

The Royal Navy and the Origins of Strategic Bombing, 1916-1918

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Introduction

At the beginning of 1916, First Lord of the Admiralty Arthur Balfour, former Conservative Prime Minister and Winston Churchill's successor as First Lord, agreed to establish Royal Naval Air Service (RNAS) No. 3 Wing (Luxeuil) to conduct what was then known as long-distance bombing against the steel and weapons factories located in Germany's Saarland. This controversial development for a naval aviation force was justified as an extension of the fleet's blockade against the Central Powers. By early 1917 No. 3 Wing had carried out a dozen raids and was being equipped with powerful Handley Page bombers. The Wing, however, was unceremoniously disbanded at the beginning of May 1917, amidst fierce Army opposition to the Navy's control of long-distance bombing assets. The RNAS, despite having lost the struggle for long-range bombing supremacy to the Army, then contributed bombing squadrons to the Royal Flying Corps' (RFC) 41st Wing, which became the basis for Major-General Hugh Trenchard's Independent Air Force (IAF) in 1918. Since its creation in April 1918, the Royal Air Force (RAF) has largely ignored the fact that it was the Navy that devised and implemented strategic bombing theory and practice during the First World War.

The Royal Navy's involvement with strategic bombing began with First Lord Churchill, who, having unilaterally created the RNAS out of the Naval Wing of the RFC on 23 June 1914,¹ proceeded to employ this long-range and mobile force to create feints along the Belgian coast and bomb Germany's Zeppelin sheds.² These latter operations significantly included the bombing raid carried out on 21 November 1914 against the Zeppelin factory at Friedrichshafen, destined to become the first aircraft bombing raid specifically targeting an industrial facility.³ The dangerous and temperamental nature of these early anti-Zeppelin raids convinced Churchill,

¹ Charles Frederick Gamble, *The Story of a North Sea Air Station* (London: Neville Spearman, 1967), p. 75. Maurice Hankey, *The Supreme Command, 1914 - 1918, Vol. I*, Kindle ebook, vol. 1, 2 vols. (New York: Routledge, 2014), p. 110

² Tami Davis Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas About Strategic Bombing, 1914-1945* (New Jersey: Princeton University Press, 2004), p. 21

³ Richard Layman, *Naval Aviation in the First World War: Its Impact and Influence* (London: Chatham Publishing, 1996), p. 67

who himself had learned to fly with the RFC (Naval Wing) before the war,⁴ that dedicated bombing aircraft would be required as the war continued. The Admiralty Air Department, initially under the firebrand administration of Commodore Murray Sueter, was a repository of technical expertise that Churchill often turned to when he needed complex technical problems solved, not least of which included the development of the tank and heavy bombers.⁵

The Air Department, working in conjunction with various British aircraft manufactures, including Beardmore, A. V. Roe, Short Brothers, Grahame-White, Sopwith, Samuel White, and Handley Page, pursued the development of specialized bombing planes. The Admiralty specification for a two-engine bomber capable of carrying six 112 lb bombs (the “bloody paralysers” in Mr. Handley Page’s phrase) was issued in December 1914.⁶ Four prototypes were ordered in February 1915 and, with Commodore Sueter’s support for their tireless work, the small Handley Page team grew from a dozen to 150 employees, enabling the first prototype, equipped with twin 250 hp Rolls-Royce Eagle II engines, to be ready for its maiden flight on 17 December.⁷ In mid-1915, not long after Balfour took over the Admiralty following Churchill’s resignation in the May Crisis that year, the Admiralty issued specifications for a single engine bomber capable of carrying eight 112 lb bombs for the purpose of attacking Germany’s various naval and Zeppelin bases such as Kiel, Cuxhaven and the Jade Bay.⁸ Short Brothers ultimately won this contract with their landplane version of the Short 184 seaplane (250 hp Rolls-Royce engine), and 110 were ordered during 1916, although 28 of these orders were cancelled and production dropped off as the twin-engine Handley Page machine soon surpassed the Short

⁴ Randolph Churchill, *Winston S. Churchill: Young Statesman, 1901-1914*, vol. 2, 8 vols. (Boston: Houghton Mifflin Company, 1967), p. 682-3

⁵ Alexander Howlett, *The Development of British Naval Aviation, 1914-1918* (New York: Routledge, 2021), p. 7, 99, 131, 198. Christina J. M. Goulter, “The Royal Naval Air Service: A Very Modern Force,” in *Air Power History: Turning Points from Kitty Hawk to Kosovo*, ed. Sebastian Cox and Peter Gray (New York: Frank Cass Publishers, 2002), 51–65., p. 57. Michael Goodall, “The Admiralty Competition Bombers, 1915-1916,” *Cross & Cockade International Journal* 5, no. 2 (1974): 67–74., p. 67. Extracts from Minutes of a Conference held in the Admiralty on 3 April 1915, TNA ADM 1/8497, #64 in Stephen Roskill, ed., *Documents Relating to the Naval Air Service, 1908-1918* (London: Spottiswoode, Ballantyne and Co. Ltd., 1969), p. 199

⁶ Goodall, “The Admiralty Competition Bombers, 1915-1916,” p. 67. Rob Langham, *Bloody Paralyser: The Giant Handley Page Bombers of the First World War*, Kindle ebook (Croydon: Fonthill Media Limited, 2016), chapter 2, loc. 401-12

⁷ Goodall, “The Admiralty Competition Bombers, 1915-1916,” p. 67. Langham, *Bloody Paralyser*, chapter 2, loc. 424-48

⁸ Goodall, “The Admiralty Competition Bombers, 1915-1916,” p. 67

bomber in both bomb load and range,⁹ a fact that was recognized by Balfour and his Director of Air Services (DAS) Rear Admiral Charles Vaughan-Lee.¹⁰

Improvements were made to the Handley Page aircraft at RNAS Eastchurch early in 1916, and a second prototype was flown at Hendon on 23 April.¹¹ The Handley Page O/100 was then accepted for service at the end of May. Sueter, now the Superintendent for Aircraft Construction (SAC) in Vaughan-Lee's Air Department, increased the order for Handley Page machines to 40 in April, and in August the final prototype with defensive machine gun mountings and improved 320 hp Eagle III engines had been completed.¹²

Control over aircraft production, however, was becoming a contentious political issue: the Ministry of Munitions, established under David Lloyd George following the May Crisis, was the logical ministry to assume control of air supply. Both the Army Council and Admiralty resisted this,¹³ the latter in particular because long-range bombing, with specialized aircraft designed and built to Admiralty specifications, was about to take on a new importance. As Rear Admiral Vaughan-Lee explained to the Joint War Air Committee (JWAC) in March 1916, the RNAS was preparing "to attack the enemy's fleets, dockyards, arsenals, factories, air sheds, etc., from the coasts, whether the coasts be the enemy's or our own (i.e. long-distance bombing)."¹⁴ The Saar industrial area, where it was believed that the steel for U-boat construction was taking place, was of particular interest.¹⁵

Imperial Air Service, JWAC, and Air Board

While the Navy was busy assembling its bombers and readying for the long-range bombing mission, Prime Minister H. H. Asquith's government was undergoing a protracted battle to create what was expected would ultimately become an 'Imperial Air Service'.¹⁶ This cart-before-the-horses approach to air power was based on the belief that a unified air arm of the future would

⁹ Goodall., p. 74.

¹⁰ Goodall., p. 67. Memorandum by Rear-Admiral C. L. Vaughan-Lee, Director of Air Services, on Defence Against Zeppelin Raids, dated 4 April 1916, TNA ADM 1/8449, #120 in Roskill, *Documents.*, p. 342-4

¹¹ Langham, *Bloody Paralyser.*, chapter 2, loc. 472

¹² Langham., chapter 2, loc. 412, 484

¹³ War Committee proceedings, 4 February 1916, TNA CAB 22/82

¹⁴ Malcolm Cooper, *The Birth of Independent Air Power* (London: Allen & Unwin, 1986)., p. 49

¹⁵ H. A. Jones, *The War In The Air, VI*, Antony Rowe Ltd. reprint, vol. 6, 6 vols. (Uckfield: Naval & Military Press, 1937)., p. 118

¹⁶ "General Policy" 26 April 1916, LHCA Montagu papers, Montagu III/C/3

likely supplant armies and navies as the core elements of Britain's imperial defence.¹⁷ In June 1915 Churchill, who had championed the RNAS' long-distance bombing against the Zeppelin sheds and was angling for a ministry after his ignominious departure from the Admiralty, supported the creation of an Air Ministry with himself in mind for Air Minister.¹⁸ Churchill's proposal on this occasion was squelched by War Committee secretary Lieutenant-Colonel Maurice Hankey, who did not want to unleash the inevitable dislocation of personnel and responsibilities that such a radical move would entail, favouring instead his own solution in the form of a resurrected consultative Air Committee, much as had existed before the war.¹⁹

Fulfilling this nostalgic vision was the Joint War Air Committee (JWAC), established by the War Committee on 15 February 1916 and chaired by Lord Derby, with a mandate to review air supply and service roles.²⁰ Derby agreed with Hankey's rationale for avoiding service unification during wartime, and was being supported in this regard by both Brigadier-General Trenchard, responsible for the RFC in the field, and Director General of Military Aeronautics (DGMA) Sir David Henderson on the Army Council.²¹ All was not well, however, as Derby and his deputy, unified air power proponent and pioneer aviator Lord Montagu, felt that without executive power they could get nowhere against War Office and Admiralty opposition to any modification to the services' aircraft production and plans, and so both conspired to resign at the end of March.²²

Lord Montagu, for his part, continued to advocate for the creation of an Imperial Air Service, something he had supported before the war.²³ Montagu, whom the sympathetic

¹⁷ Howlett, *Development of British Naval Aviation.*, p. 142, 162. Roskill, *Documents.*, p. 269

¹⁸ Stephen Roskill, *Hankey: Man of Secrets, I*, vol. 1, 3 vols. (Annapolis: Naval Institute Press, 1970), p. 186. Martin Gilbert, *The Challenge of War: Winston S. Churchill, 1914-1916*, Minerva edition, vol. 3, 8 vols. (London: Mandarin Paperbacks, 1990), p. 501, 770

¹⁹ Cooper, *Birth of Independent Air Power.*, p. 46

²⁰ Howlett, *Development of British Naval Aviation.*, p. 170. Maurice Hankey, *The Supreme Command, 1914 - 1918, Vol. II*, Kindle ebook, vol. 2, 2 vols. (New York: Routledge, 2014), chapter 54, loc. 2267. Extract from Proceedings of the 71st Meeting of the War Committee held on 15 February 1916 (W.C.25) and Conclusions Reached, TNA CAB 42/8 and 37/142, #103 in Roskill, *Documents.*, p. 302

²¹ Cooper, *Birth of Independent Air Power.*, p. 47-8. George K. Williams, *Biplanes and Bombsights: British Bombing in World War I* (Maxwell Air Force Base, Alabama: Air University Press, 1999), p. 38

²² Derby was back in government as Under-Secretary of State for War in July. Roskill, *Documents.*, p. 271. Howlett, *Development of British Naval Aviation.*, p. 168-9. Cooper, *Birth of Independent Air Power.*, p. 48. David Lloyd George, *War Memoirs, Vol. II*, Kindle ebook, vol. 2, 2 vols. (Arcole Publishing, 2017), p. 68. H. Montgomery Hyde, *British Air Policy Between the Wars, 1918-1939* (London: Heinemann, 1976), p. 26. Extracts from Letter from Lord Derby to Mr. Asquith, 'Dictated 27 March: sent 3 April 1916', TNA AIR 1/2312, #112 in Roskill, *Documents.*, p. 325-6

²³ Cooper, *Birth of Independent Air Power.*, p. 46-7

Commodore Sueter had been ordered to avoid,²⁴ outlined his scheme at the Navy League Aircraft Demonstration on 28 April, proposing to re-amalgamate the two air service branches under the authority of an Air Minister, but leaving Grand Fleet C-in-C Admiral Sir John Jellicoe and BEF C-in-C Field Marshal Sir Douglas Haig in operational control, essentially resurrecting Churchill's June 1915 proposal (Churchill, at the beginning of March 1916 having returned from his stint as a battalion commander with the BEF, likewise argued for a unified service and Air Ministry in a House of Commons speech on 17 May).²⁵ Montagu's own rationalization for this project was based on what he had seen during his time on the JWAC, specifically, a "lack of co-operation between Admiralty and War Office" and inefficiencies resulting from "overlapping in buying and contracts."²⁶ Historians Stephen Roskill and Eric Grove are both in agreement that this staunch opposition from Balfour and his JWAC representative, DAS Vaughan-Lee, were contributing factors to the demise of the JWAC,²⁷ although Derby forced the issue by demanding an expansion of the JWAC's authority beyond the limited scope of the 1912 Air Committee model Hankey had originally envisioned.²⁸

Lord Curzon, then Lord Privy Seal, now entered the scene, and on 16 April lobbied for his own installation as head of an Air Board to replace the JWAC.²⁹ Curzon, who was eager to stake his claim to leadership of the imperial organization - and deal a defeat to his longstanding antagonist Arthur Balfour - took an even stronger line on the imperative for unification and the formation of an Air Ministry than had Derby or Montagu.³⁰ For Curzon, who had been appointed Queen Victoria's last Viceroy of India (1898 to 1905), only "grand diplomacy" could satisfy his

²⁴ Cooper., p. 48

²⁵ Lord Montagu's address at the Navy League Aircraft Demonstration, 28 April 1916, LHCA Montagu 6. Martin Gilbert, *Winston S. Churchill: The Challenge of War, 1914-1916*, ebook, vol. 3, 7 vols. (Hillsdale, Michigan: Hillsdale College Press, 1971), p. 763-70

²⁶ Lord Montagu's address at the Navy League Aircraft Demonstration, 28 April 1916, LHCA Montagu 6, p. 3-4

²⁷ Eric Grove, "Air Force, Fleet Air Arm - or Armoured Corps? The Royal Naval Air Service at War," in *British Naval Aviation*, ed. Tim Benbow (Farnham: Ashgate Publishing Limited, 2011), 27-56., p. 41-40. Roskill, *Documents.*, p. 271

²⁸ Cooper, *Birth of Independent Air Power.*, p. 46-7.

²⁹ Cooper., p. 56. Roskill, *Documents.*, p. 271

³⁰ David Gilmour, *Curzon, Imperial Statesman* (New York: Farrar, Straus and Giroux, 2003), p. 450-3. Leonard Mosley, *Curzon: The End of an Epoch* (London: Longmans, Green and Co., 1961), p. 157. John Grigg, *Lloyd George, War Leader* (London: Penguin Books Ltd., 2002), p. 251. Roskill, *Man of Secrets, I.*, p. 253-4. Lloyd George, *War Memoirs, Vol. II.*, p. 69. Extracts from Memorandum for the Cabinet by Lord Curzon, Lord Privy Seal, dated 14 February 1916, TNA CAB 37/142, #102 in Roskill, *Documents.*, p. 297. Extracts from First Report of the Air Board, addressed to the War Committee and dated 23 October 1916, AIR 1/2311, #140 in Roskill., p. 389

aspirations,³¹ and a ministry to govern the new frontier of the air could perhaps fulfil those ambitions. Curzon, moreover, had encountered what he perceived as relentless intransience to necessary administrative reforms on the part of the military before, in the guise of Commander-in-Chief Kitchener during his time in India,³² and what could be more important for the future of imperial defence than reform of the air service?³³ Curzon thus pursued his agenda for Air Board presidency with Asquith on 16 April and, despite Balfour's opposition at the War Committee, on this occasion War Minister Kitchener pronounced no opposition. The Curzon Air Board was formed on 11 May.³⁴

In the strictly material sense, as Roskill observed, the crux of the matter over control of long-range bombing had to do with the fact that "the service made responsible for such operations obviously should have first call on the production of large aircraft with powerful engines – of which there was an acute shortage."³⁵ This 1916 reality was well understood by DAS Vaughan-Lee and his deputy Wing Captain Arthur Vyvyan,³⁶ as the two were planning to purchase significant numbers of water-cooled inline engines for the RNAS' new bombers - the same engines sought by the RFC.³⁷ Vaughan-Lee, criticizing the Air Board's rush towards service unification, wrote on 5 June that "it is the same story, the War Office want to stop our long distance bombing in order to get hold of our engines and machines and so to cover their own deficiencies."³⁸

The disparity in terms of supply between the RNAS and RFC was significant, but not to the favour of the Army Council's demands for resources: in February 1916 the RNAS field strength was 646 aircraft – less than half that of the RFC's 1,350 - with the RNAS proposing to purchase another 664 aircraft, half of which were to cover attrition. Having denied the Curzon Board any fiscal authority, the Admiralty had in fact placed £3 million worth of orders for

³¹ Andrew Roberts, *Salisbury, Victorian Titan* (London: Orion Books Ltd, 2000), p. 694

³² Lawrence James, *Raj: The Making and Unmaking of British India* (New York: St. Martin's Griffin, 1997), p. 362

³³ Cooper, *Birth of Independent Air Power.*, p. 58-9

³⁴ Lloyd George, *War Memoirs, Vol. II.*, p. 69. Cooper, *Birth of Independent Air Power.*, p. 59

³⁵ Roskill, *Documents.*, p. 269

³⁶ Howlett, *Development of British Naval Aviation.*, p. 137. Cooper, *Birth of Independent Air Power.*, p. 51

³⁷ Cooper, *Birth of Independent Air Power.*, p. 50. Joint War Air Committee Report No. 2, Present deficiencies and future requirements of the Royal Flying Corps, 23 March 1916, TNA AIR 1/2319

³⁸ Minute by Rear-Admiral C. L. Vaughan-Lee, 5 June 1916, TNA ADM 1/8449, from #128 in Roskill, *Documents.*, p. 365

aircraft and engines completely independently.³⁹ On 26 October the Admiralty stated to the Air Board that it intended to keep 200 aircraft in France, and provocatively added that it would seek an additional 2,000 engines for future long-range bombing aircraft.⁴⁰ The Admiralty jealously guarded its procurement network for high quality aircraft, from firms including Sopwith, Short and Beardmore, and engines from firms such as Rolls-Royce, Bentley and Sunbeam, leaving the RFC reliant on the national Royal Aircraft Factory.⁴¹

In February 1916 the RFC was planning to purchase 3,350 machines, using up most of the 5,363 aero-engines built in Britain during 1916.⁴² The planned RFC purchases increased to the enormous number of 8,403 airplanes and 9,962 engines by 31 May, and reached the fantastical at 11,345 and 14,755, respectively, on 29 September.⁴³ Considering these astronomical orders being placed by the RFC, the RNAS orders for specialized long-distance bombing aircraft, outside the Army Council's procurement network, were not excessive. Indeed, the RNAS long-distance bombing force, as of March 1916, required only 50 heavy bombers, 80 light bombers, and 50 long-range fighters, a total of 180 aircraft of which 140 were already on order.⁴⁴

On 23 October the Air Board issued its first report,⁴⁵ stating clearly that the Board's purpose was "to exercise a general supervision over the Air Service as a whole, and to prepare the way for larger changes and a more powerful, a better concentrated, and a more coherent organisation in the future."⁴⁶ At the 28 November War Committee review of the air report, Air Board President Curzon predictably argued that the Board itself should take over control of airplane production, and, moreover, that an Imperial Air Service and a permanent Board or ministry were desirable post-war outcomes for defence considerations.⁴⁷ DGMA Henderson likewise wanted to see the Air Board, and not the Ministry of Munitions, assume responsibility

³⁹ Grove, "Air Force, Fleet Air Arm - or Armoured Corps?", p. 41

⁴⁰ Howlett, *Development of British Naval Aviation*., p. 141

⁴¹ Cooper, *Birth of Independent Air Power*., p. 52-3

⁴² Up from 1,720 in 1915, but still less than the 1916 figure of 7,283 for Germany or 16,149 for France

⁴³ Cooper, *Birth of Independent Air Power*., p. 49, 51-2. The War Office, *Statistics of the Military Effort of the British Empire During the Great War, 1914-1920*, reprint (Uckfield: Naval & Military Press, 1922)., p. 497
Minutes of the 69th meeting of the War Committee, 10 February 1916, TNA CAB 42/8/5

⁴⁴ Cooper, *Birth of Independent Air Power*., p. 49

⁴⁵ Lloyd George, *War Memoirs, Vol. II*., p. 69. Minutes of the 141st meeting of the War Committee, 28 November 1916, TNA CAB 42/26/1

⁴⁶ Extracts from First Report of the Air Board, addressed to the War Committee and dated 23 October 1916, TNA AIR 1/2311 and CAB 22/75, #140 in Roskill, *Documents*., p. 389

⁴⁷ Minutes of the 141st meeting of the War Committee, 28 November 1916, TNA CAB 42/26/1, p. 1-2

for aircraft supply.⁴⁸ The Army Council ultimately expected the RFC to gain control over long-distance bombing operations, but was willing to entertain an independent air service if necessary.⁴⁹ Montagu, who was in fact now the Minister of Munitions, naturally desired to secure airplane supply responsibilities for his own department, and would be sure to support a unified air force if the possibility arose.

Balfour's counterarguments to Curzon's proposals were forceful and convincing to Asquith.⁵⁰ Balfour did not want to relinquish control over the Air Department, the RNAS having been declared a naval arm under his tenure, no different from the Royal Marines or the Coast Guard. Balfour intended to keep aerial "invention, research, experiment, design, production, inspection and finance" under Admiralty control,⁵¹ arguing that if supply was nevertheless to be centralized it should be done so within the Ministry of Munitions and not the Air Board.⁵² Curzon countered that the RNAS should be run by air men, the oblique reference being to Commodore Sueter who had been demoted from head of the Air Department head to Superintended for Aircraft Construction (SAC) by Balfour.⁵³ On 7 December, however, Prime Minister Asquith was superseded by David Lloyd George and First Lord Balfour by Sir Edward Carson.⁵⁴ Curzon resigned shortly afterwards, leaving chairmanship of the Air Board to Lord Cowdray on 22 December.⁵⁵ Asquith had already decided, at the November 27th meeting of the War Committee, that the Ministry of Munitions would become responsible for air supply, but that the Air Board would allocate resources,⁵⁶ and Lloyd George carried his policy through into the new year's War Cabinet, but not for long.⁵⁷

⁴⁸ Minutes of the 141st meeting of the War Committee, 28 November 1916, TNA CAB 42/26/1, p. 2-4

⁴⁹ Cooper, *Birth of Independent Air Power*., p. 49-51. Joint War Air Committee Report No. 5, Policy of the Army Council with regard to Royal Flying Corps (Military Wing), 3 March 1916, TNA AIR 1/2319

⁵⁰ H. H. Asquith, *Memories and Reflections, Vol. II, 1914-1927*, Kindle ebook, vol. 2, 2 vols. (Charlottesville, VA: Albion Press Ltd, 2016)., chapter 16, loc. 2448

⁵¹ Lloyd George, *War Memoirs, Vol. II.*, p. 70-1

⁵² R. J. Q. Adams, *Balfour: The Last Grandee* (London: John Murray, 2008)., p. 311. Minutes of the 141st meeting of the War Committee, 28 November 1916, TNA CAB 42/26/1, p. 1

⁵³ Grove, "Air Force, Fleet Air Arm - or Armoured Corps?", p. 41

⁵⁴ Arthur Marder, *From The Dreadnought to Scapa Flow: The Year of Crisis, 1917*, vol. 4, 5 vols. (Toronto: Oxford University Press, 1969)., p. 54. Adams, *Balfour*., p. 318-23

⁵⁵ Malcolm Cooper, "Blueprint for Confusion: The Administrative Background to the Formation of the Royal Air Force, 1912-19," *Journal of Contemporary History* 22, no. 3 (July 1, 1987): 437-53., p. 439. Lloyd George, *War Memoirs, Vol. II.*, p. 72-3

⁵⁶ Lloyd George, *War Memoirs, Vol. II.*, p. 71.

⁵⁷ Godfrey Lloyd, ed., *The Ministry of Munitions: The Supply of Munitions*, reprint, vol. 12, 12 vols. (Uckfield: Naval & Military Press, 1921)., p. 7

Early in 1917 DAS Vaughan-Lee, the last pillar of opposition to unification from the Air Department, was himself replaced by Commodore Godfrey Paine, who became the newly created Fifth Sea Lord on 11 January.⁵⁸ With the path cleared before him, Lord Cowdray now oversaw the Air Board in its rise to power as an executive authority, the direct precursor to the coming Air Ministry. Cowdray gained control over the important aero-engine production,⁵⁹ but his greatest victory was securing responsibility for the supply of airplane (and seaplane) design, which was confirmed for the Air Board at the War Cabinet meeting of 1 February.⁶⁰

These developments had the effect of disproportionately favouring the Army's air material requests: during the Arras campaign that April, Haig, and his RFC commander Brigadier-General Trenchard, repeatedly requested more and newer airplanes, exactly as they had done during the Somme offensive of 1916.⁶¹ As Malcolm Cooper phrased it, since "the bulk of available aeronautical material was already being channelled towards the RFC in France... the superimposition of a new procurement apparatus simply tended to institutionalize."⁶²

No. 3 Wing Luxeuil

The inter-departmental struggle for control of air supply and organization during 1916 and 1917 was by no means simply an abstract exercise in political power jockeying and administrative paper-pushing: an actual wing of naval bombers, to be designated RNAS No. 3 Wing,⁶³ had in fact been assembled at Detling, in Kent. The Sopwith 1½ Strutter, capable of carrying four 65 lb bombs when the observer's seat was replaced with a bomb bay, had been prototyped at the end of 1915 and training on the bombers began in February 1916 with the intention that they would be flown from England to attack steel factories in Essen and Dusseldorf beginning that May.⁶⁴

⁵⁸ Marder, *The Year of Crisis*., p. 60. Board Minute, dated 3 January 1917, TNA ADM 1/8475, #152 in Roskill, *Documents*., p. 450

⁵⁹ Roskill, *Documents*., p. 453. Jones, *War In The Air, Vol. VI.*, p. 56

⁶⁰ Extracts from Letter from Secretary, Air Board, to Secretary War Cabinet, together with a Memorandum by the Air Board, both dated 1 February 1917, TNA AIR 1/2405, #159 in Roskill, *Documents*., p. 464

⁶¹ Andrew Boyle, *Trenchard: Man of Vision* (London: Collins, 1962)., p. 213-6. H. A. Jones, *The War In The Air, II*, Antony Rowe Ltd. reprint, vol. 2, 6 vols. (Uckfield: Naval & Military Press, 1928)., p. 452

⁶² Cooper, "Blueprint for Confusion.", p. 439-40. Lloyd George, *War Memoirs, Vol. II.*, p. 75

⁶³ Reforming Charles Samson's No. 3 Wing which had been disbanded after Dardanelles. Ray Sturtivant and Gordon Page, *Royal Navy Aircraft Serials and Units, 1911-1919* (Tonbridge: Air Britain (Historians) Ltd, 1992)., p. 444

⁶⁴ Neville Jones, *The Origins of Strategic Bombing* (London: William Kimber & Co. Limited, 1973)., p. 79. Owen Thetford, *British Naval Aircraft since 1912*, 4th ed. (London: Putnam, 1978)., p. 292

Squadron Commander Reginald ‘Reggie’ Marix oversaw the initial operational training at Deling during February.⁶⁵ The operation to bomb Essen and Dusseldorf from Manston, however, was abandoned due to diplomatic concerns regarding overflight of the Netherlands. Another possibility, fortuitous for the Admiralty, was deploying No. 3 Wing for operations alongside France’s own long-distance bombers, with the benefit that doing so would shield the mission from Haig’s eyes at General Headquarters (GHQ).⁶⁶ Chief of the Naval War Staff Rear Admiral Sir Henry Oliver had his hand in this subterfuge, a “somewhat disingenuous” deployment as Roskill described it.⁶⁷ Oliver stated that “possibly the simplest way of doing it [long-range bombing] would be to say nothing on this side but to make an arrangement with the French and then do it.”⁶⁸ Correspondingly, the Air Department despatched a construction team of 126 men to Luxeuil to prepare for No. 3 Wing’s arrival.⁶⁹ In mid-June Wing Commander Richard Bell Davies, VC, arrived at Manston to fly the Wing out to the Ochey and Luxeuil aerodromes in the Nancy and Bourgogne-Franche-Comte regions.⁷⁰ It was intended to build up the Wing to an establishment of 55 aircraft: 35 bombers (20 Sopwith Strutters and 15 Shorts) and 20 Sopwith Strutter fighters.⁷¹

Wing Commander William Leslie Elder, charged with commanding No. 3 Wing, met with the French at the aviation department in Paris at the beginning of May.⁷² Elder had previously been on Air Department duties organizing the Curtiss Aviation School in Toronto during 1915,⁷³ and before that he had occupied the important position of Inspecting Captain of

⁶⁵ John Lea, *Reggie, The Life of Air Vice Marshal R L G Marix CB DSO* (Bishop Auckland, Durham: The Pentland Press Ltd, 1994)., p. 58. Howlett, *Development of British Naval Aviation.*, p. 139-140. Service record of Reginald Lennox George Marix, TNA ADM 273/3. Wing Captain W. L. Elder, History of No. 3 Wing, RNAS, TNA AIR 1/2107/207/42

⁶⁶ Grove, “Air Force, Fleet Air Arm - or Armoured Corps?”, p. 40

⁶⁷ Roskill, *Documents.*, p. 270

⁶⁸ Memorandum by Rear-Admiral C. L. Vaughan-Lee, Director of Air Services, on Defence Against Zeppelin Raids, dated 4 April 1916, TNA ADM 1/8449, #120 in Roskill., p. 342-4. Wing Captain W. L. Elder, History of No. 3 Wing, RNAS, TNA AIR 1/2107/207/42

⁶⁹ Wing Captain W. L. Elder, History of No. 3 Wing, RNAS, TNA AIR 1/2107/207/42

⁷⁰ Richard Bell Davies, *Sailor in the Air: The Memoirs of the World’s First Carrier Pilot* (Barnsley: Seaforth Publishing, 2008)., p. 145. Howlett, *Development of British Naval Aviation.*, p. 139. Goodall, “The Admiralty Competition Bombers, 1915-1916.”, p. 77. Service Record of Richard Bell Davies, TNA ADM 273/2

⁷¹ Jones, *War In The Air, Vol. II.*, p. 452. Bruce Robertson, *Sopwith-The Man and His Aircraft* (Letchworth, Hertfordshire: Air Review Ltd., 1970)., p. 77

⁷² Wing Captain W. L. Elder, History of No. 3 Wing, RNAS, TNA AIR 1/2107/207/42

⁷³ David Hobbs, *The Royal Navy’s Air Service in the Great War* (Barnsley: Seaforth Publishing, 2017)., p. 322

Aircraft, essentially the Director Air Department's deputy at the Sheerness Central Air Office.⁷⁴ A thoroughly experienced technician who had commanded torpedo boat and destroyer flotillas at Portsmouth,⁷⁵ Elder possessed a flare for the exotic, having as a young lieutenant been "present on the occasion of the bombardment and capture of the Sultan of Zanzibar's palace," on 27 August 1896, and having participated in the notorious Benin expedition alongside Reginald Bacon, Arthur Vyvyan and Charles Lambe the following year.⁷⁶

Elder received approval to carry on with the Allied industrial bombing plan,⁷⁷ and assumed command of No. 3 Wing on 14 June with the rank of Acting Wing Captain.⁷⁸ For reasons of expediency, logistics, and combined effort, the French were to be in operational control of the bombing program.⁷⁹ Elder's first orders arrived on 27 July, instructing him to attack strategic military targets in conjunction with the French.⁸⁰ The first operation was in fact carried out on the morning of 30 July, a raid in which three RNAS Sopwith 1½ Strutters flew 190 km to the benzene stores and barracks at Mulheim, where they dropped 520 lbs of 65 lb bombs, alongside the 1,200 lbs of 50 lb bombs and shells dropped by six French bombers of the 4th Groupe de Bombardment - the three squadrons under the command of the popular artilleryman and pilot Capitaine Felix Happe, Elder's French counterpart at Luxeuil.⁸¹

A scheme was proposed to bomb the Hoboken Naval Works in Antwerp that August,⁸² but poor weather combined with the War Office imperative during the Somme offensive to make good RFC losses, instead resulted in the Air Department transferring to the BEF 62 Strutters and thus delaying No. 3 Wing operations for three months as Elder bought French Breguet V bombers to fill in.⁸³ Curzon had been behind this request for RNAS aircraft to supply Haig's

⁷⁴ Service record of William Leslie Elder, TNA ADM 273/2/44

⁷⁵ *The Naval Who's Who, 1917* (Polstead: J. B. Hayward & Son, 1981), p. 55. Service record of William Leslie Elder, TNA ADM 273/2/44

⁷⁶ Howlett, *Development of British Naval Aviation*, p. 133

⁷⁷ Howlett, p. 140

⁷⁸ Hobbs, *Royal Navy's Air Service*, p. 358

⁷⁹ Williams, *Biplanes And Bombsights*, p. 13-4

⁸⁰ Howlett, *Development of British Naval Aviation*, p. 140

⁸¹ Elder to Admiralty, Report on bombing of Mulheim, 30 July 1916, TNA AIR 1/111. Jones, *Origins of Strategic Bombing*, p. 113. Roger Gunn, *Raymond Collishaw and the Black Flight* (Toronto: Dundurn, 2013), p. 47

⁸² Minutes of the 266th meeting of the War Cabinet, 6 November 1917, TNA CAB 23/4/40, p. 2-3

⁸³ Grove, "Air Force, Fleet Air Arm - or Armoured Corps?", p. 40. Gunn, *Black Flight*, p. 39, 50

mincing machine,⁸⁴ and Trenchard was also keen to gain the new Short bombers and Sopwith fighters, with their novel synchronized Vickers machine guns.⁸⁵ The famous RNAS No. 8 Squadron, initially composed of Sopwith Strutter fighters, was transferred to RFC control on 26 October 1916, where it remained until the end of the war.⁸⁶ As George Williams noted, “the army’s demands for flying machines at the expense of No. 3 Wing began in late spring 1916 and continued until the Wing was disbanded a year later.”⁸⁷

Given this concentration of material and manpower on the Somme, No. 3 Wing was built-up as best it could be during the fall. The first 16 Short bombers arrived at Manston for working up during July and August, although only two were ever flown out to Luxeuil.⁸⁸ By September No. 3 Wing’s two squadrons counted for 22 front-line aircraft, but of these only 12 were immediately available.⁸⁹ The Wing at this time included 22 flight sub-lieutenants at Manston and 14 at Luxeuil. Wing Captain Elder’s executive officer was Squadron Commander Marix, supported by Flight Commanders C. M. Murphy, C. Draper and G. L. Thomson, plus Lieutenant J. D. Newberry. There were a number of distinguished aviators in this group, including Lieutenant Commander Felix Samson and Flight Sub-Lieutenant Raymond Collishaw, the latter specializing in the Short bombers at Manston.⁹⁰ Wing Commander Richard Bell Davies at Luxeuil was overseeing operations.⁹¹ Lieutenant Lord Tiverton, who had specialized in bombsite design during 1915, was the Armament Officer.⁹² Three assistant paymasters were

⁸⁴ Extract from Minutes of War Committee (W.C.76), dated 18 October 1916, TNA AIR 1/2319, #139 in Roskill, *Documents.*, p. 138. Memorandum for the War Committee by Lord Curzon dated 9 November 1916, TNA CAB 42/46, #144 in Roskill., p. 418-9. Note by Lord Curzon, Functions of the Air Board, 19 December 1916, TNA AIR 1/2311

⁸⁵ Between 13 June and 29 September, 1,195 RFC airplanes were lost or written off, and from 1 July to the end of November the RFC suffered 551 casualties including missing and captured, with 109 killed. Boyle, *Man of Vision.*, p. 189. The War Office, *Statistics.*, p. 497, 507. Jones, *War In The Air, Vol. II.*, p. 453. See also, Appendix VIII in Jones., p. 471-2, & Appendix XXXVII in H. A. Jones, *The War in the Air: Appendices*, reprint (London: The Naval & Military Press Ltd, 1937)., p. 161

⁸⁶ G. R. Bromet, “Formation and Early Days in France,” in *Naval Eight: A History of No. 8 Squadron, RNAS, Afterwards No. 208 Squadron, RAF, from Its Formation in 1916 until the Armistice in 1918*, ed. E. G. Johnstone (London: The Signal Press Ltd, 1931)., p. 10-1. Appendix XXIX in Jones, *War In The Air: Appendices.*, p. 143

⁸⁷ Williams, *Biplanes And Bombsights.*, p. 6

⁸⁸ Nos. 9308-9314, 9316, 9321, 9476-8, 9480-2, 9485 and 9772. See Sturtivant and Page, *Royal Navy Aircraft Serials.*, p. 158, 162, 168. Gunn, *Black Flight.*, p. 40

⁸⁹ Sturtivant and Page, *Royal Navy Aircraft Serials.*, p. 158-60, 162. Wing Captain Elder, No. 3 Wing, RNAS, May 1917, TNA AIR 1/2266

⁹⁰ Gunn, *Black Flight.*, p. 39. Service record of Felix Rumney Samson, TNA ADM 273/5/10

⁹¹ Disposition of Officers of the Royal Naval Air Service, 11 September 1916, TNA AIR 1/2512

⁹² Jones, *Origins of Strategic Bombing.*, p. 111

enough to provide financing and accounting for the entire wing. Squadron Commander Charles E. H. Rathbone, RMLI, previously the commanding officer of RNAS stations Redcar and Eastbourne, and one of the original first class at the Central Flying School (CFS) Upavon, arrived late in November.⁹³

Generalissimo Joseph Joffre's *Grand Quartier General* (GQG) had been contemplating an air raid against the Oberndorf Mauser works since August 1916, and on 3 September the order for the strike arrived from Lieutenant Colonel Barres, Capitaine Happe's superior at the aviation department. The weather at Luxeuil however did not clear until 12 October, at which time fifteen RNAS 1½ Strutters, out of a total 55 French and British aircraft (40 bombers and 15 fighters), flew the 200 km to the target and dropped 3,867 lbs of bombs.⁹⁴ The raiders encountered poor weather and strong German resistance,⁹⁵ with interceptors and anti-aircraft fire resulting in the loss of nine aircraft, six French and three British, losses that were heavy enough to convince the French, but not the British, to switch to night bombing.⁹⁶ The raid scattered bombs over a wide area, with the town of Oberndorf reporting 27 civilian casualties and seven deaths.⁹⁷

On 23 October two flights of Sopwith bombers from Red Squadron at Ochey, escorted by six fighters, again together with the French, dropped 3,000 lbs of bombs on the Hagendingen steel works, and disabled three of the five blast furnaces there, despite heavy anti-aircraft fire.⁹⁸ The Volklingen steel works were bombed on 10 November,⁹⁹ and the St. Ingbert steel works on the 12th. No. 3 Wing bombed the Dillingen blast furnaces with 2,000 lbs of bombs on 24 November,¹⁰⁰ but with minimal impact on production.¹⁰¹ The last No. 3 Wing raid of the year was carried out on 27 December, again targeting the Dillingen blast furnaces, but the 2,340 lbs

⁹³ Service record of Charles Edward Henry Rathbone, ADM 273/2

⁹⁴ Howlett, *Development of British Naval Aviation.*, p. 140-1. Elder to Admiralty, Report on bombing of Oberndorf, 12 October 1916, TNA AIR 1/111. Captain W. L. Elder, report of 12 October 1916, in No. 3 Wing RNAS, Report on Bomb Raids carried out on Industrial Areas in Saar Valley in Germany with combats with enemy and summary of operations, July 1916 – March 1917, TNA AIR 1/648/17/122/397

⁹⁵ Flight Sub-Lieutenants J. A. Glen, F. C. Armstrong, R. Collishaw, Raid on Oberndorf, 12 October 1916, TNA AIR 1/111

⁹⁶ Williams, *Biplanes And Bombsights.*, p. 13. Jones, *Origins of Strategic Bombing.*, p. 113-4.

⁹⁷ Elder to Admiralty, Report on bombing of Oberndorf, 12 October 1916, TNA AIR 1/111

⁹⁸ Report of Operations No. 20, Naval Staff Operations Division, *Royal Naval Air Service Operations Reports: November 1915 to June 1917, 1-36*, vol. 1, 3 vols. (Uckfield: Naval & Military Press, 2018)., p. 99. Howlett, *Development of British Naval Aviation.*, p. 141

⁹⁹ Howlett, *Development of British Naval Aviation.*, p. 141. Jones, *War In The Air, Vol. II.*, p. 453

¹⁰⁰ Jones, *War In The Air, Vol. II.*, p. 453

¹⁰¹ Williams, *Biplanes And Bombsights.*, p. 20-1. Wing Captain Elder to Admiralty, 25 November 1916, TNA AIR 1/111

that were dropped only landed on the outskirts of the factory.¹⁰² Operations during the winter were particularly difficult given the poor weather and extreme cold at low-oxygen altitudes of 10,000 feet or more. Both man and machine were impacted, the cold inflicting frostbite, jamming guns, and freezing everything from motor oil to navigational compasses.¹⁰³

The Wing expanded over the winter: October, November and December brought the arrival of additional Strutters, 21 aircraft altogether,¹⁰⁴ building the naval bombing force up to 47 machines by the end of the year despite the loss of the majority of the Short bombers to the RFC in November. The Handley Page bombers, as we have seen, were entering service at Manston between July and August 1916, at which time the Handley Page Squadron of the first four prototypes was assembled under Squadron Commander John. T. Babington, one of the three original Friedrichshafen raid pilots from 21 November 1914.¹⁰⁵ Babington flew the Handley Page Squadron to Ochey on 4 November 1916,¹⁰⁶ but the harsh winter prevented operations until March 1917.¹⁰⁷ On the other side of the ledger, the Germans established a Home Air Defence Command in October 1916, and were clearly taking the matter of air defence seriously.¹⁰⁸

Although the Wing renewed its bombing campaign in January and February 1917, a lethal combination of opposition from the Cowdray Air Board and Field Marshal Haig politically doomed the RNAS strategic bombing effort. The tipping point arrived at the beginning of March, just as the Wing was preparing for operations with its expanded force, now built up to 50 pilots and 55 operational machines.¹⁰⁹ Haig, as the official historian Henry Jones phrased it, “objected to an independent naval air detachment operating from French soil against what he considered to be military targets.”¹¹⁰ The BEF C-in-C had forwarded his complaints to the War Office on 1 November 1916, who then forwarded Haig’s concerns on to the Admiralty. DAS Vaughan-Lee

¹⁰² Williams., p. 21. Wing Captain Elder to Admiralty, 28 December 1916, TNA AIR 1/111

¹⁰³ Williams., p. 20. Report of Operations No. 27, p. 184, Report of Operations No. 28, p. 203, & Report of Operations, 17-31 March 1917, p. 4, in Naval Staff Operations Division, *RNAS Operations Reports, Vol I.*

¹⁰⁴ Type 9700: N5091 through to N5101, and N5103 through to N5107, plus N5109, N5113, N5115 – N5117, see Sturtivant and Page, *Royal Navy Aircraft Serials.*, p. 244-246. Jones, *War In The Air, Vol. II.*, p. 158, 162, 168-7, 452 fn

¹⁰⁵ Langham, *Bloody Paralyser.*, chapter 2, loc. 496. *The Naval Who’s Who, 1917.*, p. 222. Hobbs, *Royal Navy’s Air Service.*, p. 77-9. Service Record of John T. Babington, DSO, TNA ADM 273/2

¹⁰⁶ Sturtivant and Page, *Royal Navy Aircraft Serials.*, p. 440. Langham, *Bloody Paralyser.*, chapter 2, loc. 524

¹⁰⁷ Howlett, *Development of British Naval Aviation.*, p. 142

¹⁰⁸ Howlett., p. 141

¹⁰⁹ Wing Captain Elder, No. 3 Wing, RNAS, May 1917, TNA AIR 1/2266

¹¹⁰ Jones, *War In The Air, Vol. VI.*, p. 122

saw this letter, but the Admiralty made no response until 4 March 1917, despite repeated War Office inquiries.¹¹¹

With Balfour and Vaughan-Lee out of the Admiralty in January, Trenchard, Henderson, and Fifth Sea Lord Paine, together informed Haig that the Admiralty was willing to disband No. 3 Wing so that the machines could be repurposed by the RFC. Haig redoubled his opposition to the bombing offensive, and, in a crucial letter of 24 February, the day before No. 3 Wing bombed the Burbach ironworks with 1,690 lbs, derided its effectiveness against industry.¹¹² Curzon, under Lloyd George acting as Lord President of the Council and member of the War Cabinet, was still battling with the Admiralty, now under the leadership of Carson and Jellicoe.¹¹³ But the Navy was decidedly distracted by the imperative to increase air support for the anti-U-boat campaign, and Carson was not the astute political infighter that Balfour had been.¹¹⁴ With prospects of becoming Air Minister, and with Churchill waiting in the wings, Curzon supported Haig when he complained about the Luxeuil Wing's independence from BEF command. On March 7, three days after 20 of No. 3 Wing's planes dropped 2,600 lbs on the Burbach ironworks, the drawdown began: six planes, 19 pilots and 100 ratings were transferred to Wing Captain Charles Lambe's U-boat base bombing effort at RNAS Dunkirk, which was gradually built up during the course of the war and in 1918 became a powerful RAF bombing force before being replaced by the United States Navy's bombers.¹¹⁵ On 25 March 1917 No. 3 Wing was unceremoniously ordered to disband,¹¹⁶ although action on this decision was delayed until a retaliation bombing raid could be carried out against Freiburg, explicitly in response to U-boat sinkings of three hospital ships.¹¹⁷

¹¹¹ Extracts from Letter No. O.B. 1837 from General Sir Douglas Haig, C-in-C British Armies in France, to the War Office, dated 1 November 1916, War Office Letter 87/8869 (A.O.1) of 10 November to the Admiralty, Admiralty Minutes on Foregoing, and Admiralty Letter M.02380 of 4 March 1917 to War Office, TNA ADM 1/8449, #142 in Roskill, *Documents.*, p. 405-12

¹¹² Biddle, *Rhetoric and Reality.*, p. 26. Letter No. O.B./1837 from Field Marshal Sir Douglas Haig, C-in-C, British Expeditionary Force, to the War Office, dated from G.H.Q., British Armies in France, 24 February 1917, TNA ADM 1/8449, #162 in Roskill, *Documents.*, p. 473-4

¹¹³ Lord Beaverbrook, *Men and Power, 1917-1918*, vol. 2, 2 vols. (London: Hutchinson & Co., 1956), p. 165, 205, 313-4

¹¹⁴ Marder, *The Year of Crisis.*, p. 81-3. John J. Abbatiello, *Anti-Submarine Warfare in World War I: British Naval Aviation and the Defeat of the U-Boats* (New York: Routledge, 2006), p. 87-90

¹¹⁵ Abbatiello, *Anti-Submarine Warfare.*, chapter 3. Geoffrey Rossano and Thomas Wildenberg, *Striking the Hornets' Nest* (Annapolis: Naval Institute Press, 2015), chapters 15 & 16

¹¹⁶ Howlett, *Development of British Naval Aviation.*, p. 143. Jones, *Origins of Strategic Bombing.*, p. 122-3. Williams, *Biplanes And Bombsights.*, p. 12

¹¹⁷ Howlett, *Development of British Naval Aviation.*, p. 143

The Freiburg raid was carried out in broad daylight on 14 April by 23 planes from No. 3 Wing supported by 15 French aircraft. Earlier that morning, two Handley Page bombers took off on individual raids against Hagendingen (blast furnaces) and Chambley (aerodrome), pugnaciously concluding No. 3 Wing industrial bombing operations.¹¹⁸ Over the course of its bombing campaign, between the first raid of 30 July 1916 and the Handley Page and Freiburg missions of 14 April 1917, No. 3 Wing flew 18 missions and dropped 38,567 lbs of bombs with an average bomb load of approximately 2,150 lbs per raid.¹¹⁹ This 17 tons of bombs should be compared with the 110 tons dropped on England by Gotha and Gaint bombers between May 1917 and May 1918, the 292 tons dropped by the RFC on the Somme between 1 July and 17 November 1916, and the 660 tons dropped by the 41st Wing and IAF between October 1917-November 1918.¹²⁰

Some damage was certainly inflicted on Germany's war industries, but the tendency, as German sources and post-war bombing surveys by the US Air Service and the Air Ministry indicate, was for the and Air Department's after-action reports to inflate the impact of the raids.¹²¹ Williams noted that of the five missions flown against blast furnaces, at St. Ingbert, Dillingen and Hadendingen, four had no real impact on the civilian workforce.¹²² The Burbach ironworks were bombed four times between 23 January and 22 March 1917, but no air raids were recorded in the factory logs after the 23 January attack until October 1917.¹²³ The reporting of excessive results due to frustratingly imprecise wartime bomb damage assessments, and a tendency to project concerns about the impact of bombing attacks on London, led directly to inflated reports of the Wing's effectiveness against civilian workforce morale.¹²⁴

¹¹⁸ Commanding Officer Ochey to Commanding Officer No. 3 Wing Luxeuil, 7 April 1917, TNA AIR 1/638. Summary of No. 3 Wing raids, 30 July 1916 to 14 April 1917, TNA AIR 1/111, p. 65-91

¹¹⁹ Howlett, *Development of British Naval Aviation.*, p. 144. Williams, *Biplanes And Bombsights.*, p. 1. Malcolm Cooper, "The British Experience of Strategic Bombing," *Cross & Cockade International Journal* 17, no. 2 (Summer 1986): 49-61., p. 52. Wing Captain Elder history and operations of No. 3 Wing, 24 May 1917, TNA AIR 1/2266, p. 5. Summary of No. 3 Wing raids, 30 July 1916 to 14 April 1917, TNA AIR 1/111

¹²⁰ Raymond Fredette, *The First Battle of Britain, 1917-1918* (London: Cassell and Company, Ltd, 1966)., p. 263-6 Appendix VIII in Jones, *War In The Air, Vol. II.*, p. 471-2. Appendix XII, Statistics of work of squadrons of the Independent Force, including wastage, June-November 1918, in Jones, *War In The Air: Appendices.*, p. 41. Cooper, "The British Experience of Strategic Bombing.", p. 49

¹²¹ Williams, *Biplanes And Bombsights.*, p. 18. Biddle, *Rhetoric and Reality.*, p. 57-67

¹²² Williams, *Biplanes And Bombsights.*, p. 20

¹²³ Williams., p. 20

¹²⁴ Williams., p. 24-30. Tami Davis Biddle, *Air Power and Warfare: A Century of Theory and History* (Carlisle, PA: United States Army War College, 2019)., p. 11-2. Christopher Luck, "The Smuts Report: Interpreting and Misinterpreting the Promise of Air Power," in *Changing War: The British Army, the*

Haig's criticism of the No. 3 Wing mission, and Trenchard and Henderson's strong opposition to naval strategic bombing, should not mask the fact that, given the political pressure for air service unification and retaliation, the RFC would now be required to undertake the long-distance bombing mission itself. The RFC's outlays presented at the War Office meeting of 21 June correspondingly proposed an increase from 108 squadrons to 200, of which 40 would be long-distance bombing squadrons.¹²⁵ The War Cabinet meeting later that week raised the issue of retaliation for the Gotha raids, a subject also discussed after the Gotha bombing of London on 7 July. At this meeting it was resolved to launch a retaliatory raid against Mannheim, only 100 miles behind the front lines, as soon as the appropriate bombing force could be organized.¹²⁶ The chemical gas works at Mannheim had been a target considered by No. 3 Wing,¹²⁷ but was now put forward without evident enthusiasm by Field Marshal Haig, who was angling to keep whatever bombing was going to take place under his control.¹²⁸ From Haig's perspective it was far better to gain a long-distance bombing force for offensive action against the enemy's forces and logistics, than to lose additional fighter squadrons to the Home Defence command of Sir John French,¹²⁹ a position supported by Lieutenant-General Henderson, Major-General Trenchard, and Fifth Sea Lord Godfrey Paine.¹³⁰ These last three believed "it would be possible to begin bombing on a considerable scale by next Spring [1918]," but that in the immediate term, "even if it were possible to organise a bombing force by October of this year, very little value would be obtained from it before the Spring," due to the weather.¹³¹ Their draft report elaborated that "the Naval Air Service have, at present, no aeroplanes which could assist in such an

Hundred Days Campaign and The Birth of the Royal Air Force, 1918, ed. Gary Sheffield and Peter Gray, Kindle ebook, Birmingham War Studies (London: Bloomsbury, 2013), 149–71., p. 149

¹²⁵ Jones, *War In The Air, Vol. VI.*, p. 2 n

¹²⁶ Williams, *Biplanes And Bombsights.*, p. 39

¹²⁷ Howlett, *Development of British Naval Aviation.*, p. 138, 143. Williams, *Biplanes And Bombsights.*, p. 39

¹²⁸ Richard Overy, *The Birth of the RAF, 1918: The World's First Air Force* (London: Penguin Books, 2019)., p. 34. Williams, *Biplanes And Bombsights.*, p. 38

¹²⁹ William Robertson, *Soldiers and Statesmen, 1914-1918, Vol. II*, Kindle ebook, vol. 2, 2 vols. (Auckland: Pickle Partners Publishing, 2015)., p. 24-5

¹³⁰ Howlett, *Development of British Naval Aviation.*, p. 145. Report on Long-Distance Bombing Operations, 20 June 1917, Appendix: Cabinet Committee on War Policy, 169th Meeting of the War Cabinet, 26 June 1917, TNA CAB 23/3/17

¹³¹ Report on Long-Distance Bombing Operations, 20 June 1917, Appendix: Cabinet Committee on War Policy, 169th Meeting of the War Cabinet, 26 June 1917, TNA CAB 23/3/17

operation” an incredulous statement considering that No. 3 Wing had been disbanded not much more than two months prior.¹³²

As Neville Jones put it, “by the spring of 1917 the leaders of the Flying Corps had achieved all their aims in their dispute with the Admiralty. They had caused the bombing wing at Luxeuil to be disbanded and had secured from the Navy four fully equipped fighting squadrons and a large number of aero-engines.”¹³³ Malcolm Cooper wrote that “the navy had effectively surrendered its claim to an equal voice in Britain’s air councils.”¹³⁴

The 41st Wing, Air Ministry, and Independent Air Force

The Gotha bombing campaign, with its deadly daylight attacks on Kent and Folkstone on 26 May and on London on 13 June and 7 July, changed the calculus.¹³⁵ The Lloyd George coalition, already beset as it was with the perils of the U-boat crisis and the impending collapse of Russia, wanted quick answers to the air defence issue, and the independent air advocates now saw their chance.¹³⁶ Lloyd George appointed his fixer, South African Defence Minister Lieutenant-General Jan Smuts, to find solutions.¹³⁷ Smuts’ first report of 19 July focused on the air defence of London,¹³⁸ but three days prior Lloyd George had offered Churchill, who in June had been a subject of press speculation regarding possible presidency of the Air Board,¹³⁹ the position of

¹³² Report on Long-Distance Bombing Operations, 20 June 1917, Appendix: Cabinet Committee on War Policy, 169th Meeting of the War Cabinet, 26 June 1917, TNA CAB 23/3/17

¹³³ Jones, *Origins of Strategic Bombing*., p. 127. In fact, by June 1917, there were six RNAS fighter squadrons serving on the Western Front: Nos. 1, 3, 6, 9, 10, and No. 8 which, as we have seen, had been under RFC control since October 1916, see Appendix XXIX in Jones, *War In The Air: Appendices*., p. 142-3

¹³⁴ Cooper, *Birth of Independent Air Power*., p. 58

¹³⁵ Williams, *Biplanes And Bombsights*., p. 36. Susan Grayzel, *At Home and Under Fire: Air Raids and Culture in Britain from the Great War to the Blitz* (New York: Cambridge University Press, 2012)., p. 344. Christopher Cole and E. F. Cheesman, *The Air Defence of Britain 1914-1918* (London: The Bodley Head Ltd, 1984)., p. 243-72. Fredette, *The First Battle of Britain*., p. 53-84. Cooper, “Blueprint for Confusion.”, p. 444-5. John Sweetman, “The Smuts Report of 1917: Merely Political Window-Dressing?,” *Journal of Strategic Studies* 4, no. 2 (1981): 152–74., p. 153

¹³⁶ Williams, *Biplanes And Bombsights*., p. 37

¹³⁷ Roy Hattersley, *David Lloyd George: The Great Outsider* (London: Little, Brown, and Company, 2010)., p. 442

¹³⁸ Home Defence, 19 July 1917, Appendix VI in H. A. Jones, *The War In The Air, V*, Antony Rowe Ltd. reprint, vol. 5, 6 vols. (Uckfield: The Naval & Military Press Ltd, 1935)., p. 487-91. Jan Smuts’ First Report on the Committee on Air Organisation and Home Defence against Air Raids, 19 July 1917, TNA AIR 9/69

¹³⁹ Martin Gilbert, *World In Torment: Winston S. Churchill, 1917-1922*, Minerva edition, vol. 4, 8 vols. (London: Mandarin Paperbacks, 1990)., p. 23

either Air Minister or Minister of Munitions, with Churchill favouring the latter.¹⁴⁰ It should be of no surprise then that Smuts' second report of 17 August confirmed that government policy would be to realize the creation of "a real Air Ministry responsible for all air organisation and operations."¹⁴¹ On 30 July the Air Board approved the construction of 100 Handley Page bombers, plus three of the proposed super-heavy Type V1500s.¹⁴²

John Sweetman and Malcolm Cooper agree that Smuts was merely providing leverage for the decision Lloyd George had already made to unify the services and create the Air Ministry.¹⁴³ Lord Milner, in particular, played a key role in pushing through the Air Ministry's formation, and the Admiralty, now under the technocratic guidance of First Lord Eric Geddes, was undergoing a period of reform during September and October that culminated on 24 December in the sacking of Jellicoe as First Sea Lord and was unable or unwilling to prevent the seemingly inevitable process of air unification.¹⁴⁴ The formation of the Air Ministry was hastened by Germany's transition to night bombing with Gotha and Gaint bombers during September,¹⁴⁵ which RNAS fighters stationed at England's coastal air stations and at Dunkirk could not intercept due to the minimal number of naval night fighters available.¹⁴⁶ The War Cabinet duly approved Mr. Long's Air Force Bill on 6 November, formalizing the creation of the Air Ministry.¹⁴⁷

Key figures from the Royal Navy and Air Department who supported unification for the purposes of long-distance bombing included DAS Vaughan-Lee's former deputy, Assistant Direction Air Services Wing Captain Arthur V. Vyvyan, who had not abandoned the prospect of long-range bombing despite the demise of No. 3 Wing. Lieutenant Commander Lord Tiverton,

¹⁴⁰ Winston Churchill, *The World Crisis: Volume III, 1916 - 1918*, Kindle ebook, vol. 3, 5 vols. (New York: RosettaBooks, LLC, 2013), chapter 12, loc. 4101

¹⁴¹ Roskill, *Man of Secrets, I.*, p. 426-7. Williams, *Biplanes And Bombsights.*, p. 39. Committee on Air Organisation and Home Defence against Air Raids, 17 August 1917, TNA CAB 24/22/58. Air Organization, Second Report of the Prime Minister's Committee on Air Organization and Home Defence against Air Raids, dated 17th August 1917, Appendix II in Jones, *War In The Air: Appendices.*, p. 8-14

¹⁴² Howlett, *Development of British Naval Aviation.*, p. 147. Biddle, *Rhetoric and Reality.*, p. 47

¹⁴³ Lloyd George, *War Memoirs, Vol. II.*, p. 66-7. Cooper, "Blueprint for Confusion.", p. 443. Sweetman, "The Smuts Report of 1917: Merely Political Window-Dressing?", p. 152

¹⁴⁴ Cooper, "Blueprint for Confusion.", p. 441. Cooper, *Birth of Independent Air Power.*, p. 116. Marder, *The Year of Crisis.*, p. 218-23, 338-9

¹⁴⁵ Williams, *Biplanes And Bombsights.*, p. 39. Cooper, "Blueprint for Confusion.", p. 440. Cole and Cheesman, *The Air Defence of Britain 1914-1918.*, p. 322-42

¹⁴⁶ Howlett, *Development of British Naval Aviation.*, p. 195. Cole and Cheesman, *The Air Defence of Britain 1914-1918.*, p. 354

¹⁴⁷ Minutes of the 266th meeting of the War Cabinet, 6 November 1917, TNA CAB 23/4/40, p. 4-5

strategic bombing expert and No. 3 Wing Armaments Officer afterwards attached to the naval section of the British Aviation Commission in Paris, was another important Royal Navy advocate of independent air power. In April and September 1917 Tiverton prepared papers for Vyvyan to present at the Air Board on the practicalities of long-distance bombing.¹⁴⁸ Rear Admiral Mark Kerr, a maverick air power radical who was also serving on the Air Board, presented dire prognostications of huge bombing fleets paralyzing Britain's vital centres if the government did not act first.¹⁴⁹ This fifth column of Royal Navy air power advocates was rounded out by Commodore Murray Sueter, who hoped the Air Ministry would welcome his technical expertise. On 1 January 1918 Vyvyan became Assistant Chief of the Air Staff, and Kerr was made Deputy Chief. Sueter, who had been relieved of command as a result of a very improper indiscretion related to his claim for developing the tank,¹⁵⁰ was blacklisted from transferring to the RAF and thus received neither pudding nor pie.¹⁵¹

The imperative for retaliation became critical with in the inception of the Gotha and Gaint night bombing raids between 4 September and 2 October 1917. Smuts, whose committee on 3 September was expanded with the inclusion of Minister of Munitions Churchill,¹⁵² and encouraged by the War Cabinet's resolution on 5 September "that we must carry the aerial war into Germany, not merely on the ground of reprisal,"¹⁵³ circulated an analysis of home defence options to the War Cabinet on 6 September, wherein the pertinent conclusion was that "we can only defend this island effectively against air attacks by offensive measures, by attacking the enemy in his air bases on the Continent and in that way destroying his power of attacking us across the Channel."¹⁵⁴ At the zenith of irony, on 2 October 1917, Chief of the Imperial General Staff (CIGS) Field Marshal Sir William Robertson, following on from the agreement of the War Cabinet the previous day, now sought out Trenchard to try to get Haig to commit one squadron

¹⁴⁸ Christina Goulter, *A Forgotten Offensive: Royal Air Force Coastal Command's Anti-Shipping Campaign, 1940-1945*, Kindle ebook (Abingdon: Routledge, 2013), p. 28-9. Jones, *Origins of Strategic Bombing*, p. 142-3

¹⁴⁹ Mark Kerr, *Land, Sea, and Air* (London: Longmans, Green and Co. Ltd., 1927), p. 290-1. Jones, *Origins of Strategic Bombing*, p. 151-2. Overy, *The Birth of the RAF*, p. 29

¹⁵⁰ Commodore Murray Sueter, C.B. MVO, 6 December 1917, TNA ADM 178/29

¹⁵¹ Howlett, *Development of British Naval Aviation*, p. 146-7; Edward Chilton, "Rear Admiral Sir Murray Sueter, CB," *Cross & Cockade International Journal* 15, no. 2 (Summer 1984): 49-55., p. 51-2

¹⁵² Minutes of a Meeting of the War Cabinet, 227, 3 September 1917, TNA CAB 23/4/1, p. 4

¹⁵³ Minutes of a Meeting of the War Cabinet, 228, 5 September 1917, TNA CAB 23/4/2, p. 2

¹⁵⁴ Jones, *War In The Air, Vol. VI*, p. 15. Jones, *War In The Air, Vol. V*, p. 64-5. Night Air Raids on London, 6 September 1917, Appendix VII in Jones., p. 491-3

of bombers to the retaliatory long-range bombing project.¹⁵⁵ On 15 October the War Cabinet resolved that “immediate arrangements should be made for the conduct of long-range offensive operations against German towns where factories existed for the production of munitions of all kinds.” An Air Policy Committee was established with Smuts, Derby, Geddes and Cowdray taking charge.¹⁵⁶

The RFC began to assemble its long-distance bombing force in the Nancy area, in fact at No. 3 Wing’s former Ochey aerodrome.¹⁵⁷ First Lord of the Admiralty Geddes attached eight to ten Handley Page night bombers in the form of No. 16 Squadron (Squadron Commander K. S. Savroy), which had been detached from anti-submarine operations on the Yorkshire coast and assembled at Manston.¹⁵⁸ Trenchard committed 40-50 crated DH4s that otherwise were to have been sent to Russia, which in turn allowed RFC Squadrons No. 55 (day bombing DH4s) and No. 100 (night bombing FE2bs) to be transferred to the incipient long-distance force.¹⁵⁹ At the beginning of October Trenchard was ordered to deploy the force as soon as possible, which he designated the 41st Wing, and picked for command Lieutenant-Colonel (future Chief of the Air Staff) C. L. N. Newall.¹⁶⁰ Between June 1917 and January 1918 the 41st Wing carried out 53.5% of its sorties against industrial targets such as blast furnaces and chemical works, with the remaining effort being directed against operational targets such as enemy aerodromes and railway exchanges.¹⁶¹

Lloyd George, shoring up his political allies for the coming 1918 phase of the war, had in mind Lord Northcliffe, *Daily Mail* and *The Times* press baron, and a fierce antagonist of the soon to depart First Sea Lord Jellicoe,¹⁶² as the first Air Minister. But when Northcliffe refused this offer by indiscreetly publishing it in *The Times* on 16 November, Lord Cowdray immediately resigned.¹⁶³ On the 23 November Lord Rothermere, Northcliffe’s brother, was instead made Air

¹⁵⁵ Jones, *War In The Air*, Vol. V., p. 88

¹⁵⁶ Cooper, *Birth of Independent Air Power.*, p. 116. Minutes of War Cabinet Committee on Air Policy, 16 October 1917, TNA AIR 1/678. Minutes of a Meeting of the War Cabinet, 15 October 1917, TNA CAB 23/4

¹⁵⁷ Howlett, *Development of British Naval Aviation.*, p. 145

¹⁵⁸ E. D. Harding and Peter Chapman, eds., *A History of Number 16 Squadron: Royal Naval Air Service* (Morrisville, North Carolina: Lulu Press, 2006)., p. 5

¹⁵⁹ Jones, *War In The Air*, Vol. VI., p. 123 fn

¹⁶⁰ Jones, *War In The Air*, Vol. V., p. 90-1. Jones, *War In The Air*, Vol. VI., p. 123

¹⁶¹ Howlett, *Development of British Naval Aviation.*, p. 146. Williams, *Biplanes And Bombsights.*, p. 116

¹⁶² Marder, *The Year of Crisis.*, p. 325

¹⁶³ A Note on the Resignation of Lord Cowdray from the Air Board, 16 November 1917, #205 in Roskill, *Documents.*, p. 581. J. Lee Thompson, *Politicians, the Press, and Propaganda: Lord Northcliffe and the Great War, 1914-1919*, Kindle ebook (Kent, Ohio: Kent State University Press, 1999)., chapter 9, loc. 4291

Minister, and on 3 January 1918 the Air Council was constituted, including such critical air power advocates as Lieutenant-General Sir David Henderson as Vice President, Sir William Weir as Director-General of Aircraft Production at the Ministry of Munitions, Commodore Paine as Master-General of Personnel and Rear Admiral Mark Kerr as Deputy Chief of the Air Staff. Trenchard himself became the first Chief of the Air Staff (CAS).¹⁶⁴

Deliveries of engines and airframes were expected to increase dramatically during 1918.¹⁶⁵ Six new National Aircraft Factories commenced production between January and April, and 2,374 BHP and Fiat engines were purchased from France. In Britain, 3,711 Hispano-Suiza and Sunbeam Arab and 2,486 Clerget and Bentley engines had been built by June 1918,¹⁶⁶ and production was expanded at Rolls-Royce, whose 8,342 workers ultimately produced 6,554 engines, including 4,080 Eagles (250-375 hp) and 1,969 Falcons (190-250 hp) during the war.¹⁶⁷ The United States gradually ramped up production of its mass produced Liberty engine (200-300 hp), of which the Air Board and Air Ministry ordered 5,500 but only 1,050 were actually delivered before American demand completely swallowed supply.¹⁶⁸

The first Air Council did not last long, as CAS Trenchard found himself in an intractable feud with Air Minister Rothermere. The heart of the matter was that Rothermere, a strong advocate of independent air power, did not agree with Trenchard's policy of funneling resources to the Western Front in support of Haig.¹⁶⁹ Unable to reconcile their differences, Trenchard resigned on 19 March, but was willing to delay until April so that the RAF could at least be formed first.¹⁷⁰ On 13 April Rothermere then accepted Trenchard's resignation and immediately appointed Wing Captain, now Brigadier-General, Frederick Sykes as Chief of the Air Staff.¹⁷¹ DGMA Henderson, an old antagonist of Sykes, resigned from the Army Council less than a week later, and Rothermere, himself the subject of increasing criticism for this series of

¹⁶⁴ Philip Joubert, *The Third Service: The Story Behind the Royal Air Force* (London: Thames & Hudson, 1955), p. 61

¹⁶⁵ Jones, *War In The Air, Vol. VI.*, p. 56

¹⁶⁶ Jones., p. 42

¹⁶⁷ Jones., p. 51. Langham, *Bloody Paralyser.*, chapter 2, loc. 872

¹⁶⁸ Langham, *Bloody Paralyser.*, chapter 2, loc. 895. Jones, *War In The Air, Vol. VI.*, p. 53

¹⁶⁹ Peter Gray, "The Air Ministry and the Formation of the Royal Air Force," in *Changing War: The British Army, the Hundred Days Campaign and The Birth of the Royal Air Force, 1918*, ed. Gary Sheffield and Peter Gray, Kindle ebook, Birmingham War Studies (London: Bloomsbury, 2013), 135-48., p. 142-3. Biddle, *Rhetoric and Reality.*, p. 27

¹⁷⁰ Overy, *The Birth of the RAF.*, p. 44

¹⁷¹ Overy., p. 52. Eric Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918*, Cass Series: Studies in Air Power 8 (London: Frank Cass Publishers, 1999), p. 118

reversals, resigned on 25 April.¹⁷² Sir William Weir, now Lord Weir of Eastwood, was appointed Air Minister on 1 May.¹⁷³ It was the Sykes-Weir team that oversaw the formation of the RAF and the application of long-range bombing as major Allied policy until the armistice.¹⁷⁴

To execute the long-distance bombing mission the War Cabinet envisioned, on 6 June Sykes advanced 41st Wing CO Lieutenant-Colonel Newall to Brigadier-General and appointed him to command of the Eighth Brigade (of which the 41st Wing was the only component at first), as the core of the newly formed Independent Air Force (IAF) within the RAF. Sykes appointed none other than his predecessor as CAS, Major-General Trenchard to command the IAF. The latter, for his part, promptly employed this formidable instrument of air power in support of the BEF, primarily by bombing enemy communications, as was his established practice from his years working with Haig.¹⁷⁵ No. 216 Squadron, the naval bombing unit attached to the 41st Wing, was joined by No. 215 Squadron on 4 July 1918 as part of the RAF's 83rd Wing, Eighth Brigade. The two naval squadrons worked alongside No. 100 Squadron as night bombers, and the whole force was concentrated at Autreville on 19 August.¹⁷⁶ The 41st Wing and IAF flew 508 raids between October 1917 and November 1918, of which only 172 were against targets actually inside Germany.¹⁷⁷

Under Trenchard's command No. 216 Squadron primarily bombed railway junctions and enemy aerodromes, the Squadron's effort accounting for 27% (176.5 tons) of the IAF's total bomb tonnage.¹⁷⁸ Moderate to considerable damage was judged to have been inflicted on railway junctions.¹⁷⁹ The two naval squadrons bombed the Metz-Sabon railway junction 36 times, and dropped 220 tons on enemy aerodromes.¹⁸⁰ Although considerable damage was done to the Burbach, Carlshutte, Dillingen and Rombach blast furnaces, there was little real loss of

¹⁷² Overy, *The Birth of the RAF*., p. 53

¹⁷³ W. J. Reader, *Architect of Air Power: The Life of the First Viscount Weir of Eastwood, 1877-1959* (London: Collins, 1968)., p. 69. Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918*., p. 118

¹⁷⁴ Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918*., p. 112-4

¹⁷⁵ Tami Davis Biddle, "Learning in Real Time: The Development and Implementation of Air Power in the First World War," in *Air Power History: Turning Points from Kitty Hawk to Kosovo*, ed. Sebastian Cox and Peter Gray (New York: Frank Cass Publishers, 2002), 3-20., p. 12. Howlett, *Development of British Naval Aviation*., p. 148-9

¹⁷⁶ Howlett, *Development of British Naval Aviation*., p. 148

¹⁷⁷ Howlett., p. 149

¹⁷⁸ Howlett., p. 149

¹⁷⁹ Ian Philpott, *The Birth of the Royal Air Force* (Barnsley, South Yorkshire: Pen & Sword Military, 2013)., p. 158

¹⁸⁰ Howlett, *Development of British Naval Aviation*., p. 149

production.¹⁸¹ The story was the same for the targeted chemical works and other industrial centres.¹⁸² As historian Richard Overy observed, Trenchard's use of the IAF "was not what Weir and Sykes had had in mind,"¹⁸³ and Malcolm Cooper stated baldly, "Trenchard was the last man to foster the growth of independent spirit within the RAF."¹⁸⁴ The Air Ministry soon found itself battling for control of the IAF against both Haig and the French, the latter who wanted the entire Allied bombing force placed at Supreme Commander Foch's disposal.¹⁸⁵

Conclusion

From the Zeppelin shed raids of 1914 to the dedicated industrial bombing of No. 3 Wing in 1916-17, the RNAS pioneered long-distance strategic bombing. Despite losing the battle for control over British long-distance bombing to the Air Board and War Office, the Navy contributed squadrons to the RFC's long-distance bombing 41st Wing, and later the IAF. The Royal Navy, in conjunction with the French and in response to Germany's Zeppelin and Gotha raids, operationalized the concept of strategic bombing against the enemy's industrial centres. First Lords of the Admiralty Churchill and Balfour, and their Air Department directors Commodore Sueter and Rear Admiral Vaughan-Lee, were logically extending the Navy's traditional maritime coastal strike and blockade roles to territories and industries that had hitherto been beyond the range of direct attack. That the Air Ministry came to champion these roles is a historical irony not lost on the Royal Navy.

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¹⁸¹ Philpott, *Birth of the Royal Air Force.*, p. 158

¹⁸² Philpott., p. 159

¹⁸³ Overy, *The Birth of the RAF.*, p. 69

¹⁸⁴ Cooper, "Blueprint for Confusion.", p. 447

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