This is an important consideration since any tendency for the Air Force to be regarded as a blind alley occupation, would be fatal. The training of all these boys will eventually be carried out at Halton Park, where ample and well equipped technical shops are already in existence. Pending the erection of permanent barracks to replace wooden war-time huts, use will also be made of Cranwell, in Lincolnshire. It has been necessary to speed up the training of some 5,000 boys enlisted during, and shortly after, the war, and the residue of these, some 3,000, will complete their training, at Halton. A scheme has been drawn out for the future enlistment of boys by means of a competitive examination, and local education authorities have been circularized with a view to their nominating suitable boys to sit for the examination.

By this means it is hoped to secure a really high standard. The first entry under this scheme will take place early in 1920, and the boys will commence their training at Cranwell and will be moved to Halton as soon as the permanent accommodation is ready.

The boys, on successfully passing their final examination, will be graded as leading aircraftsmen, and a certain number will be specially selected for a further course of training, at the end of which they will either be granted commissions, or promoted to corporal. Those granted commissions will join the cadet college.

It is intended to enlist the remainder of the mechanics, of whom more than half will belong to short apprenticeship trades as men, and these will undergo 12 months training at Cranwell as soon as the boys have moved to Halton. Pending the move, it is proposed to carry out the training of these men at Eastchurch, which, as has already been said, will not be required in its eventual capacity as a gunnery school for another 12 months at least.

Non-technical men will be given a short course of recruit training at the depot at Uxbridge.

8. *Higher organization at home.* As regards higher organization in the United Kingdom, all units working with the Navy have lately been formed into one command, known as the Coastal Area Royal Air Force. The two remaining commands, known as the Southern and Northern Areas, will, early in 1920, be amalgamated into one command to be known as the Inland Area. This cannot be done earlier owing to the very large amount of work entailed in closing up surplus stations, demobilizing surplus personnel and generally clearing up the after effects of the war.

9. *Depots.* Each of the two Areas in the United Kingdom will have its repair depot, at Henlow for the Inland Area, and at Donnibristle, near Rosyth, for the Coastal Area. During the next financial year it will be necessary to retain three of the existing stores depots, but it may prove possible at a later date to reduce the number to two, though this is by no means certain. It is hoped that eventually arrangements will be made for all Royal Air Force mechanical transport to be repaired at Slough, but in view of the arrears of work it will be necessary to retain for the present our own repair depot at Shrewsbury. Each overseas theatre will have a combined repair and store depot of a size suitable to the number of squadrons based upon it.

10. *Necessity for large capital outlay on accommodation.* From the above outline of our proposals it will be seen that every endeavour is being made to reduce expenditure on personnel during 1920-1921 to the minimum absolutely essential to create the framework of our future Air Force. This is necessary, if for no other reason, owing to the peculiar position in which the Royal Air Force is placed as regards permanent accommodation. Though some of the wartime buildings can be made to serve for a year or two in their present state, the Air Force does not possess one single permanent barracks, and a large capital outlay on the provision of new buildings and the adaptation of the most suitable of the temporary buildings

is inevitable during the first few years. This will be balanced to a certain extent during the next two years by the small requirements in technical equipments due to the large stock remaining over from the war. The principle followed has therefore been to excise rigid economy at the outset over personnel and technical equipment in order to free as large a part as possible of the total sum provided towards the provision of barracks. As time goes on, the building services will absorb less, while the cost of technical equipment, and, to a lesser extent, of personnel, will increase, until eventually the works vote will be little in excess of the cost of maintenance.

It must be recognized, however, that the total cost of building will be large. The boys' barracks at Halton, for instance, with the necessary accessory buildings and the cadet college will no doubt be a heavy item. These are undoubtedly the two most expensive services, but the accommodation for personnel at the majority of our stations will have to be rebuilt or adapted at considerable cost. The outlay must, however, be faced, and it is undoubtedly wise to undertake the bulk of the work in the first few years, while the expense of other services can be kept down.

11. *Research.* One matter of supreme importance has not yet been mentioned, namely, the provision to be made for research. The departments of Supply and Research are now being transferred from the Ministry of Munitions to the Air Ministry, and a portion of the experimental establishments are a charge on the Air Force votes. Steady and uninterrupted progress in research is vital to the efficiency of the Air Force, and to the development of aviation generally, and on it depends both the elimination of accidents and the retention of the leading position we have established at such heavy cost during the war. The existing establishments must therefore be retained during the ensuing financial year at a sufficient strength to ensure that urgent work shall continue. Some of the work which was urgent under war conditions can, however, now be postponed until progress with the building programme liberates more money for other purposes. The principal aeroplane research establishments are at Biggin Hill, Martlesham Heath, and Grain, while airships' research will be undertaken at Cardington and Howden.

12. *Civil aviation.* No allusion has been made to civil aviation in this paper, which has been confined to the Service aspect of the question.

H M TRENCHARD  
*Chief of the Air Staff*

AIR MINISTRY  
*25<sup>th</sup> November, 1919.*



# APPENDIX - (cont'd)

—	Existing or to be formed in 1920-21.	Increase during 1921-22 to.	Increase during 1922-23 to.
Depots	2 Aeroplane Repair Depots 1 MT Repair Depot 3 Stores Depots	As for 1920-21 except that the MT Repair Depot will drop out as soon as the repair work for RAF vehicles can be undertaken at Slough	As for 1921-22
Airships	1 Station	No increase	No increase
II. – Overseas			
India	8 Squadrons 1 Depot	No increase	No increase
Egypt	7 Squadrons 1 Depot	7 Squadrons 1 Depot 1 Training Wing	7 Squadrons 1 Depot 1 Training Wing 1 School of Air Pilotage 1 School of Gunnery
Mesopotamia	3 Squadrons 1 Depot	No increase	No increase
Malta	1 Flight Seaplanes	1 Squadron Seaplanes	No increase
Alexandria	1 Flight Seaplanes	1 Squadron Seaplanes	No increase
Mediterranean	1 Flight Float Seaplanes on carrier	No increase	No increase

**APPENDIX B****THE PART OF THE AIR FORCE OF THE FUTURE IMPERIAL DEFENCE****Observations by Mr. Balfour on the Position of the  
Air Force in relation to the Army and Navy**

The position of the Air Force in relation to the Army and Navy has been brought before the Standing Sub-Committee in Papers prepared by the staffs of all three Services. The conclusions presented in these Papers differ widely from each other, and such discussion as has taken place on the subject at the Committee makes it fairly clear that no agreement is likely to be arrived at by any further interchange of argument and counter-argument across the table. In these circumstances, the decision of the main point at issue must lie with the Cabinet, and I promised the Standing Committee that I would prepare a Paper for Cabinet use, dealing with the most important practical issue. It must be clearly understood that the following observations represent only my views, from which the experts representing the three Services will doubtless differ as much as they differ from each other.

These differences are doubtless great and probably irreconcilable, but it must not therefore be supposed that underlying them there is not a considerable measure of agreement. All would agree, I think, that where the part played by the Flying Force is an auxiliary part, either to the Army or the Fleet, it must be under the General or Admiral by whom the Army or Fleet is commanded. The Naval and Military General Staffs would never allow, and the Air Force, I think, would never claim, that when aerial warfare was only one of the subsidiary instruments for carrying out a general plan, it must be controlled by the chief responsible for the whole scheme.

But supposing the roles are reversed – supposing the main operations are carried out by the Air Force, while the Navy and the Army play a relatively unimportant part in the operations – what then? That such a condition of things is possible seems indeed, to be hardly contemplated in the Papers submitted to us by the Naval and Military Staffs. The Military Staff, for example, regards the Air Force as holding a position analogous to artillery: like artillery, it is highly technical, and therefore requires a special training: like artillery, it is important, because it can co-operate with infantry, cavalry and tanks. To the critics holding this view it is absurd to allow aeroplanes to play an independent part as it would be to confer a similar privilege on guns and howitzers. The General Staff, indeed, dwell with some insistence on the fact that in earlier times a different view was taken, and the artillery was not placed under Army control until the necessity for maintaining unity of command forced it into its proper position of subordination, and they appear to think that the same principle will, in the case of the Air Force, lead to the same result.

Parenthetically I may observe that the permanent tendencies have not always been towards unification. Up to the seventeenth century, for example, fleets were navigated by sailors,

while naval strategy and naval tactics were determined by soldiers. The complete differentiation between the organisation which carried on war by land and war by sea is a relatively late growth.

Leaving history on one side, may we not put out present question as follows: Are there, or are there not, military operations of first-class importance in which the main burden of responsibility is thrown upon the Air Force, while the other services play either an insignificant part or no part at all? The Air Force claim that there are; and it seems to me that their claim must be allowed.

Of these operations the most striking is home defence against air raids. The Air Force assert that if there is another great war, the first and the most formidable danger which this island will run will take the form of a great air attack directed by the enemy against London and other vital spots. From invasion by sea the Fleet may be able to protect us; only the Air Force can protect us from invasion by air. Even anti-aircraft guns, however, numerous and however well directed, will never prevent invading aeroplanes working their will upon a city like London. Aircraft must in such cases be met by aircraft.

Here, then we have a military operation which not only can be carried out independently by the Air Force, but which cannot be carried out by anything else. The Air Force does not act as an auxiliary; it requires no aid either from the Navy or the Army unless, indeed, the anti-aircraft guns were controlled by the latter, which would be contrary to the principle of a single command. In any case, since the air force would do most of the work, it is they who should be responsible for its direction.

But the very same argument which requires that the Air Force should be autonomous in operations which are in the main aerial, requires them to accept a position of strict subordination when they are acting merely as auxiliaries to fleets or armies.

Between these two extremes, however, are many gradations. If, for example, a punitive expedition, consisting of aeroplanes unaccompanied by troops, is sent against a tribe on the north-west frontier of India or in Mesopotamia, ought this to be controlled from Military Headquarters or from Air Headquarters? Or again, if a convoy of merchant ships has to be protected up the Channel, is this operation to be carried out under the orders of the Admiralty, or merely in close co-operation with the Admiralty? In other words, are the aeroplanes to have a purely dependent status like aeroplanes in the field, or are they to be regarded as an independent force collaborating with the Navy, as the Navy on occasion acts in cooperation with the Army? On the whole I incline to the latter view.

There is a tendency in some of the Papers laid before the Standing Committee to minimise the military effect on this country of air raids successfully carried out on a very great scale. In the memorandum prepared by the General Staff there is a picture drawn of Great Britain with



its capital in ruins and the Admiralty and the War Office carrying on their duties undismayed in the safe but obscure retreat supplied by some disused coal-mine. Even such a catastrophe as this, they say would not force a decision; and perhaps they are right. I would, however, observe that as a matter of history, peace has usually been arranged between belligerents long before the worsted party was reduced to so pitiable a condition, and while the position of the General Staffs of the Army and Navy heroically carrying on their functions at the bottom of a coal pit might in some respects be less disastrous than it seems, seeing that in the contingency supposed they would have very little to do, the enemy aeroplanes, wandering at will over the country, could carry out their work of destruction, however numerous and however heroic might be the Armies and the Navies of the country they were reducing to ruin.

(Note. – I would parenthetically observe that were France, Belgium, Holland and Denmark neutral, no first-class Power could invade us by air, nor is it easy to imagine circumstances in which a great British army could operate on the Continent of Europe).

The conclusion that I draw from these considerations is that the Air Force must be Autonomous in matters of administration and education; that in the case of defence against air raids the Army and the Navy must play a secondary role; that in the case of military operations by land, or naval operations by sea, the situation must be reversed and the Air Force be in strict subordination to the General and Admiral in supreme command, while there are other cases, such as the protection of commerce or attack on enemy harbours or inland towns, in which the relation between the Air Force and the other Services must be regarded rather as a matter of co-operation, like that which prevails between the Army and the Navy, than of the strict subordination necessary when the aeroplanes are acting merely as auxiliaries. This threefold relation between the Air Force and the two other Services has no exact precedent, and would undoubtedly require tact and judgment on the part of all the Departments concerned. But it seems to me to be logical, and I am convinced that any attempt to reduce the new force to an inferior position will seriously hamper its vigorous development and may put us at a serious disadvantage compared with nations who, for whatever reason, have abandoned rivalry at sea and desire to exploit to the utmost the new weapon whose edge cannot be completely turned by any hostile superiority in fleets or armies.

(Initialled): A.J.B.

July 26, 1921.

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## **Comment from Air Marshal Trenchard on Mr Balfour's Cabinet Paper<sup>i</sup>**

I would like to say that there is one thing which has been thrashed out during the past six or eight months, and that is our taking over some of the responsibilities of the defence of this Empire from the Navy and Army.

This question has been discussed both orally and by papers representing all points of view, before Mr. Balfour, who delivered his judgement, which was embodied in Cabinet Paper 149C. This gave a pronouncement in favour of the many claims of the Air Service, although Mr. Balfour was, I may say, one of those who during the war, were not in favour of forming a separate Air Force.

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<sup>i</sup> Royal Air Force Museum Hendon: Trenchard MFCs: 76/1/100

## ASPECTS OF SERVICE AVIATION\*

BY AIR MARSHAL SIR H M TRENCHARD, BART, KCB, DSO

The innumerable details connected with a fighting Service cannot be dealt with in a short article, and I propose, therefore, to touch upon some of the aspects only. This opportunity will enable me to explain to a wider public than can be reached by official regulations and pronouncements some of the main principles which are guiding us in the raising, maintenance, distribution and employment of the Royal Air Force.

### INTRODUCTORY REMARKS

The test of every fighting Service is war. Its organization, training, distribution, systems of command and administration must always be primarily governed by this consideration. Peace has its own problems and difficulties, financial and other; but in solving them we must always keep war in the forefront of the picture and try to foresee its possibility, probability, locality and nature.

Under modern conditions, no nation can afford to keep its fighting forces, whether they be raised on a voluntary or compulsory basis, at such a strength in peace time as to be able to deal (without expansion) with war on any considerable scale. To a greater or less degree, all the fighting Services of today must be organized on the cadre principle and must have behind them the necessary reserves of trained men and material, with plans for speedy mobilization worked out in every detail.

These factors affect in varying degree the Navy, the Army and the Air Force. The last-named is perhaps faced with the hardest problem of all in that its reserves are most difficult to maintain while the most rapid mobilization is absolutely essential.

In the report of the American Aviation Commission, presented to Congress a year ago, a list of what the Commission described as “unescapable conclusions” is given, among which are included the following:

“That any future war will inevitably open with great aerial activity in advance of contact either upon land or sea, and that victory cannot but incline to that belligerent, able first to achieve, and later to maintain, his supremacy in the air.

“That no sudden creation of aerial equipment to meet a national emergency already at hand is possible. It has been proved within the experience of every nation engaged in the war that two years or more of high pressure effort has been needed to achieve the quantity production of aircraft, aircraft engines, and accessory equipment. The training of personnel, including engineering, production, inspection, maintenance, and operating forces – covering some fifty distinct trades and some seventy-five industries – has proved itself a stupendous task when undertaken upon the basis of war emergency alone”.

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\* The substance of this article was contained in an address delivered by Sir H Trenchard at the Air Conference on the 14<sup>th</sup> of October, 1920.

That is the American view. I do not think any of us who have experience of aviation during the war will be inclined to quarrel with these conclusions.

It must always be remembered that mobilization does not end war, but only begins it, and that therefore additional provision must be made against war wastage. The difficulties of the Air Service are abnormal in this respect also. The nature of its work makes wastage high, both in personnel and material. The necessity for immediate and intensive training on a greatly increased scale adds to it.

It is obvious that the Royal Air Force, on any financial basis we are likely to be able to afford in peace time, cannot of itself create the reserve of personnel or maintain the stock of material requisite to meet these needs. Great reserves of material present a peculiarly difficult problem, since, in addition to being very costly to provide and store, a great deal of such material deteriorates rapidly, whilst all is liable to become obsolete owing to the rapid development of aeronautical science.

I must here emphasize the point that I am only dealing with the present and the next ten or fifteen years, as after that period development may become stabilized.

To quote the Report of the American Commission again, a third conclusion is reached:

“That for economic reasons, no nation can hope in peace time to maintain air forces adequate to its defensive needs except through the creation of a great reserve in personnel, material, and producing industry, through the encouragement of Civil Aeronautics. Commercial Aviation and Transportation development must be made to carry the financial load”.

One is forced to the conclusion that the Royal Air Force, for a first-class war, must be dependent on outside aid, and what outside aid is possible except Civil Aviation? In the same way as the Navy relies on the Mercantile Marine, but to a far greater extent must the Air Force rely on Civil Aviation. Remember, I say a first-class war.

Regarded in this light, the present situation cannot be described as altogether satisfactory, but we must remember that only two years have passed since the Armistice; and most of these two years have been occupied on the service side in getting rid of war wreckage, temporary personnel, surplus material, aerodromes, etc, and on the Civil side in exploring the possibilities of Civil and Commercial Aviation. Fortunately mobilization on a large scale is not, humanly speaking, a problem of the moment, and we may expect that the new form of transport will prove its value before long in Civil Aerial Transport. The train did not replace the stage coach, nor the motor bus the horse bus completely and suddenly; each had its early years of effort towards commercial efficiency, and there is no reason to be discouraged because the aeroplane seems like to follow the same course.

I will now turn to some of the more immediate problems of Service Aviation. Of these the most important are concerned with organization, the provision of officers and men and planning of their Service careers, the principles of distribution and employment of the Royal Air Force units, and the laying down of foundations for the future.

### ORGANIZATION

In helping to lay down the organization of the Royal Air Force in peace it was the endeavour of all concerned to maintain the principles that stood so well the strain of the war, and also to base its organization on the traditions that were built up during the war. Moreover, whilst always keeping in view future requirements and possible developments, we have had to watch present needs.

A fighting Service may be compared to a fruit tree consisting of roots and trunk, branches and fruit. The roots and trunk are the raw material in officers, men and equipment, the branches are the training and depot organization, and these two produce the fruit, namely the fighting unit.

The man who plants an orchard of young trees cannot expect much crop for the first few years. If he allows the trees to bear too much fruit in their early years, he only weakens them and destroys his chance of a good and valuable crop in years to come. We are exactly in the same position. As far as possible, our aims have been to ensure a well grown tree with strong and healthy roots, but demobilization left us with little but roots and the new growth is still in the sapling stage.

Unfortunately the Armistice did not usher in universal peace, and fighting has been going on in many theatres ever since. We have had, therefore, to a certain extent to force the crop, thereby inevitably retarding growth. To drop metaphor, demobilization left us with the bare number of officers and men required, but with neither the pre-war experience, organization or resources enjoyed by the older Services. For instance, we did not have a single permanent barrack on the scale of the up-to-date barracks of the older Services, nearly all our buildings being temporary war constructions. The trades of the men did not correspond to requirements after all those who were temporary men were demobilized. Again, those who were retained were in many cases only liable to a further short term of service, and the training of recruits to take their places had to be commenced at once, and there were few instructors. But for a long time the size and composition of the Air Force had necessarily to remain undecided, peace establishments could not be drawn up, and even the approximate number of men whom it was required to train in each trade was a matter of guess-work.

The Navy and Army, especially the latter, were no doubt faced with similar difficulties, but not to the same extent. They had their pre-war experience as a guide, and whereas in a battalion the shortage of a few men hardly affects the unit as a whole, in a highly technical Service like the Royal Air Force, the lack of one essential tradesman in a squadron may seriously affect efficiency.

I have only put forward these considerations in order to give some indication of the complexities of the problem. We want criticism and welcome it. The more I see of it the more I know it helps us. It is sometimes said that criticism should be informed and constructive, and not uninformed and destructive. All I can say is that I have often found uninformed and destructive criticism more helpful than informed and constructive criticism of which I hear and read so much.

The greatest trouble we have to deal with is impatience. Probably, all the most useful people are impatient; but I would appeal for a little patience with our Service for its own sake, and, as I said before, in order to make the root healthy in the future.

Otherwise our task only becomes harder, and the day is postponed on which the Service can be put on a really sound footing.

### **PROVISION OF PERSONNEL**

The efficiency of a fighting Service depends primarily on its personnel, their moral and discipline, their keenness and professional knowledge, and last but not least, their well-being and contentment.

In considering this aspect of the problem, the fact that we are a new Service helps us in many ways. We can pick the brains of the older Services and profit by their wealth of experience, and we are also unhampered by tradition. It is, however, also a handicap, owing to the uncertainty as to the career offered to both officers and men. Many questions inevitably occur to those who are attracted by the Service: What is the prospect for the officer as regards his probable position and income in middle age? What will become of the disabled pilot? These questions, and many others have been very carefully considered, but it is not easy to get into touch with the individual and reassure him.

Official literature is unavoidably tinged with caution in the matter of promises, and is apt to have more of a repellent than an attractive effect. I therefore welcome this opportunity of filling in a few of the blanks. First, as regards officers: the nature of the Air Service is such that a large proportion of younger officers and comparatively few older ones are needed. Consequently, no Air Force can provide a career within itself for the whole of the young officers it requires, and some form of entry for comparatively short terms of service, to supplement the permanent officers, is a necessity.

This is equally true, whether the Air Force exists as a separate Service or in its former divided state. Indeed, this fact was recognized both by the War Office and the Admiralty when the special entry schemes were first drafted before the war. I am afraid that sometimes this has been overlooked. The number of officers given permanent commissions, therefore, has been, and will in future be, limited to the extent necessary to provide for all a reasonable prospect of rising to the higher ranks and earning a substantial pension. For those who may become permanently

unfit to fly by reason of accidents or from other causes the Air Force itself will always provide a certain number of ground billets which do not necessitate flying; and for any who cannot be so absorbed, we are seeking sanction for a liberal scale of disability pensions. In this connection, I think we may confidently anticipate a great reduction in the accident ratio, as I am practically certain that in the next generation there will be no strain in flying, other than that inseparable from Service strain. The strain of war flying was great and will always be so, but the strain of peace flying is, I think, due to the pre-conceived idea of the dangers of flying. War training was perforce hurried and intensive, so as to meet the constant call for reinforcements from all fronts, but in peace there is no need for this, and consequently training can be longer and more thorough. The development of more reliable machines possessing a greater range of speed, and capable of landing slowly in confined or awkward ground, will similarly lessen the risk for the trained pilot.

As regards other ranks, we hope to enlist the bulk of our requirements in the long apprenticeship trades as boys. Local education authorities and teachers' associations are extending us their help and support, and I hope, as the advantages and the needs of the Service become more widely known, that we shall have no difficulty in obtaining the numbers we require; on the contrary, that we may look forward to keen competition.

These boys are being given three years' thorough training, both theoretical and practical, in their trade, and on completing this will do seven years' colour service. Vacancies in the short apprenticeship trades will be filled by direct enlistment of men, both skilled and unskilled. The latter are undergoing the periods of training (on the average about twelve months) necessary to make them efficient in their particular trade. The men required for unskilled labour are similarly obtained by direct enlistment, and we hope it will be found possible to teach a trade to as many as wish to learn one during their service in the Royal Air Force. General education has not been forgotten. A scheme has been sanctioned for the engagement of civilian teachers on a salary basis which we hope will attract a good proportion of Public School and University men. At the Cadet College and the Boys' Training Establishments the scheme is already working, and, as our peace organization takes shape, we hope to extend it first to the Men's Training Establishments and eventually to all training units. I think I have said enough to show that steps are being taken to ensure that service in the Air Force on a long service basis is not a blind alley occupation.

The entry of those officers who can only be taken on a short basis may prove to be a more difficult problem. As yet the scheme is only in the experimental stage, since there was no lack of officers who would otherwise have been demobilized, who were willing and anxious to continue serving for another two or three years. The retention of these officers is necessarily a merely temporary expedient, only made possible as a direct result of the war. For the future we are, at present, looking to two sources. First, the seconding of officers from the Navy and Army; and second, the entry of officers direct from civil life on a definite short service engagement who will receive a gratuity and return to civil life on the expiration of their engagement, subject only to a liability to a certain period of service in the Reserve.

These two sources are interdependent, and each is an essential feature of the scheme. Since permanent officers will only be productive of an RAF Reserve to a very limited extent, and seconded officers will not be so at all, the short service officer must be the backbone of any Reserve designed to meet requirements which do not call for a national effort.

If a large number of officers come forward from the older Services for seconding to the RAF, the number of short service commissions offered will be correspondingly less, and so the best material only need be taken. By thus raising the standard of the candidates, the older Services will help to ensure that their air requirements are met by the best type of officers. The seconding system, moreover, whilst of paramount importance to the Air Force, is also a fundamental factor in the development of the Navy and the Army. Whatever the future may show that the Air Force is capable of doing in its independent capacity, it cannot be doubted that it will always be called upon to work in close and intimate co-operation with the Navy and Army. No commander who has once experienced the advantage of seeing "what is on the other side of the hill" is likely to forego it. But the other Services cannot make the best use of the Royal Air Force unless they know its possibilities and limitations and understand the principles of its employment. Officers of the Navy and Army should know about the limitations of machines, for instance, the small amount of actual flying that can be done, at any rate continuously, in each twenty-four hours, and the reasons for this, ie fatigue of pilots and the limitations of petrol capacity, due to the necessity of high performance. Naval and military commanders should understand these limitations and the consequent necessity for making the best use of aircraft during the time they can be in the air; they must study the influence of these things upon themselves and their tactics. In the case of the Army, some of the effects are plain. Movements will have to be carried out by night to a much greater extent than in the past, in camps and billets comfort will often have to be sacrificed to security from aerial observation. Camouflage and smoke will have to be extensively employed. There is no better way, in fact it might almost be said that there is no real way, of learning all this except by personal experience. The officers who are now seconded under this scheme will, I hope, be the naval and military commanders of the future. The Royal Air Force could, if necessary, be officered in other ways, but the seconding scheme is essential from the point of view of the other Services.

To return for a moment to the short service scheme, this is admittedly an experiment. Doubts have been expressed as to whether it will prove attractive, but I would like to put two questions. Rightly administered on broad-minded and sensible lines, is it not possible that four years' service in the Royal Air Force between the ages of 19 and 24 might prove, in many cases, a substitute for those who cannot afford a University career? Again, is the latter age really too old to permit a man entering upon another career, taking into consideration that he will have gained some experience of handling men, the widened outlook which results from travel and a modicum at least of technical knowledge?

### **DISTRIBUTION**

Distribution affects very considerably the organization of the Service, and I said just now that



our problem is to meet present needs while keeping in view future requirements. Present needs are difficult to estimate in view of the almost universal unrest which causes the storm centre to shift from day to day. This inevitably makes for dispersion, which means inefficiency. In every case of military force, the evil of small detachments is recognized, but the material assistance that can be provided by small aerial units, together with the moral support they can render, is apt to obscure the fact that in an Air Service the inefficiency of small detachments is out of all proportion to their decrease in size. This is, of course, because the Air Force, being a highly technical Service, is dependent on adequate workshop facilities, good provision of spare parts and other technical supplies, as well as efficient supervision by the higher ranks. Air Commodore Brooke-Popham said in France, "An infantryman can still fight if he is deficient of his greatcoat or his water-bottle, but the loss of one nut or bolt can render an aeroplane useless and an encumbrance on the ground". The idea, therefore, is to concentrate in as few centres as possible, with power to move a suitable force quickly to any point required. The latter condition is the most difficult one to fulfil under present conditions. Movement by air is complicated for us by the fact that to get anywhere from the United Kingdom we must pass over one or more European countries where we cannot establish the necessary ground organization, while the route between Egypt and India cannot be used at present owing to Arab unrest.

Movement by sea is a slow business, unless aeroplane carriers are available, which is not the case at present. Shipping is difficult to obtain, and this is not to be wondered at when the bulk and weight of a squadron and its stores are remembered. A DH9A Squadron, for instance, required 383 cases of various sizes, the twelve largest being over 27 feet long, weighing 2¼ tons each, measuring 37½ shipping tons and requiring specially large hatches.

In spite of many difficulties, we have attempted to adhere to the principle of concentration, at present, I fear, not too effectually, but it is a principle which must be looked upon as fixed and must be striven for. One cannot look at a map of the world without seeing that Egypt is the centre of it from a Service aviation point of view. It also affords an ideal flying climate.

### **EMPLOYMENT**

When we come to consider the employment of the Royal Air Force, the first want we feel is that there is but little literature on the subject. There is no Royal Air Force Clausewitz or Hamley or Mahan, and we cannot learn entirely from naval and military history. I wish here to emphasize that, although there is no Clausewitz or Hamley or Mahan for the Royal Air Force, it must not be thought that there are no principles of tactics or strategy for the air. The principles are there. Principles are not opinions but facts, and are unchangeable through all the changing types of machines of war. But what is the trouble? It is that these principles have not been formulated by a Hamley or Mahan, and that they have not been accepted by the outside world. But the principles found in the last years of the war were found in the same way as they were found in the past. They were not created; facts made them, and they exist and are sound, if only we had a Hamley or a Mahan to express them to the outside world.

But at the same time the coming of the Air Service means that the application of the old principles of warfare must be carefully studied to see in what way the application of the principles should be modified. Only think what an effect the introduction of the submarine, making use of the third dimension to a very limited extent, has had on naval warfare. Time and space problems in aviation differ entirely from those which confront the naval or military commander. The moral factor is enormously enhanced in comparison with the material. There are no physical obstacles.

We have, however, the experience of war in many theatres to guide us, although it has not yet been committed to paper in any readily accessible form. The need of a Royal Air Force Staff College to analyse principles and create a school of thought is obvious. This could not be done at the Navy or Army Colleges, where, with all the goodwill in the world, the problem would inevitably be approached with pre-conceived ideas. In this connection I would like to emphasize once more the point I tried to make when discussing the provision of officers, namely, that the other Services must study and understand us, since, whatever the future developments of the Royal Air Force in its independent capacity, it is certain to be constantly employed in co-operation with both the Navy and Army, and can only be used to the best advantage if studied and understood.

In my opinion the most important principle of all, and the one perhaps least generally understood and appreciated, is that the work of the Air Service either on land or sea, in spite of its many and various aspects, can only achieve its greatest efficiency if regarded and carried out as a single co-ordinated effort. The work required, whether by the Navy or Army, is both tactical and strategical. It consists of reconnaissance and photography, of spotting for the artillery, and of offensive action against troops or ships, against personnel and material on lines of communication, depots and harbours. Independently of this work in intimate co-operation with the other Services the Air Force can attack the enemy's sources of supply and the moral of his civil population and government. It is, however, utterly wrong and very wasteful to look upon these as entirely separate duties. In the first place, to perform any of them with success it is necessary to gain predominance in the air, and the air is one element. With regard to this predominance in the air, I would like to point out that in a first-class war one side will gain predominance in one place and may temporarily lose it in another theatre; and we must face the fact that the main point is to have the predominance in that area which at the time is considered of primary importance, if it is not possible to gain it in all areas. Another fact which must be borne in mind is that the development of an aeroplane with greatly increased fighting capabilities may cause a temporary loss of the predominance in the air, and, until the civil population and the army consider that they have lost the war, it is never safe to consider that one side has gained predominance permanently. To revert to the co-operation of what is essentially air work with that for the other Services, it may be that the normal duty of some squadrons may be artillery work, of others the attack of the enemy's fighting troops, and of others the distant bombing of his factories, but it is essentially wasteful to divide the Air Force up into separate bodies for each duty. If, for instance, squadrons are only employed for long-

distance bombing, starting possibly from somewhere outside the army zone, their power is wasted when the weather is unsuitable, as it often must be. Tactically, too, the long-distance operations for reconnaissance and bombing are intimately connected with the closer work in immediate co-operation with the fighting troops. A short-distance bomb raid carried out by machines which can be temporarily spared from artillery work will inevitably bring the enemy's fighting machines into the air, and the long-distance raid or reconnaissance can be timed to start when the enemy's machines will be on the point of exhausting their petrol supply. Or, again, raids on the enemy's aerodromes can be carried out by fighting machines of comparatively short endurance just prior to the commencement of long-distance work. All bombing, even when carried out on very distant and apparently independent objectives, must be co-ordinated with the efforts that are being made by the land and sea forces, both as to the selection of objectives and as to the time at which the attacks shall take place. In my opinion, bombing, to be effective must be continuous, and it is from the accumulative moral effect of attacks carried out day after day for a week or ten days in succession that the best results may be expected. I may be wrong, but, in my opinion, the moral effect of bombing, especially night bombing, does not decrease with experience. I have often heard people say that, although the moral effect of bombing may be very great for the first two or three times, people soon get used to it. Personally, I believe the reverse is the case.

I have not mentioned surprise, which is just as important in the air as on the ground, though harder to obtain. For one thing, the need for exerting constant pressure conflicts with surprise, but, at the same time, surprise can be used with great effect in the air owing to the power of being able to switch off from one point of attack on to another, very often with hardly any movement of aerodromes; but in this connection I must emphasize the point that I am certain was proved, but was, I agree, contested by some, namely, that aerodromes must and will be pushed close up to the enemy to get the maximum out of air power for most of its work. I agree that long-range bombing can be carried out from farther back, but I must emphasize the fact that, in carrying it out from bases situated unnecessarily far away from the enemy's front, some of the power of the air will be lost.

There are, also, some negative principles, especially applicable to fighting on a smaller scale in undeveloped and extensive countries, which appears the most probable form of warfare we are likely to see for the next few years.

The power of aircraft to cover great distances at high speed, their instant readiness for action, their independence of physical communications, their indifference to obstacles and the inability of enemy unprovided with an Air Service to counter their attack combine to encourage their use more often than the occasion warrants. The power to go to war at will is apt in fact to result in a thoughtless application of that power. This is particularly so in the case of small detachments at the disposal of relatively junior commanders. Over-precipitate action is not in itself perhaps a serious mistake, it is in its probable lack of results that the danger lies, by robbing the Air Service of that moral effect which is its chief asset. Offensive action in the

air to bring a stubborn enemy to task must be followed up, and this cannot be done if it is commenced with insufficient forethought and inadequate resources. The capacity of the Air Service to deal a swift and unexpected blow may indeed succeed in stifling an outbreak in its early stages, but it is in the power to continue offensive action day by day, and, if necessary, week by week, that the assurance of ultimate success lies.

This article was transcribed by RAF CAPS from Air Marshal Sir Hugh Montague Trenchard, 'Aspects of Service Aviation', *The Army Quarterly*, Vol. 2, No. 1 (1921), pp. 10-21. (Crown Copyright).

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## MR. CHAMBERLAIN'S ANNOUNCEMENT

*HC Deb 16 March 1922 vol 151 cc2469-528*

*Mr. CHAMBERLAIN*

If the matters raised by my hon. and gallant Friends related solely to the Navy, I should not have thought it necessary to intervene. It would be left to the very competent hands of the Admiralty representatives in this House. But as my hon. and gallant Friend and my Noble Friend have raised a question which cannot be confined to a single Service, which even as they have raised it affects two Services, as also two Ministers at present, and in all its implications affects all the three fighting Services and the fighting Ministries, it seems proper that the statement of Government policy should be made by a Minister, not the head of one of these various Departments, but on behalf of the Government as a whole. It is certainly due to no lack of respect to other Gentlemen who intend to speak, but I think it is for the convenience of the House that I should take the earliest opportunity of stating what are our views.

I do not pretend tonight to lay down a policy for all time. The Air man has had, during and since the War, an extraordinarily rapid development, but he would be a bold man who would attempt as yet to define the ultimate potentialities of the Air Force, or the place which it will hold in warfare, whether over the sea or over the land. I can imagine, without an undue strain upon my imagination, developments which may change the whole course of war, and which may quite conceivably lead the world in a short time to think that limitation of battleships or limitation of armaments is of very little use unless the new weapon is subjected to limitation of a similar kind. Accordingly in what I say I am declaring the policy of His Majesty's Government as things stand, and it is essential that that policy should be known, because it is not fair to any Service, nor can the best be expected from any Service, unless they know clearly what is our present policy.

I think my hon. and gallant Friends who have moved and seconded the Amendment have said everything that could be said in support of their Amendment from the particular point of view from which they approach the question. It was essentially and admittedly a rather narrow point of view. They were considering the interests of the Naval Service, even to such an extent that my hon. and gallant Friend at one point in his speech made the point that it was not fair to take enterprising officers, or officers of ability, from the Naval Service for the service of the country in another sphere. I must remind my hon. and gallant Friend of what indeed he will readily admit—that we have a common country, and that all these Services exist and only exist for the defence of that common country. We must look at it, therefore, from a wider point of view than that taken by my hon. and gallant Friend. I think it will be not without service to the House in coming to a judgment on the subject if I give a review of what has been the history of this arm up to the present. Some knowledge of the experiments we have already tried will not only be serviceable, but will be necessary to the formation of a correct judgment as to what is best to be done at present.

In 1912 a scheme for the creation of a Royal Flying Corps was laid before Parliament. The theory on which that scheme was based was that the needs of the Navy and Army differed, and that each required a technically developed arm respectively for sea and land warfare, but that the foundation of the requirements of each Service was identical, namely, an adequate number of efficient flying men. The aeronautical service, therefore, was to be regarded as one, and was designated at that time the Royal Flying Corps. It consisted of a naval and a military wing, maintained at the expense and administered by the Admiralty and the War Office respectively. There was established further a single Royal Aircraft Factory, common to both Services, and a central Flying School, all graduating at this school to remain to specialise in naval and military flying. And, in order to secure co-ordination between the two branches of the Royal Flying Corps, an Air Committee was set up as a Sub-Committee of the Committee of Imperial Defence. My right hon. and gallant Friend (Major-General Seely) was the first Chairman of that Committee. But even from the first there was a tendency for the two Services to drift apart, and in 1914, before the outbreak of the War, the Naval Wing of the Royal Flying Corps had already changed its title to the Royal Naval Air Service. With the outbreak of hostilities, the separation of the two Services was virtually complete. That is the first stage in the history of this arm. When war broke out, the War Office were responsible for the aerial defence of the country. But all the squadrons of the Royal Flying Corps were engaged in France, and at Lord Kitchener's request the Admiralty took responsibility for home defence against aircraft, early in September, 1914. Therefore, for the first two-and-a-half years of the war expansion of the two branches of the Air Service was developed independently, both as to organisation and supply, by the naval and military authorities. What was the result?

My hon. and gallant Friend proudly boasts that the Navy got all the best machines and all the best officers. How did it get them? Was that distribution dictated by the country's needs at the moment, or by any consideration of the country's need? It was dictated by a fierce inter-departmental competition in the market, the resources of which at that time were wholly insufficient to supply the Services. It was a haphazard and, therefore, a dangerous arrangement. It was an accidental, and, therefore, could not be a considered, arrangement. It resulted in overlapping, waste of effort, one Department bidding against another in the distribution and application of the resources of the country, not according to a considered view of the country's needs, but according to the relative skill and relative quickness of the different Departments in getting hold of what resources were available. Those are the great and glorious days the hon. and gallant Gentleman (Sir Lt. Hall) holds up to us as providing that which his Amendment would provide, and which the present system does not.

Towards the end of 1915, so patent were the facts that there arose a strong movement for co-ordination, though it was not at the time proposed to combine the two Services, because it was clear that for a considerable time to come the great bulk of the work in the air would be of a definitely naval or military character. There was already a strong body of opinion in favour of an Air Minister, who should have entire control of the Services, and a status equal to that of the First Lord of the Admiralty or the Secretary of State for War.

The next step in co-ordination was that in February, 1916, a Joint War Air Committee was appointed to collaborate in and co-ordinate questions of supply and design of material for the Naval and Military Air Services. That was not without some relation to the state of things on which my hon. and gallant Friend (Sir E. Hall) so lovingly dwelt. The Committee failed to present an agreed Report, and it was brought to an abrupt end by the resignation of its chairman (Lord Derby). That committee was succeeded by an Air Board, constituted on 11<sup>th</sup> May, 1916, under the Presidency of Lord Curzon. This Board was free to discuss matters of general policy in relation to the Air, including combined operations of the Naval and Military Air Services, and to make recommendations to the Admiralty and the War Office thereon, as well as to discuss and make recommendations on the types of machine required for the two Air Services. If either Department declined to act upon its recommendations, the President had the right of reference to the War Committee. The Board was also charged with the task of organising and co-ordinating—observe how often the word co-ordinating comes in; I emphasise it because it means that the system was not working smoothly, that there was not one policy, but two policies, often clashing and constantly overlapping—the supply of material and to prevent competition between the two Departments. Finally, it was responsible for the co-ordination of research in aerial matters between all the bodies concerned.

After further experience—in November of that year, 1916—the Government, after prolonged inquiry, decided on further developments, providing for the Admiralty and War Office to concert their respective aerial policies in consultation with the Air Board, and to submit their programmes of aerial production to the Air Board, which was to decide as to the extent to which the Departmental programmes were to be approved, having regard to the rate of production, the needs of other Departments and the respective urgency of the demands. Every one of these steps was necessary because the profound lack of co-ordination and of a central control had landed the country in difficulties, and had failed to provide us with a satisfactory defence. A change of Government took place in December of that year, but the new Government confirmed the decision of its predecessor; and the new Air Board was actually constituted on 6<sup>th</sup> February, 1917. Up to the middle of 1917 all the aerial output was absorbed by the older Services. The supply could not overtake the demand. The constantly growing series of activities to which aircraft was successfully applied outstripped the progress of manufacture, and forced us to apply all the machinery available for a purely naval or purely military purpose, and the building up of a reserve for an independent aerial campaign against Germany was impossible. By July, 1917, however, the Ministry of Munitions had the supply position well in hand. A deadlock appeared to have been reached both in the naval and military theatres, and it seemed conceivable that a sustained air offensive might contribute more powerfully than any other factor towards undermining the moral of the enemy, and disposing him towards a reasonable peace.

It was perfectly clear, however, that unless there were a properly constituted Air General Staff, under an Air Board or under an Air Ministry, aviation, output, however large, would continue to be absorbed by the two Services already existing. Accordingly, in August, 1917, the

Government decided in favour of the principle of uniting the Air Services, and of providing a special branch for the systematic raiding of German munition centres. And an Air Organisation Committee was appointed, under the Chairmanship of General Smuts, to work out the details for an Air Ministry, an Air Council, and a combined Air Force. The Air Council was set up by Order in Council on the 21<sup>st</sup> December, 1917.

The independent Air Force was constituted on 8<sup>th</sup> June, 1918, under the then General, now Air Marshal, Sir Hugh Trenchard, who was placed directly under the Air Ministry, although for purely operation purposes General Trenchard was under the supreme command of Marshal Foch. It was during this latter period, subsequent to the formation of the Air Ministry, that our Air Services achieved their maximum successes in the War. Although in 1918 a serious shortage in the supply of high-powered engines curtailed that programme, the limited amount of raiding which took place had a considerable effect on the enemy. It is well known that if the War had lasted a little longer, the range of our bombing squadrons would have greatly increased, and would probably have included Berlin. From that time to this the Air Force has remained a separate force under the Air Ministry.

I hope the House does not think that I have taken too long with the summary, which I could not well have made shorter if I were to give the House all the events that led up to the formation of the Air Ministry and of a separate Air Board by an Act of Parliament on the decision of this House. It will be seen that it was war experience which led to the creation of the Air Ministry, and to the constitution of a separate homogeneous Air Force. It was not theory derived from speculation in the past, but it was practical experience, after trying a great many other experiments, and the deficiencies which they left, that proved to the Government in the pressure of the War, and for the successful conduct of the War, the necessity of creating the system now in force.

<http://hansard.millbanksystems.com/commons/1922/mar/16/mr-chamberlains-announcement>



**REPORT**

OF THE

**SUB-COMMITTEE OF THE COMMITTEE  
OF IMPERIAL DEFENCE**

ON

**NATIONAL AND IMPERIAL DEFENCE**

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*Presented to Parliament by Command of His Majesty.*

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CONTENTS

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	PAGE
Terms of Reference	1
Part –	
I    Introductory	2
II   Co-operation and Correlation between the Services from the Point of View of National and Imperial Defence	3
III  Co-ordination	7
IV   The Relations of the Navy and Air Force	16
V    The Relations of the Army and the Air Force	17
VI   The Strength of the Royal Air Force	18
VII  Summary of Conclusions and Recommendations	20
Annex  Report on a Sub-Committee on the Relations between the Navy and the Air Force in regard to Fleet Air Work	26

## **SUB-COMMITTEE APPOINTED BY THE PRIME MINISTER TO ENQUIRE INTO THE QUESTION OF NATIONAL AND IMPERIAL DEFENCE**

—  
*Terms of Reference.*

The Prime Minister desires that a Sub-Committee of the Committee of Imperial Defence, composed as follows:

The Marquess of Salisbury (*in the Chair*),  
The Chancellor of the Exchequer,  
The Secretary of State for Foreign Affairs,  
The Secretary of State for the Colonies,  
The Secretary of State for War,  
The Secretary of State for India,  
The First Lord of the Admiralty,  
Lord Balfour,  
Lord Weir,  
Sir Maurice Hankey (*Secretary*)

should meet to enquire into the co-operation and correlation between the Navy, Army and Air Force from the point of view of National and Imperial Defence generally, including the question of establishing some co-ordinating authority, whether by a Ministry of Defence, or otherwise, and, in particular, to deal with:

- (a) The relations of the Navy and Air Force, as regards the control of Fleet air work.
- (b) The corresponding relation between the Army and Air Force.
- (c) The standard to be aimed at for defining the strength of the Air Force for purposes of Home and Imperial Defence.

(Initialled) A.B.L.

2, WHITEHALL GARDENS, SW1.

*March 9, 1923.*

## PART I – INTRODUCTORY

1. An examination of the Terms of Reference to the Sub-Committee, which are given on the preceding page, reveals that the enquiry covers the following separate but closely connected groups of questions:

- (1) The co-operation and correlation between the three Services from the point of view of National and Imperial Defence (see Part II).
- (2) Their co-ordination, whether by means of a Ministry of Defence or otherwise (see Part III).
- (3) The relations of the Navy and Air Force as regards the control of Fleet air work (see Part IV).
- (4) The corresponding relations of the Army and Air Force (see Part V).
- (5) The standard to be aimed at for defining the strength of the Air Force for purposes of Home and Imperial Defence (see Part VI).

The whole of the above questions were dealt with, though not in the same order, by the Sub-Committee itself, which is hereafter referred to as the Committee or the Main Committee, with the one exception of item (3), which was remitted to a special Sub-Committee composed of:

Lord Balfour,  
Lord Peel, and  
Lord Weir.

2. Between the 15<sup>th</sup> March and the 31<sup>st</sup> October, the Main Committee has held 19 meetings, in addition to the 12 meetings of the special Sub-Committee, making a grand total of 31 meetings. The evidence of the Chiefs of Staff of the Fighting Services has been heard at great length on all the subjects discussed. The special Sub-Committee heard 16 witnesses. No less than 67 Memoranda were furnished to the Main Committee and 19 to the Sub-Committee, a total of 86 Memoranda. These include Memoranda on the question of a Ministry of Defence by the following authorities outside the Government service (see Part III):

Lord Midleton,  
Lord Haldane,  
Major-General Seely,  
Sir Eric Geddes,  
Field-Marshal Sir William Robertson,  
Lieut-General Sir Aylmer Hunter-Weston,

Major-General Sir J H Davidson,  
Major-General Sir Frederick Sykes.

In addition, the Committee derived useful information from a report called for by their special Sub-Committee from Lieutenant-General Sir Charles Harington, General Officer Commanding-in-Chief, Allied Forces in Occupation in Turkey.

On the 18<sup>th</sup> June, the Chairman, accompanied by the Secretary of State for India and Lord Weir, received a deputation from the Parliamentary Air Committee. The deputation attended primarily with the object of presenting views on the question of the relations of the Navy and Air Force, but touched on many of the related questions which were before the Committee.

## **PART II – CO-OPERATION AND CORRELATION BETWEEN THE THREE SERVICES FROM THE POINT OF VIEW OF NATIONAL AND IMPERIAL DEFENCE**

3. At the outset of the enquiry the Committee agreed that the term “National and Imperial Defence” could properly be defined as “Defence of Territory and Defence of Communications”. In order to establish the principles of co-operation and correlation between the three Services from the point of view of National and Imperial Defence, it was found necessary to make a careful examination of the responsibilities of the three Services in this matter.

### **PRE-WAR RESPONSIBILITIES OF THE FIGHTING SERVICES**

4. The main responsibilities of the Navy, as they were regarded before the war, were set forth in a Memorandum by the Committee of Imperial Defence on the Principles of Imperial Defence in 1910 in the following terms:

“The maintenance of sea supremacy has been assumed as the basis of the system of Imperial Defence against attack from over the sea. This is the determining factor in shaping the whole defensive policy of the Empire, and is fully recognised by the Admiralty, who have accepted the responsibility of protecting all British territory abroad against organised invasion from the sea”.

5. The Army was responsible for dealing not with organised invasion from the sea, which was a purely naval responsibility, but with such raiding forces as might elude the Fleet. This responsibility included the general military defence of the United Kingdom, as well as the provision of fixed defences and garrisons at Naval bases, Imperial coaling stations and defended ports at home and abroad (other than those in the Dominions and India). The Army was also responsible for the provision of reinforcements for India in certain eventualities, for the defence of certain land frontiers, and for the maintenance of an expeditionary force to meet the military needs of the Empire, wherever they might arise. This expeditionary force formed the nucleus on which were built up the huge armies employed in the Great War.

6. The Royal Air Force before the war was regarded as purely ancillary to the older Services, of which it formed a part. It emerged from the Great War as a separate Service under a separate Ministry. It is essential, therefore, to the co-ordination of Imperial Defence that the responsibilities of the new Service should be very clearly defined and correlated with those of the sister Services.

### **THE POST-WAR RESPONSIBILITIES OF THE FIGHTING SERVICES**

7. Considerable progress had been made before the commencement of the present enquiry in the direction of defining the post-war responsibilities of the three fighting Services. The enquiry by Mr Bonar Law's Sub-Committee on the Capital Ship (March, 1921), which heard much evidence as to the potentialities of the air arm at sea, had resulted in the retention of the capital ship as the basis of our sea power. The scope of the enquiry, however, did not extend to a definition of the respective responsibilities of the Navy and Air Force in regard to operations at sea.

8. The Committee of Imperial Defence had also approved an arrangement made between the War Office and Air Ministry in regard to the responsibility for anti-aircraft defence, under which the Air Force was to be responsible for the control of anti-aircraft defences, the War Office providing the necessary personnel and matériel on the ground.

9. Since the war, the Royal Air Force has been given the responsibility for the security of the mandated territory of Iraq and Palestine.

10. In addition, on the 16<sup>th</sup> March, 1922, the following principles in regard to the co-operation of the three Services were announced in the House of Commons:

"(i) That the Air Force must be autonomous in matters of administration and education;

"(ii) That in case of defence against air raids, the Army and Navy must play a secondary role;

"(iii) That in the case of military operations by land or naval operations by sea, the Air Force should be in strict subordination to the General or Admiral in supreme command; and lastly,

"(iv) That in other cases (such as the protection of commerce, and attack on enemy harbours and inland towns) the relations between the Air Force and the other Services should be regarded rather as a matter of co-operation than that of the strict subordination which is necessary when aeroplanes are acting merely as auxiliaries to the other arms".  
(Parliamentary Debates, March 16, 1922).

11. In order to ascertain whether the above allocation of responsibilities between the three Services required further readjustment, the Committee felt it necessary to make investigations into the strategical basis of our system of National and Imperial Defence.

12. The most important result of this part of the enquiry was to confirm the vital need for a great increase in our air forces, which had been established in previous enquiries. It soon became clear, not only that the Air Force has an important part to play in the defence of our home territory against sea-borne attack as well as of maritime communications in waters adjacent to the British Islands, but that to provide protection against aerial attack a large aerial home Defence Force was required. The question of the size of this force formed the subject of an interim report to the Cabinet, and is dealt with in Part VI of this Report. The adoption by the Government of the Committee's recommendations on this subject added to the responsibilities of the Royal Air Force. In other respects, however, it did not bear upon the problem of co-operation and correlation between the three Services, which depends on those aspects of National and Imperial Defence where strategical or tactical co-operation between two or more Services is required. The Committee therefore enquired into these questions in considerable detail.

13. So far as the protection of territory and communications in the wider oceans is concerned, the question of a readjustment of responsibilities between the Service Departments did not arise. Although certain types of aeroplanes have a radius of action up to 500-600 miles, and others up to 300-400 miles, neither the British nor any other Air Service is yet equipped with aeroplanes whose normal effective radius of action exceeds about 200 miles, and beyond that distance only sea-borne aircraft have for the present to be considered. But it must be remembered that the types of aeroplanes now in service use continue steadily to be replaced by machines of greater power and wider radius of action. Whatever the arrangements for the organisation and administration of the sea-borne air arm may be – a subject dealt with in Part IV – there is no dispute that its operations must be controlled and directed by the same authority that controls and directs the other operations of the Fleet, namely, the Admiralty. The responsibility of the Admiralty, therefore, for the protection of territory and communications in great oceans was not challenged.

14. In the narrow seas, however, Imperial territory and communications are evidently liable to attack, not only by surface craft and submarines, but also by aircraft, in so far as they are within the radius of action of aircraft operating from foreign territory. The Committee therefore found it necessary to enquire how far the power of the Navy to protect territory and communications in the narrow seas is affected by modern developments of naval and aerial warfare.

15. So far as territory is concerned, it is satisfactory to be able to record that the three General Staffs are agreed that in existing conditions the liability of the United Kingdom to sea-borne invasion as compared with the years preceding the war is negligible.

16. Another matter on which some measure of agreement was found to exist between the Naval Staff and the Air Staff is in regard to the increased risks to communications in those portions of the narrow seas which are exposed to attack by aircraft operating from shore bases, such as the English Channel and the Mediterranean. Both Staffs admit that the advent of

aircraft has increased the danger to communications in such waters, though they differ as to the extent of this danger.

17. Apart from this, when the Committee came to examine the question of the protection of maritime communications in the narrow seas, they did not find the same measure of agreement between the Staffs which they had met with in regard to the protection of the territory of the Mother country. On the contrary, this part of the enquiry revealed wide differences of professional opinion between the Naval Staff and the Air Staff, both in matters of principle and detail, on such questions as the power of a fleet to operate within effective striking range of hostile aircraft, the effectiveness of attacks on a fleet by aircraft and the power of a fleet to defend itself against such attacks, the defence of naval bases against aircraft attack and the protection of certain portions of our trade routes. The more closely the enquiry was pressed in matters of detail the wider these differences appeared.

In the course of this enquiry frequent appeals were made to the experience of the war in support of both sides of the various controversies, and the Committee obtained independent historical evidence from the Historical Section. The conditions of the late war, however, are not necessarily applicable to future wars, particularly in view of the potentialities of development in aircraft.

In the light of present knowledge the Committee did not feel competent to form an opinion on the difficult technical questions on which the General Staffs take different views. They felt that, apart from the provision of an adequate Air Defence Force, which is dealt with in Part VI of this Report, the most useful service they could render at the moment was to devise machinery for securing the smooth co-operation of the three Services, notwithstanding the differences of professional opinion, and for gradually building up a doctrine common to the three Services. This part of the terms of reference is dealt with in Part III of this Report. While the Committee do not put forward any suggestion to change the existing division of responsibility between the three Services as described in paragraph 10, they recommend that the responsibilities of the Navy and the Air Force in regard to the protection of communications in the narrow seas should form the subject of further investigation. They also consider that experiment in respect of the problems of air attack and defence at sea should be given due weight in Admiralty and Air Ministry programmes, in order to secure on the basis of practical experience the fullest measure of unity of professional opinion.

18. Before leaving the question of the co-operation and correlation between the three Services, the Committee desire to draw attention to the views of Lieutenant-General Sir Charles Harington on the subject, which were formed as the result of his experience in command of the Allied Forces of Occupation at Constantinople. These views illustrate and confirm the soundness of the principles approved by the Cabinet in March, 1922 (paragraph 10). General Harington suggests "that the principle should be laid down that the 'predominant partner' co-ordinates and the other Services should conform in exactly the same loyal way in



which Admirals de Robeck and Brock – both officers senior to me – have helped me”. While the Committee are not prepared to recommend without further technical examination that this principle should be adopted in the settlement of all military problems in which more than one Service is concerned, they consider that it is worthy of the most serious consideration and should be examined by the new Committee of Chiefs of Staff referred to later in this Report (paragraph 36).

## CONCLUSIONS

19. The conclusions of the Committee in regard to this part of the Report may be summed up as follows:

- (a) While the Committee do not put forward any suggestion to change the existing division of responsibility between the three Services as described in paragraph 10, they recommend that the responsibilities of the Navy and the Air Force in regard to the protection of communications in the narrow seas should form the subject of further investigation. The Committee further recommend that experiment in respect of the problems of air attack and defence at sea should be given due weight in Admiralty and Air Ministry programmes, in order to secure on the basis of practical experience the fullest measure of unity of professional opinion.
- (b) The principal need, as regards co-operation and correlation, is close co-ordination, which is dealt with in Part III of this Report.
- (c) The principle that in all belligerent operations in which more than one Service is concerned one of the three Services should be selected as a “predominant partner” to co-ordinate the other Services should be examined by the Committee of Chiefs of Staff.
- (d) While the menace of attack from the air has greatly increased and necessitates a strong Home Defence Air Force as proposed in Part VI of this Report, the three Staffs are agreed that in existing conditions the liability of the country to sea-borne invasion has considerably diminished as compared with pre-war standards.

## PART III – CO-ORDINATION

### A MINISTRY OF DEFENCE

20. Since the war the most widely-discussed proposal for overcoming our defects in co-ordination is a Ministry of Defence, which has been put forward repeatedly both in Parliament and in the Press. In 1922 Sir Eric Geddes’ Committee on National Expenditure recommended “the creation of a Co-ordinating Authority or a Ministry of Defence responsible for seeing that each force plays its part and is allotted appropriate responsibility for carrying out various functions”. A Cabinet Committee, which reviewed the Geddes Report, endorsed the above recommendation, but, while admitting the creation of a Ministry of Defence may be the

ultimate solution of the problem, did "not consider that the present time is appropriate for the fusion of the administration of the three Services under one Minister". They recommended instead "that the Committee of Imperial Defence should be in constant session all the year round in order to consider and advise on matter of policy affecting the three fighting Services". On the 21<sup>st</sup> March, 1922, the late Secretary of State for the Colonies (Mr Churchill), during a debate in the House of Commons, made an important speech in favour of a Ministry of Defence as the ultimate solution of our problems of co-ordination, though he admitted that the time for accomplishing this had not arrived. The gist is contained in the final passages:

"No solution of a harmonious or symmetrical character will be achieved in the co-ordination of the Services except through the agency of a Ministry of Defence, but it is not possible to create such a body at the present time, nor will it be possible for a considerable time. In the interim the only steps which are open to us are to create machinery for pooling the administrative functions of the three arms and to create a common staff brain, from whose exertions in the future the responsible advice given to the Cabinet of the day in regard to matters of defence must and can only effectively originate".

21. The interim steps referred to by Mr Churchill were the appointment of a Committee, under Sir Alfred Mond, whose place was later taken by Lord Weir, to consider the amalgamation of the common Services of the Navy, Army and Air Force, and, later, of a Sub-Committee of the Committee of Imperial Defence under the Minister of Education, on the question of establishing a joint Staff College for the three Services. Lord Weir's Committee reported that "the amalgamation of the common services would only be practicable if it formed part of a comprehensive scheme of reorganisation which provided for the establishment of a Ministry to control a defence force in which the identity of the Navy, Army and Air Force had been merged". They recommended, however, a complete scheme for co-ordinating the common services, which has since been adopted by the Cabinet and is being put in operation. The report of Mr Wood's Committee, proposing a scheme for the formation of a Joint Staff College, has been circulated to this Committee and is now before the Committee of Imperial Defence.

22. In view of the uncertainty as to what is meant by the term "Ministry of Defence", the Committee thought it desirable to approach some of those who have advocated this solution to the problem of co-ordination, as well as other outside authorities, in order to ascertain their views on the subject. Among the outside experts who were good enough to give the Committee the benefit of their experience on this subject, there were only two advocates of a Ministry of Defence, and each of them contemplated its formation by different methods. Sir Eric Geddes proposed to achieve co-ordination of the Services by the creation of a single Secretary of State for "Warfare" or "Defence", with responsibility for the three Services. Under the Secretary of State he would put the Admiralty, War Office and Air Ministry, each of which would be under a Sub-Minister. These Sub-Ministers should not be eligible for Cabinet rank, as that would make for departmental competition between them. Among themselves they would be equal in importance and would bear the same relation to the Secretary of State

as a Parliamentary Under Secretary holds to his Ministerial chief to-day. The Sub-Ministers would preside respectively at the Board of Admiralty, Army Council and Air Council, which would remain more or less as at present. The Secretary of State would have a very small office, containing a Statistical Accountant and a Council consisting of the Sub-Ministers of the Navy, Army and Air Force, with two members each from the Board of Admiralty, Army Council and Air Council. The Secretary of State would have to obtain the endorsement of the Committee of Imperial Defence "before his estimates and his provisions were taken to the Cabinet". Sir Eric Geddes added proposals for organisation after the outbreak of war, which it is unnecessary to enter into here.

23. Major-General Sir Frederick Sykes advocated a Ministry of Defence by means of a form of fusion or amalgamation of the existing Service departments. He considered that "the real solution lies in definite, unified, supreme control by a Defence Ministry, with the Prime Minister as independent Chairman, and a joint Staff which would really think out defence as a whole". Failing this policy of perfection, General Sykes would "support every measure which will pave the way for such control". He would achieve this by "the real strengthening of the mandate and constitution of the Committee of Imperial Defence. In his view, the Committee should frame estimates for defence for the three Services, and a special section should be formed for the specific purpose of jointly framing and supervising major schemes and measures of defence. As many Services as possible should be unified. There should be a joint boy-mechanic training, a joint Cadet College, a joint Staff course, &c. The question of the amalgamation of similar Services should be reopened".

24. The proposals of the remaining outside authorities had many points in common. They all laid stress on the need for co-ordination. They all proposed that this co-ordination should be effected through the Committee of Imperial Defence. They nearly all admitted, either directly or by implication, that the work of directing the Committee was too heavy for the Prime Minister to undertake single-handed and that he should have the assistance of a Minister, as Vice-Chairman, who could give most of his time to this task. Several laid stress on the importance of securing the co-operation of the Dominions in the Committee of Imperial Defence.

25. In detail, the proposals varied considerably. Lord Midleton and Lord Haldane did not indicate any particular developments of the existing Committee of Imperial Defence, the case for which was summed up by the latter in the following terms:

"The Committee of Imperial Defence is an organisation that has nothing quite resembling it in any other country. The reason is that no other nation resembles the British Empire, with its Island centre for a number of countries, some of which are self-governing, and all of which are united by unwritten and elastic obligations. We have evolved this Committee to meet Dominion as well as Home necessities, and to meet the former it is far better adapted than any special Ministry of Defence could be. ... But a still more distinctive

feature of the existing organisation is that it has been evolved to meet a situation where sea power comes first and where the other two Services are, in some measure, merely its adjuncts, however great and important. That is why the scope of the Committee must be sufficiently catholic to admit of the co-operation within it of distinguished experts at the head of very different Services”.

The above extract was specifically endorsed by the Chief of the Imperial General Staff.

26. Major-General Seely, Field-Marshal Sir William Robertson, Major-General Sir J H Davidson, MP, and Lieut-General Sir Aylmer Hunter-Weston, MP, all advocated definite extensions of the Committee of Imperial Defence organisation, which resembled one another in principle while differing in detail.

27. General Seely's principal proposal was “that a Minister must be appointed, under whatever title be deemed expedient, whose sole duty it will be to secure the co-operation of the three Services, reporting fully to the Prime Minister and the Cabinet. I suggest that he should be styled ‘Minister of Defence and Vice-President of the Committee of Imperial Defence’”. General Seely strongly advocated the retention of the civilian heads of the three Service Departments in their existing status as members of the Cabinet. “Great Government Offices”, he writes, “cannot possibly be controlled efficiently by any man without Cabinet rank. I am sure that anyone who has had experience of Great Government Offices would agree with this view”.

28. Field-Marshal Sir William Robertson's proposals are summarised in his Memorandum as follows:

“(a) Neither a Ministry of Defence nor a combined Imperial General Staff will provide, or help to provide, the co-ordinating authority we require.

“(b) Controlling authority, in its true meaning, must be vested in the supreme executive power, the Cabinet, and it cannot be placed elsewhere.

“(c) Experience has shown that we cannot conduct a great war through the medium of a Cabinet of twenty or more Ministers, and that the duty is best assigned to a small body of Ministers having no other duties to perform. As this organisation is not feasible in peace time, its place should be taken by a Council of Imperial Defence, which will form a nucleus of war.

“(d) In order to furnish this Council with the professional assistance needed, there should be, working under it, a Technical Committee, charged with the investigation of all operative and administrative questions, and with presenting them, with recommendations thereon, to the Council for consideration and approval.

"(e) In time of war a Minister of Supply and a Minister of Manpower should be appointed and a War Cabinet should be formed. The latter, assisted and advised by the three Chiefs of Staff, would take over the duties in (c) and (d).

"(f) Every effort should be made to enlist the co-operation of the Dominions, both as to State policy and war preparations".

29. The following details of Sir William Robertson's plan may be added. The Committee would be composed very much as heretofore. In addition:

"The Prime Minister would, of course, be President. It would be the duty of the three Chiefs of Staff to advise the Council on professional matters, the advice to be taken or left as Ministers may think best, but to be heard. These officers should, as was the War Cabinet system, attend the Council in an advisory capacity and not as members. I believe this procedure to be the best for both parties. Following the pre-war constitution of the Committee of Imperial Defence, a senior officer from each of the three Services should be included in the Council as members. Their experience would enable them to give valuable help both to Ministers and the Chiefs of Staff, and they would be specially useful to the former in cases where the latter might feel compelled to differ from each other in regard to professional matters upon which they were called upon to advise. If these three officers (unemployed) are not included in the Council, Ministers will have to decide for themselves professional questions about which their knowledge must necessarily be imperfect, and the soundness of their decisions will, therefore, remain largely a matter of chance".

30. Major General Sir J H Davidson, MP, referred the Committee to an article published by him in the Army Quarterly of January, 1921, in which he advocated a plan presented to the Government by the Parliamentary Army Committee in June, 1920, the essentials of which are contained in the following extract from a Minute addressed by the Committee to the Prime Minister (Mr Lloyd George):

"4. It is possible that the most practicable scheme under present conditions would be to create immediately a Standing Joint Defence Sub-Committee of the Committee of Imperial Defence, formed of the First Sea Lord, the CIGS, and the CAS, or officers appointed or deputed by them, together with representatives of the Self-Governing Dominions, of India, and of other Departments concerned.

"5. Whatever be the Advisory Body formed, the members of the Army Committee in the House of Commons are of opinion that it is essential:

"(I) That it should meet regularly and frequently.

"(II) That it should have a specially selected and permanent Secretariat to assist in its work, and to record its proceedings and conclusions.

“(III) That the Chairman of this Sub-Committee should be a Minister not in charge of one of the Great Departments of State, except on those occasions when the Prime Minister is himself present.

“6. Among the duties of the Standing Joint Defence Sub-Committee of the CID, should be included the following:

“To examine:

“(a) The Imperial Organisation for Defence.

“(b) The Estimates, in draft, with a view to ensuring due economy and efficiency.

“(c) Our Imperial responsibilities from the point of view of Defence.

“(d) The effect of scientific progress and inventions.

“(e) The problems of Strategy and Logistics.

“(f) The proposals of the League of Nations”.

31. Lieut-General Sir Aylmer Hunter-Weston, MP, was a signatory of the Minute of the Parliamentary Army Committee referred to above, and his Memorandum gives a carefully thought-out scheme for applying the principles propounded therein. He recommended the retention of the present Committee of Imperial Defence with the title of Council of Imperial Defence, under the Chairmanship of the Prime Minister, with the Lord President of the Council as Vice-Chairman. In addition, he proposed the establishment of a Board of Defence, composed of the Ministerial and professional heads of the three Fighting Services, with a representative of the Treasury, meeting under the Chairmanship of the Vice-Chairman of the Council of Defence, who might with advantage be called Minister of Defence. The Chairman should have power of initiative in all matters of strategy, policy, and finance affecting more than one Service. The duties proposed for this “Board of Defence” under its Chairman are similar in character to those suggested by the Parliamentary Army Committee for the Standing Joint Defence Sub-Committee, but worked out in greater detail.

32. An essential part of General Hunter-Weston’s plan was that the Council of Imperial Defence should function actively and regularly, and that the Dominions and India should be represented at its meetings. He advocated that, as no one man can fulfil the functions of Chief of the General War Staff of our Defence Forces, the office should be put in commission and carried out by the professional heads of the three Services sitting together in Committee.

33. In the view of the Committee the proposals for a Minister of Defence are effectually disposed of in the following passage from Lord Haldane's Memorandum:

"In the way of the institution of a general Minister of Defence there are obvious difficulties. If established with anything like adequate power of control, such a Minister would be bound to interfere in administration, just as the First Lord of the Admiralty and the Secretary of State for War are bound to be ready to do so, by reason of their direct responsibility for it to Parliament. The Minister of Defence would, indeed, be looked to as responsible not only for efficiency, but for economy. He would therefore require a considerable and varied staff, whose duties would overlap and duplicate those of existing departmental staffs. What would be the relation of this new staff to the staffs under the three Ministers at present responsible to Parliament, and what would be the constitutional and practical relationship of the new Minister of Defence to the three older Ministers? The former would, I think, be in considerable danger of proving himself to be either too great or too little. He would be too little if the departmental staffs developed to their full inherent capacity and were working out general military policy in conference. In such a case the Prime Minister would be the only person possessed of authority sufficient to enable him to intervene effectively.

"With the Cabinet behind him, he is in a position to exercise influence as no Minister of Defence could.

"If, indeed, the Minister of Defence were to make himself, on the other hand, very powerful by equipping himself with an effective administrative organisation sufficient for direct control of the three Services, he might well become a rival of the Prime Minister himself. The difficulty does not exhaust itself here. The first Government that made such an appointment would probably make it with great care and with sufficient regard to necessary qualifications in the occupant of the position. But if a subsequent Government came in that were not deeply interested in defence, the temptation would be strong to give the office to an influential politician distinguished, perhaps, mainly for debating gifts".

34. To these objections may be added the following, urged by Lord Midleton:

"It is surely beyond human power for one man to get his mind impregnated with the pros and cons of large changes in three totally distinct Services within the limited time for which Parliamentary Chiefs hold office. The fact that there have been eleven changes in the Office of Secretary of State for War in the last eleven years has been very prejudicial to the economy and possibly to the efficiency of the Army. First Lords of the Admiralty attach the greatest importance to their official tours for elucidating by contact with Naval Officers not employed at the Admiralty the problems submitted to them. The overworked Minister of Defence would be quite unable to find time for such excursions.

"A further difficulty would be the Parliamentary one, since it is often necessary for the Minister in charge to give a pledge during a debate as to the course which his Department will take. Not infrequently it has happened that by far the most efficient Head of the Defence Committee would be a Member of the House of Lords; . . . . . If the supreme executive responsibility of all three Departments were to be massed in one Minister it would be imperative that he should sit in the House of Commons, and attendance in the House of Commons would add immeasurably to the already multifarious duties imposed on him".

35. The closely-connected question of a combined Staff is disposed of equally effectively by Field-Marshal Sir William Robertson in the following terms:

"The formation of a combined Imperial General Staff, consisting of Military, Naval and Air Force officers, working under a Chief (a soldier, or sailor, or airman) responsible to the Government, or to a Minister of Defence, for working out plans of operations on land, on sea, and in the air, and, according to some, endowed with 'financial and strategical powers', is even more fantastical as well as dreadfully mischievous. An important cornerstone in military organisation is that he who makes a plan ought to be responsible for its execution and stake his reputation upon it. Consequently, the Chief of this proposed combined Staff must draft and issue the orders of the Government to all the Generals and Admirals and Air Officers entrusted with the control of the armies, the fleets and the air forces. The confusion that would arise in the three War Departments and at the front, if any such ill-considered system as this were adopted, is quite inconceivable. Further, this Staff would directly interpose between the three Chiefs of Staff and the Cabinet, and there could be no more pernicious system than that".

36. The Committee considered these criticisms to be overwhelming as against all proposals for setting up a Ministry of Defence or any Minister of Defence with authority overriding that of the Ministers at the head of the Service Departments, or a combined Staff. After careful consideration of the various proposals laid before them, after a full discussion with the Chiefs of Staff of the three Fighting Services, and after a close examination of the constitution and the present methods of work of the Committee of Imperial Defence, the Committee reached the following conclusions, which were adopted by the Government and presented to Parliament in August last (Cmd 1938):

"(1) It is undesirable and impracticable to supersede the Ministerial heads of the three Fighting Services by making them subordinates of a Minister of Defence; the alternative plan for an amalgamation of the three Service Departments is equally impracticable.

"(2) On the other hand, the existing system of co-ordination by the Committee of Imperial Defence is not sufficient to secure full initiative and responsibility for defence as a whole and requires to be defined and strengthened.



"(3) Under the existing system the Committee of Imperial Defence, an advisory and consultative body, enquires into and makes recommendations in regard to the issues of defence policy and organisation which are brought before it. The power of initiative lies with the Government Departments and with the Prime Minister.

"(4) This system, though invaluable up to a point, does not make any authority, except the Prime Minister, who can only devote a small part of his time and attention to defence questions, directly responsible for the initiation of a consistent line of policy directing the common action of the three or any two of the three Services, taking into account of the reactions of the three Services upon one another.

"(5) While, therefore, the existing system of departmental initiative will continue, the responsibility for the wider initiative referred to above in paragraph (4) will also rest with the Chairman of the Committee of Imperial Defence acting under the general direction of the Committee of Imperial Defence and with the assistance of the three Chiefs of Staff.

"(6) In accordance with the terms of the Treasury Minute of the 4<sup>th</sup> May, 1904, constituting the Committee of Imperial Defence in its present form, the Committee of Imperial Defence will continue to consist of the Prime Minister, as President, with such other members as, having regard to the nature of the subject to be discussed, he may from time to time summon to assist him. In pursuance of a decision by the Prime Minister, the Committee places on record that the following should be members:

"The Chairman (Deputy to the Prime Minister).

"The Secretary of State for War.

"The Secretary of State for Air.

"The First Lord of the Admiralty.

"The Chancellor of the Exchequer, or the Financial Secretary.

"The Secretary of State for Foreign Affairs.

"The Secretary of State for the Colonies.

"The Secretary of State for India.

"The Chiefs of Staff of the three Fighting Services.

"The Permanent Secretary to the Treasury as head of the Civil Service.

"In addition to these, other British or Dominion Ministers of the Crown and other officials, or persons having special qualifications, will be summoned as members by the President according to the nature of the business.

"(7) The functions of the Chairman of the Committee of Imperial Defence will be:

"(i) To preside over the Committee of Imperial Defence in the absence of the Prime Minister.

“(ii) To report to the Prime Minister (when he himself has not presided) and to the Cabinet the recommendations of the Committee of Imperial Defence.

“(iii) In matters of detail, to interpret the decisions of the Prime Minister and the Cabinet thereupon to the Departments concerned.

“(iv) Assisted by the three Chiefs of Staff, as laid down in paragraph (5) above, to keep the defence situation as a whole constantly under review so as to ensure that defence preparations and plans and the expenditure thereupon are co-ordinated and framed to meet policy, that full information as to the changing naval, military and air situation may always be available to the Committee of Imperial Defence and that resolutions as to the requisite action thereupon may be submitted for its consideration.

“(8) In addition to the functions of the Chiefs of Staff as advisers on questions of sea, land or air policy respectively, to their own Board or Council, each of the three Chiefs of Staff will have an individual and collective responsibility for advising on defence policy as a whole, the three constituting, as it were, a Super-Chief of a War Staff in Commission. In carrying out this function they will meet together for the discussion of questions which affect their joint responsibilities.

“(9) Questions relating to co-ordination of expenditure may be entertained by the Committee of Imperial Defence when referred to it by the Cabinet. The Committee (subject to any directions by the Cabinet) will consider such questions in the light of the general defence policy of the Government, and of the strategical plans drawn up to give effect to that policy in time of war.

“(10) The Secretariat of the Committee of Imperial Defence will continue to act as liaison officers between the Chairman of the Committee and the Service Departments. The staff of the Committee will be strengthened by the addition of an Assistant Secretary to be nominated by the Prime Minister on the recommendation of the Secretary of State for Air, whose status will be identical with that of the three existing Assistant Secretaries nominated by the Prime Minister on the recommendation of the Secretary of State for War, the Secretary of State for India, and the First Lord of the Admiralty.

“(11) The Standing Defence Sub-Committee is suppressed, and its past proceedings will be merged into those of the Committee of Imperial Defence”.

The above recommendations are now in operation.

## **THE REPRESENTATION OF THE DOMINIONS AND INDIA**

37. There is one point in the above conclusions on which the Committee, in this their final Report, would like to add a few observations, namely, regarding the provision in Conclusion (6)

for the extension of invitations to representatives of the Dominions to attend as members of the Committee. From the earliest days of the Committee of Imperial Defence, representatives of the Dominions have from time to time been invited to take part in its proceedings, and the Secretary of State for India has for many years attended its meetings.

38. The subject of Dominion representative was discussed at the Committee in May, 1911, when all the Dominions were represented and the following resolution was passed:

“That one or more representatives appointed by the respective Governments of the Dominions should be invited to attend meetings of the Committee of Imperial Defence, when questions of naval and military defence affecting the Overseas Dominions are under consideration”.

39. Before the war every effort was made to give effect to the above resolution by taking advantage of the presence in this country of representatives of the Dominions, to invite them, with the concurrence of their own Governments, to the meetings of the Committee and of its Sub-Committees. Since the war no such opportunities have offered, though in fact many of the meetings of the Imperial Conference, 1921, were analogous to meetings of the Committee of Imperial Defence; those present included the regular members of the Committee, the subjects were mainly those which naturally fall to the Committee, and the secretarial work was supplied by the Committee in co-operation with the Colonial Office, the Dominions and India.\* Moreover, both before and since the war the Dominions and India have been furnished with many of the Reports of the committee of Imperial Defence.

#### **PART IV – THE RELATIONS OF THE NAVY AND THE AIR FORCE**

40. The question of the relations of the Navy and the Air Force in regard to fleet air work had already been the subject of acute and prolonged controversy, and was recognised to require investigation of a detailed character. As already mentioned, therefore, this question was referred to a special Sub-Committee composed of:

Lord Balfour.  
Lord Peel  
Lord Weir.

Their Report, together with the remarks of the main Committee thereon, were adopted by the Government, and presented to Parliament last August. (Cmd 1938). These Reports are annexed to this Report for convenience of reference.

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\* *Note by the Chairman* – This is equally true of the Imperial Conference, 1923. The question of defence was discussed by the plenary conference at great length, and in similar conditions to those mentioned in this Report. In addition, important discussions took place at the Admiralty and Air Ministry. (See the Official Summary of the proceedings of the Imperial Conference, Cmd 1987).

## PART V – THE RELATIONS OF THE ARMY AND THE AIR FORCE

41. The question of the relations of the Army and the Air Force formed the subject of an Interim Report by the Chairman to the Cabinet, dated 30<sup>th</sup> June, 1923, the effective portions of which are contained in the following extracts:

“The Secretary of State for War recently circulated to the Sub-Committee a Memorandum by the General Staff on this question ... ..

“The views of the General Staff are contained in Part I of that Memorandum, and are summarised on p4 in the following terms:

“(a) The air units, which are an integral part of the Fleet and Air formations (including probably lighter-than-air formations) capable of co-operating with the Fleet on the high seas, to be under the Admiralty.

“(b) The air units, which are an integral part of Army formations and Air formations required to co-operate with the Army (including Air Forces allotted to the general pool for war and to home defence), to be under the War Office.

“(c) Civil aviation, research, experiment and supply to be under the Air Ministry, which, relieved of all responsibility for the employment of Air Forces in peace and war, could be much reduced.

“Each of the three Departments (Naval, Military and Civil) would estimate for its own air requirements, the whole being co-ordinated by the Committee of Imperial Defence before presentation to Parliament’.

“The view of the Sub-Committee was to the effect that the above distribution of responsibility was unsatisfactory, and that if the Air Forces of this country were to be developed to the utmost it was necessary to retain the Royal Air Force as a separate Service, and that progress would not be so great if the War Office proposals were adopted. The conclusion of the Sub-Committee was:

“That they were unable to accept the views expressed by the General Staff in Part I of their Paper”.

The Secretary of State for War, while strongly supporting the General Staff solution, expressed the readiness of the War Office to co-operate in furthering the scheme as accepted.

The Cabinet adopted the above Report on the 9<sup>th</sup> July and confirmed the present arrangement under which the Royal Air Force is administered by the Air Ministry as a separate Department of State.

## PART VI – THE STRENGTH OF THE ROYAL AIR FORCE

42. The last item in the Terms of Reference is the standard to be aimed at for defining the strength of the Air Force for purposes of Home and Imperial Defence.

43. This question was dealt with in an Interim Report, dated the 12<sup>th</sup> June, 1923.

This Report was approved by the Cabinet on the 20<sup>th</sup> June, 1923, and the following announcement of the Government's policy based thereon was made in both Houses of Parliament on the same date:

"The Government have come to the following conclusions with reference to British Air power:

"In addition to meeting the essential Air power requirements of the Navy, Army, Indian and Overseas commitments, British Air power must include a Home Defence Air Force of sufficient strength adequately to protect us against Air attack by the strongest Air Force within striking distance of this country.

"It should be organised in part on a regular and permanent military basis, and in part on a territorial or reserve basis, but so arranged as to ensure that sufficient strength will be immediately available for purposes of defence. The fullest possible use to be made of civilian labour and facilities.

"In the first instance, the Home Defence Force should consist of 52 squadrons, to be created with as little delay as possible, and the Secretary of State for Air has been instructed forthwith to take the preliminary steps for carrying this decision into effect. The result of this proposal will be to add 34 squadrons to the authorised strength of the Royal Air Force. The details of the organisation will be arranged with a view to the possibility of subsequent expansion, but before any further development is put in hand the question should be re-examined in the light of the then Air strength of foreign Powers.

"In conformity with our obligation under the Covenant of the League of Nations, His Majesty's Government would gladly co-operate with other Governments in limiting the strength of air armaments on lines similar to the Treaty of Washington in the case of the Navy, and any such arrangements, it is needless to say, would govern the policy of air expansion set out in this statement". (Parliamentary Debates, 26<sup>th</sup> June, 1923).

44. In order to arrive at the total standard of strength for the Royal Air Force, it is necessary to add to the forces for Home Defence the strength of:

Royal Air Force Units serving with the Navy.

The Air Forces required for co-operation with the Army.  
The Air Forces to be maintained by the Air Ministry to fulfil their responsibilities in Iraq and Palestine.

45. It is not possible at the present time to make a recommendation as to the ultimate standard to be aimed at for any of the Services mentioned in paragraph 44. As regards the Royal Air Force Units serving with the Navy, the ultimate strength in war will be determined in the main by the number of first line aeroplanes which can be carried by the Fleet, that is to say, by carriers, battleships and light cruisers.

46. As regards the Air Forces for co-operation with the Army, the Secretary of State for Air has given an assurance to the Secretary of State for War that any requirements will be fully satisfied, subject to Treasury approval. The actual figures require further detailed discussion between the Chiefs of the General Staffs. This consultation was held up pending the decision on the relations of the Army and the Air Force. The Committee recommend that these discussions should be pushed forward as rapidly as possible by the Chiefs of Staff under the new procedure proposed in Part III.

47. Similarly, the ultimate establishment of the Air Forces abroad involves many uncertain factors, such as the future of Iraq and Palestine, and the number of machines eventually to be provided for Singapore.

48. The Committee are not concerned in the number of squadrons in India, which are paid for by India and are a matter of negotiation between the Government of India, the India Office and the Air Ministry. The subject, however, has recently been fully explored by the Committee on Indian Military Requirements.

49. In the above circumstances, the Committee can only record their recommendation that there must be sufficient air strength for the Navy, the Army, the Overseas Garrisons and Home Defence. The squadrons and machines authorised up to the 1st April, 1924, exclusive of Home Defence, are as follows:

	Machines
United Kingdom –	
(a) (i) <i>Fleet Air Arm</i> – For embarkation in carrier in all waters (13 flights)	78
(ii) <i>Naval Co-operation</i> – Flying Boats (1 flight)	5
(b) <i>Army co-operation</i> (2 squadrons)	24
(c) <i>Reserve</i> (2 squadrons)	36
Mediterranean –	
Seaplanes (1 flight)	6

(Aircraft for embarkation in carriers shown under United Kingdom above)	
Egypt (3 squadrons)	34
Palestine and Transjordan (1 1/3 squadrons)	16
Aden (1 flight)	4
Iraq (8 squadrons)	92
	—
Total	295
	—
India (6 squadrons)	72
	—
Grand Total of machines	367
	—

*Note* – Army co-operation machines are not differentiated except in the United Kingdom.

## AIRSHIPS

50. A question which is closely related to the main inquiry is that of airships, which had been referred to the Committee of Imperial Defence before the appointment of this Committee. At the first meeting this question was remitted to an Inter-Departmental Committee composed of representatives of the Admiralty, Air Ministry, and Treasury, which was set up on the initiative of the Air Ministry, and was asked to report direct to the Committee of Imperial Defence. The policy of the Government on this question was announced in Parliament on the 26<sup>th</sup> July in the following terms:

“The question of the development of airships has recently been considered by the Committee of Imperial Defence and the Imperial Shipping Committee. The Committee of Imperial Defence attaches considerable strategic value to airships, whilst the Imperial Shipping Committee considers that it is by means of an airship service that the carriage of mails can most cheaply be expedited to the Far East and Australia.

“The Government have, therefore, decided to resume the development of airships, and to proceed, if possible, by means of a commercial service rather than by State operation.

“Proposals have been placed before them by the Hon and gallant Member for Uxbridge (Lieutenant-Commander Burney), under which a bi-weekly service of six large airships to India will eventually be set up. The Government have accepted the scheme in principle, subject to the details of the contract being satisfactorily settled by the Treasury. The House of Commons will have an opportunity of considering the scheme when the details have been provisionally agreed.

"The Dominions are being informed of this decision, and it is hoped to discuss the question at the Imperial Conference with a view to their co-operation in the scheme.

"The administration of the scheme in so far as it is a matter of commercial aviation will come under the Air Ministry".<sup>†</sup>

## PART VII – SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

51. The conclusions and recommendations of this Report may be summarised as follows:

### *Co-operation and Correlation of the Services (paragraph 19).*

(a) While the Committee do not put forward any suggestion to change the existing division of responsibility between the three Services as described in paragraph 10, they recommend that the responsibilities of the Navy and the Air Force in regard to the protection of communications in the narrow seas should form the subject of further investigation. The Committee further recommend that experiment in respect of the problems of air attack and defence at sea should be given due weight in Admiralty and Air Ministry programmes, in order to secure on the basis of practical experience the fullest measure of unity of professional opinion.

(b) The principal need as regards co-operation and correlation is closer co-ordination, which is dealt with in Part III of this Report.

(c) The principle that in all belligerent operations in which more than one Service is concerned, one of the three Services should be selected as a "predominant partner" to co-ordinate the other Services should be examined by the Committee of Chiefs of Staffs.

(d) While the menace of attack from the air has greatly increased, and necessitates a strong Home Defence Air Force, as proposed in Part VI of this Report, the three Staffs are agreed that in existing conditions the liability of the country to sea-borne invasion has considerably diminished as compared with pre-war standards.

### *Co-ordination of the Services (paragraph 36).*

(e) It is undesirable and impracticable to supersede the Ministerial heads of the three fighting Services by making them subordinates of a Minister of Defence; the alternative plan for an amalgamation of the three Service Departments is equally impracticable.

(f) On the other hand, the existing system of co-ordination by the Committee of Imperial Defence is not sufficient to secure full initiative and responsibility for defence as a whole, and requires to be defined and strengthened.

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<sup>†</sup> See Imperial Economic Conference, 1923. Summary of Conclusions, page 9 (Cmd 1990); also Record of Proceedings and Documents, page 351 et seq (Cmd 2009).



(g) Under the existing system the Committee of Imperial Defence, an advisory and consultative body, inquires into and makes recommendations in regard to the issues of defence policy and organisation which are brought before it. The power of initiative lies with the Government Departments and with the Prime Minister.

(h) This system, though invaluable up to a point, does not make any authority, except the Prime Minister, who can only devote a small part of his time and attention to defence questions, directly responsible for the initiation of a consistent line of policy directing the common action of the three or any two of the three Services, taking account of the reactions of the three Services upon one another.

(i) While, therefore, the existing system of departmental initiative will continue, the responsibility for the wider initiative referred to above in paragraph (h) will also rest with the Chairman of the Committee of Imperial Defence acting under the general direction of the Committee of Imperial Defence and with the assistance of the three Chiefs of Staff.

(j) In accordance with the terms of the Treasury Minute of the 4<sup>th</sup> May, 1904, constituting the Committee of Imperial Defence in its present form, the Committee of Imperial Defence will continue to consist of the Prime Minister, as President, with such other members as, having regard to the nature of the subject to be discussed, he may from time to time summon to assist him. In pursuance of a decision by the Prime Minister, the Committee places on record that the following should be members:

The Chairman (Deputy to the Prime Minister).  
The Secretary of State for War.  
The Secretary of State for Air.  
The First Lord of the Admiralty.  
The Chancellor of the Exchequer, or the Financial Secretary.  
The Secretary of State for Foreign Affairs.  
The Secretary of State for the Colonies.  
The Secretary of State for India.  
The Chiefs of Staff of the three Fighting Services.  
The Permanent Secretary to the Treasury as head of the Civil Service.

In addition to these, other British or Dominion Ministers of the Crown and other officials, or persons having special qualifications, will be summoned as members by the President according to the nature of the business.

(k) The functions of the Chairman of the Committee of Imperial Defence will be:

(i) To preside over the Committee of Imperial Defence in the absence of the Prime Minister.

(ii) To report to the Prime Minister (when he himself has not presided) and to the Cabinet the recommendations of the Committee of Imperial Defence.

(iii) In matters of detail, to interpret the decisions of the Prime Minister and the Cabinet thereupon to the Departments concerned.

(iv) Assisted by the three Chiefs of Staff, as laid down in paragraph (i) above, to keep the defence situation as a whole constantly under review so as to ensure that defence preparations and plans and the expenditure thereupon are co-ordinated and framed to meet policy, that full information as to the changing naval, military and air situation may always be available to the Committee of Imperial Defence and that resolutions as to the requisite action thereupon may be submitted for its consideration.

(l) In addition to the functions of the Chiefs of Staff as advisers on questions of sea, land or air policy respectively, to their own Board or Council, each of the three Chiefs of Staff will have an individual and collective responsibility for advising on defence policy as a whole, the three constituting, as it were, a Super-Chief of a War Staff in Commission. In carrying out this function they will meet together for the discussion of questions which affect their joint responsibilities.

(m) Questions relating to co-ordination of expenditure may be entertained by the Committee of Imperial Defence when referred to it by the Cabinet. The Committee (subject to any directions by the Cabinet) will consider such questions in the light of the general defence policy of the Government, and of the strategical plans drawn up to give effect to that policy in time of war.

(n) The Secretariat of the Committee of Imperial Defence will continue to act as liaison officers between the Chairman of the Committee and the Service Departments. The staff of the Committee will be strengthened by the addition of an Assistant Secretary to be nominated by the Prime Minister on the recommendation of the Secretary of State for Air, whose status will be identical with that of the three existing Assistant Secretaries nominated by the Prime Minister on the recommendation of the Secretary of State for War, the Secretary of State for India and the First Lord of the Admiralty.

(o) The Standing Defence Sub-Committee is suppressed, and its past proceedings will be merged into those of the Committee of Imperial Defence.

*The Relations of the Navy and the Air Force (paragraph 40).*

(p) See Annex.

*The Relations of the Army and the Air Force (paragraph 41).*

(q) No change in the existing relations is recommended.

*The Strength of the Royal Air Force (paragraphs 42 to 49).*

(r) The standard of strength of the Royal Air Force is the sum of the following:

The Home Defence Air Force.

The Royal Air Force Units serving with the Navy.

The Air Forces required for co-operation with the Army.

The Air Forces maintained by the Royal Air Force to fulfil their responsibilities in Iraq and Palestine.

The figures, excluding those for the Home Defence Air Force, so far as they can at present be arrived at, are given in paragraph 49.

(s) The Air Forces required for co-operation with the Army should be worked out as soon as possible (paragraph 46).

(Signed) SALISBURY (*Chairman*).  
NEVILLE CHAMBERLAIN.  
CURZON OF KEDLESTON.  
DEVONSHIRE.  
DERBY.  
PEEL.  
SAMUEL HOARE.  
L S AMERY.  
BALFOUR.  
WEIR.

M P A HANKEY (*Secretary*)

2, WHITEHALL GARDENS, SW1  
*November 15, 1923.*

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