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BNW

The Papers of Sir Barnes Neville Wallis

Compiled by Christine J Heap

Contents

BNW

Shortly before he died, Sir Barnes Wallis donated the bulk of his papers and photographs to the Science Museum, Legal difficulties for a while prevented their being made accessible to the public. These have since been cleared up and the work of putting the collection in order has now been completed. It

seems a fitting way of marking the centenary of Wallis' birth to announce that the papers are available for public inspection, with the exception of a few that must remain restricted for the time being, and to issue this catalogue, which has been prepared by Christine Heap, Archives Officer in the Science Museum Library.

Wallis is best known to the general public for his development of the bouncing bomb in World War II, made famous in the memorable **Dambusters** film, in which the part of Wallis was played by the late Sir Michael Redgrave. I asked Sir Barnes whether he thought the portrayal true to life and he seemed well satisfied with it. Perhaps though, the film character was smoother, less forthright, even less downright awkward than the man himself could be.

Wallis was born on 26 September 1887 at Ripley in Derbyshire. He was a pupil at Christ's Hospital School and then served as an apprentice, first at the Thames Engineering Works, then in 1908 at John Samuel White's shipyard at Cowes. A young draughtsman, H B Pratt, came to Cowes to occupy the drawing board next to Wallis' in 1912, Pratt had been employed by Vickers at Barrow on the construction of their first airship, ordered by the Royal Navy, which had never flown and had suffered a total structural collapse while being removed from its shed.

This failure caused both Vickers and the Admiralty to abandon airships, but in 1913, when the Germans stepped up the construction of Zeppelins, the Government were startled into activity and turned to Vickers again, with an order of one rigid airship for the Navy. Vickers retrieved Pratt from Cowes and appointed him Chief Draughtsman - Airships. Pratt invited Wallis to join him as 'Chief Assistant in the designing of a **Zeppelin** larger than any yet made'. Thus began Wallis' lifelong involvement with aeronautics and association with Vickers. Due to official vacillation, it was not until 1917 that this airship, HMA No 9, was finally commissioned. Wallis was intermittently engaged on war service and airship design.

Towards the end of the war, Wallis became engrossed in the design of the R80, an elegant ship that performed well on trial, but the Air Force decided they had no need of it and it was summarily dismissed in 1921. Wallis' preoccupation with the R80 perhaps blinded him to the evident signs that the future lay with aircraft. In 1924 the Government initiated a programme for the construction of "two experimental airships to settle once and for all their viability for long distance air travel. One, the R101, was designed and constructed by a government sponsored team at Cardington; the other by private enterprise in the shape of the Airship Guarantee Company, a subsidiary of Vickers, designed not by a team but, as became increasingly clear, a fiercely individualistic Barnes Wallis, The R100 first took to the air in December 1929 and after a quite successful series of trials took off on *29* July the following year for a successful round trip to Canada.

The R101 encountered a number of problems during its trials; it had to be lengthened to provide adequate lift. There seem to have been put right, to the satisfaction of the Cardington team, in time for the flight to India on 4 October 1930 But on the way out, it crashed into a hillside at Beauvais with the loss of the lives of all but six of the fifty-four passengers and crew aboard, including Lord Thomson, the Air Minister, and other distinguished men. The shock of the disaster to Government and public alike brought an abrupt end to all airship development in this country. Wall is diverted his attention to aircraft. He had been invited to join the Aviation Department of Wishers as Chief Designer (Structures) alongside R K Pierson, Chief Designer at the Weybridge factory, and R J Mitchell, Chief Designer at the Supermarine subsidiary at Southampton. In the event Barnes Wallis had little impact on the Supermarine designs and was associated almost entirely with the Weybridge design office.

In aircraft design, Wallis is best known for his use of geodetic construction. He had developed this method for the gas bag wiring in the R100 (a geodetic line is the shortest line that can be drawn from one point on a curved surface to another such that its plane of curvature is everywhere perpendicular to the surface). Wallis had the opportunity of applying this method when Vickers constructed a single-engine low-wing monoplane that came to be known as the Wellesley. It entered service with the PAF as a bomber and between March 1937 and May 1938 a total of 377 were built. However, by the outbreak of World War II they had been superseded in home-based squadrons by larger machines. The Wellesley's most celebrated feat was in setting the world record for long-distance flight by flying non-stop for the 7,162 miles from Ismailia to Darwin in November 1938. The geodetic construct ion of the wings provided a hollow section into which additional fuel tanks could be fitted for this epoch-making flight. In general, this structure, using light aluminium alloy combined lightness and strength.

This characteristic was more strikingly evident in the next aircraft with which Wallis was associated, the Wellington twin-engined bomber, which first flew in 1936. With variations, it served as the backbone of Bomber Command's operations against Germany until the autumn of 1943 when it was replaced by four-engined machines. Wellingtons continued to serve in other spheres, such as anti -submarine duties, until the end of the war. In all, no fewer than 11,461 were built. In November 1940 The Aeroplane commented 'Wellingtons have returned from raids so damaged that they would appear to be about to collapse at any moment. Yet the geodetic structure spreads the loads that even though large portions might be shot away, the machines have been able to return to their bases'.

For much of the time during the war, Wallis was heavily engaged in supervising improvements to the Wellingtons and adoptions for special purposes. At the same time, he developed his ideas on strategic bombing of German industrial targets, including the dams in the Ruhr district, to disrupt industry

and. communications. Official reaction to these was at first frustratingly negative but in 1943 the destruction of the Ruhr dams suddenly received approval. For this purpose, Wallis devised the bouncing bombs, which, when delivered with great skill and courage by 617 Squadron, breached the Möhne and Eder dams.

Encouraged by this success, the authorities gave Wallis permission to put into practice his long held idea of a ten-ton bomb, nicknamed Tallboy to destroy targets conventional bombs would hardly dent, To his disappointment it was scaled down to 12,000 lb but even so, Tallboy was used to devastating effect, especially in the hands of 617 Squadron. Among their achievements was the destruction of a vast gun emplacement at Marquise-Mimoyeques which would otherwise have projected six hundred tons of explosive every day into the heart of London. Finally, with Tallboy they completed the destruction of the crippled **Tirpitz**, Hitler's largest and most menacing capital ship.

Towards the end of the war, Wallis at last got his ten-ton bomb, Grand Slam, first dropped in March 1945, with staggering effect. Wallis' work on bombs made a material contribution to the course of the war, largely confirming the predictions he had made in 1940 in his paper "A note on a method of attacking the Axis Powers."
After the war, Wallis was offered the post of Special Director and head of an independent Research Department at Vickers, with freedom to develop at will; Wallis turned his attention to variable geometry or swing-wing aircraft. Over the next thirteen years, with first the **Wild Goose** then **Swallow** models, Wallis developed this revolutionary concept, overcoming technical problems as he worked towards the prototype stage. That stage never came as the various potential applications of the principle were modified and then cancelled in the light of changing operational requirements and increasing costs. Although bitterly disappointed, Wallis continued to work on designs for high speed aeroplanes, eventually proposing the adoption of a rectangular fuselage as the most efficient form for hypersonic aircraft.

At last, in May 1971, Wallis retired from Vickers, by now the British Aircraft Corporation. He looked back over a career of incessant battling for his original and far-sighted conceptions against what seemed to him the obscurantist obstruction of officialdom, government and commercial. But they had to take a wide, eventually international view of developing technology, to which Wallis, the lone inventor par excellence, opposed his single-minded enthusiasms.
L R Day

Note on the Arrangement of the Papers

Barnes Wallis presented his papers to the Science Museum in 1979. The papers, consisting of correspondence, minutes of meetings, manuscript notes, calculations etc, were stored by Wallis in files and file folders. Their order within these files has not been disturbed. Photographs found in files have been left with the papers and not included in section J which details loose prints. Old and damaged folders have been replaced. Some of the papers were badly damaged in a flood at Weybridge in 1968.
To assist the reader in using the papers the files have been grouped in subject areas. Where an original numbering sequence has been evident this has been maintained in the order of the files. Where no such sequence was evident, the order has been decided by myself.

Material relating to Wallis' involvement with Christ's Hospital, Epsom College and various learned societies has not been included in this list; nor have the books from his study at home, or the trade catalogues and printed technical literature received with the papers. A separate list of this material is available for consultation at the Science Museum Library.

Finally, thanks are due to the staff of the Science Museum who have assisted in the production of this volume, particularly to Janet Fyffe who did much of the preliminary sorting and to Jill Fryer, Secretary to the Keeper of the Library, who has done a magnificent job in typing the final copy from a complicated manuscript.
C J Heap
July 1987

The Life of Sir Barnes Wallis

1887 Sep 26	Born in Ripley, Derbyshire.	2nd son of Charles George Wallis and Edith Eyre.
1905 - 1907	Thames Ironworks, Shipbuilding & Engineering Co Ltd.	Apprentice.
1907 - 1913	John Samuel White & Co Ltd, Cowes, Isle of Wight	Apprentice fitter (Marine Engines) to 1910. Draughtsman Marine Engine Dept to 1913
1913 - 1915	Assistant Chief of the Airship Dept, Vickers Ltd, London.	Design of the R9 airship.
1915	Served in First World War.	Enlisted in the Artists' Rifles and the RNVR.
1916 - 1921	Chief Draughtsman, Airship Dept, Vickers Ltd, Barrow-in-Furness.	Completion of R9. Design of airships R23, R80 and high mast type of mooring for rigid airships.
1922	London University.	Took a degree by correspondence in engineering.
1922 - 1929	Chief Engineer, Airship Guarantee Co, Vickers Ltd, London and Howden, Yorkshire.	Design of R100 airship.
19301937	Chief Designer (Structures), Vickers (Aviation) Ltd, Weybridge. Appointed Special Director 1936.	Use of geodetic construction for Wellesley and Wellington aircraft.
1938 - 1944	Assistant Chief Designer, (Aviation Section), Vickers-Armstrongs, Weybridge. Development of bouncing bomb and deep penetration bombs.	
1943	Awarded CBE.	

1945 - 1971	Chief of Aeronautical Research and Development Vickers-Armstrongs Ltd, Weybridge. Appointed Special Director and Head of Independent Research 1946.	Design of variable geometry aircraft, Wild Goose and Swallow, and development of ideas for hypersonic aircraft with square fuselage. Work on new form of submarine.
1968	Knighted.	
1971	Retirement from Vickers.	
1979 Oct 30	Died in Leatherhead Hospital.	

BNW/A – Biographical Material

A1 Certificates, programmes, honours, awards, etc.

A1/1	1901	Certificate awarded to BNW from Anti-Cigarette League
A1/2	1900-04	School certificates awarded to BNW from Christ's Hospital Drawing School 6 items
A1/3	1904	Christ's Hospital Mathematical School, Certificate of Discharge 1 item
A1/4	1905-06	Certificates awarded to BNW by Board of Education, South Kensington 2 items
A1/5	1906-17	Christ's Hospital items - calendar summer terms; swimming sports programme; concert programme; Speech Day; rail warrants 8 items
A1/6	-	List of prizes gained at school 1 item
A1/7	1915	Certificate of discharge of BNW from the Territorial Force to join Royal Naval Air Service 1 item
A1/8	1943 Jun 2	CBE certificate [shelved at MSL 22] awarded to BNW, <u>with</u> 3 accompanying letters
A1/9	1943 May-Sept	Letters of congratulation from family, friends and colleagues re CBE and RDI

		awards
A1/10	1945 Oct	Certificates and details of admission to Freedom and Livery of the Worshipful Company of Shipwrights 3 items
A1/11	1947	Receipt for £2.2.0 payable on admission of BNW to the Freedom of the City of London 1 item
A1/12	1952 Nov	Conferment of Honorary Doctor of Science degree on BNW by University of London 5 items
A1/13	1959	Conferment of Doctor of Science in Engineering degree on BNW by University of Bristol 1 item
A1/14	1965 May-Jun	Conferment of Doctor of Science degree on BNW by University of Cambridge 2 items
A1/15	1967 Jun	Conferment of Doctor of Science degree on BNW by University of Oxford 2 items
A1/16	1952/1965	Letters of congratulations from family, friends and colleagues on the Doctor of Science degree awarded to BIT by London University 1952 and by Cambridge University 1965.
A1/17	1962-63	Letters of congratulation to BNW on the award of the Founder's Medal (Air League)
A1/18	1968 May	Letters from Prime Minister's secretary re impending knighthood of BNW 5 leaves
A1/19	1968 Jun	Letters of congratulation to BNW on being knighted in Queen's Birthday Honours List June 1968 3 files
A1/20	1968 Mar-1971 Jun	[File entitled] College of Arms correspondence [containing] correspondence re BNW's coat of arms and family tree etc. [includes photos of coat of arms]
A1/21	1977	Replies to letters of congratulations on BNW's 90th birthday

A2 BNW biography - correspondence with Prof. Morpurgo,

author of BNW biography

A2/1	1968 Nov-1969 Dec	
A2/2	1970 Jan-Dec	
A2/3	1971 Jan-Jun	
A2/4	1971 Jul-Dec	
A2/5	1972 Jan	
A2/6	1972 Feb-Jun	
A2/7	1972 Jul-Dec	
A2/8	1973-74	

A3 Reminiscences

A3/1	-	A note on the origin and development of Geodetic construction as used on the Wellesley Aircraft [includes details of BNW's work on airships] 73 leaves, ms. Photocopy
A3/2	-	Note on Geodetic Construction/BNW 7 leaves, ts.
A3/3	-	Thoughts on the Royal Airship Works at Cardington and the R101 18 leaves, ts.
A3/4	1963 Aug 25	Personal reminiscences and memories of work at Vickers/BNW 8 leaves, ms

A4 Self education

A4/1-6		BSc engineering notes/BNW. For degree by correspondence from London University 6 files

A5 Employment details

A5/1	1907-39	Employment and personal file [containing] agreements, testimonials from employers, negotiations on salary etc.
A5/2	1911	Appointments diary
A5/3	1911-13	B N Wallis Calculation Book - J Samuel White & Co., Cowes, Isle of Wight, [shipbuilders & engineers]. Notebook containing calculations and drawings of

		marine diesel engines and pumps
A5/4	1913-17	[Ms. notebook arranged under alphabetical sections containing] details of pressure and velocity of air, beams, expansion curves, fuel, oils, Nurnberg oil engines, silencers, etc./BNW
A5/5	1913-46	List of Appointments and Directors, [giving details of BNW appointments from 1913 and work undertaken] 6 leaves ts.
A5/6	1928	Memorandum and Articles of Association of Vicers (Aviation) Ltd. 35 leaves
A5/7	1951/1952	R & D Department [Vickers Ltd.] List of addresses and telephone numbers of members of staff

BNW/B - Airships to 1921

B1 Correspondence

B1/1	1913-18	[File containing correspondence between BNW and H B Pratt of Royal Naval Air Station re rigid airship design]
B1/2	1919-21	[File containing correspondence between BNW in London, Charles Marlin and H B Pratt at Vickers, Barrow-in-Furness re rigid airship design]

B2 Airship design and construction

B2/1	1917-19	[File entitled] Drawing Office Miscellaneous Data and Routine [containing] Specifications, instructions and procedures to be used in airship construction - Vickers Ltd., Barrow-in-Furness
B2/2	1916-28	[File entitled] Drawing Office Data Sheets [containing] Blueprints of specifications for materials to be used in airship construction. Vickers Ltd., Barrow-in-Furness & Airship Guarantee Co. Ltd., Howden
B2/3	1917-23	[Miscellaneous file, Vickers Ltd., Barrow-in-Furness containing] Report on official lift and trim trial R80 (25L); Relative efficiency of R80 shape and E3; Summary list of rate of variation of lot of component parts of rigid airship L/d = 7.65:1; R80 Total Weights of various

		functional elements; S S Airship for Imperial Japanese navy (26L); Performance tables for rigid and non-rigid airships; Details of German Airships; The airship and its possibilities; Notes on the development of rigid airships; Gasbags and outer covers for use in commercial airships; Interview with helium expert Dr R B Moore; Water recovery; Airship construction by Schutte-Lanz since the war; Present state of airship development 1921
B2/4	1918-19	[File entitled] Miscellaneous Reports [containing papers on] Developments of the Airship Service 1914-1918 [29 leaves ts.]; The maiden flight of the passenger airship Bodendee - translated from the Luftfahrt 1919 Sept [2 leaves ts.]; Flight of HM Rigid Airship No. 23 (18L) from Walney airship shed to Howden 1917 Oct [with ts. log, 4 leaves]; Transatlantic flight of R34 [56 leaves ts.]; Report on visit to Zeppelin Company's works at Friedrichshafen, Germany [17 leaves ts.]; Patent abridgements1889-1915 Class 114 - Ships, Boats and Rafts, Propelling, Steering and Manoeuvring
B2/5	1918 Mar	Stresses in Envelopes of Non-Rigids/Maj. V. Parseval - LFG vol. 6 1912-13 [? articles from periodical extracted 1918] 14 leaves, 1 fig.
B2/6	[1919?]	Stability of Airships/BNW 23 leaves

B3 Duralumin Tubing

B3/1	1913 Dec-1919 May	[File entitled] Duralumin Structural Tests T22 [containing] REports and diagrams of results of tests on Duralumin - Vickers Ltd. [some by Prof. Lea of Birmingham Univ.] Ts.
B3/2	1917 Aug-1919 May	[File entitled] T12 Strengths of Materials [containing correspondence and reports on] Bruntonised wire; Steel tubes as compression members; Zeppelin wires; Tests on Duralumin made at Birmingham by Prof. Lea
B3/3	1918 Aug 24	[Report on] Connection of Tubes to Sockets/H.N. Wylie 7 leaves, 2 blueprints, ts.

B3/4	-	Preliminary Report of Tests on Duralumin/Vicers Ltd., Barrow-in-Furness 13 leaves, ts., carbon copy
B3/5	-	[Graphs entitled] Tests on Tubes made by Messrs Tubes from Vickers 42% Steel 2 leaves, master sheets
B3/6	-	An Investigation into the Design of Braced Girders for Airship Construction-Vickers Ltd., Barrow-in-Furness 58 leaves, 33 figs., ts., carbon copy
B3/7	[1919?]	Radii of Gyration of Bracing Pieces - Types A to F 7 leaves, ms. notes

B4 Mooring Mast (Vickers Ltd., Barrow-in-Furness)

B4/1	1917 Apr-1919 Feb	[File entitled] Mooring Gear for Non-Rigid Airships. Reports etc [containing ts. reports and correspondence on] SS 34 mooring experiments; Mooring trials of SS 36 at Barrow
B4/2	1918 Feb-1920 Aug	[File entitled] Landing and Mooring Gear for Rigid Airships, Reports etc [containing ts. reports and correspondence on] landing and mooring trials of R24 at Pulham; Specification for mooring mast at Howden; BNW's notes on the history of mooring
B4/3	1918 May-1920 Nov	[File entitled] Rigid Mooring Gear [containing ms. notes, ts. reports and correspondence] on Vickers patent landing and mooring gear for R24; Mooring experiments with HMA %9, R33 and R80
B4/4	1918 May-1920 Jul	[File entitled] Non-Rigid Mooring Gear [containing] correspondence and ts. reports on mooring experiments for SS 85000 cubic feet at Walney; Mooring gear at Pulham, proposal II; Patent specification 125,003, 1919
B4/5	1919 Oct-1920 Apr	[File entitled] Mooring Mast Proposals for Non-Rigid Airships for USA[containing ms. notes/BNW, ts. reports and correspondence on the most appropriate design]
B4/6	1920 Apr-Aug	Correspondence between Messrs Vickers Ltd., Barrow-in-Furness and the Variable Speed Gear Ltd., London re airship mooring winch.
B4/7	1920 Jun-Sept	[File entitled] Mooring Mast

	(& 1918 Mar)	[containing] ts. specifications and tenders re mooring mast at Howden, E. Yorks. and alteration of mooring mast at Pulham
B4/8	1920 Aug-Nov	[File entitled] Mooring Mast Patents [containing correspondence and draft provisional specifications for] Messrs. Vickers Ltd., Sir James McKechnie and Barnes Wallis invention for: a) Improvements in coupling gear for the mooring masts of lighter-than-air aircraft b) Improvements in mooring masts for lighter-than-air aircraft c) Improvements in winding gear d) Improvements in masts for mooring lighter-than-air aircraft e) Improvements in landing gear for mooring masts of lighter-than-air aircraft f) Improvements in weighing lighter-than-air aircraft at a mooring mast g) Improvements in landing devices for lighter-than-air aircraft
B4/9	-	[File containing ts. reports on] Oscillations during mooring; Proposals in connection with towing experiments in water channel
B4/10	-	[Ms. BNW notes on] The Scott System of landing Rigis Airships at a Mooring Mast (Vertical System) [with references to R33 and R80]
B4/11	[c.1920?]	Drawings of airships with mooring mast produced by Vickers as used in aircraft catalogue of 1919 and 1920, scale 1:500 18 plates
B4/12	[c.1920?]	Drawings of rigid, semi-rigid and non-rigid airships and of mooring mast produced by Vickers, scale 1:500 20 plates

B5 Specifications - Barrow-in-Furness: Vickers Ltd. [ts., carbon copies]

B5/1	1917 Nov	[Folder containing] Specification of New Design of Rigid Airship R80 - 25L

B5/2	1917 Nov	[Folder containing] Machinery Specification of New Design of Rigid Airship [with ms. additions]
B5/3	1918 Aug	[Folder containing] Specification of Electrical Installation for R80
B5/4	1918 Sept	[Folder containing] General Particulars and Special Features of Proposed Rigid Airship of 3,500,000 cubic feet capacity
B5/5	1919 Jan	[Folder containing] Specification of New Design of Sea Scout Airship of 100,000 cubic feet capacity
B5/6	1919 Feb	[Folder containing] Particulars regarding R80 design
B5/7	1919 Feb	[Folder containing] Proposed Specification of Rigid Airship of R80 Type, 1,200,000 cubic feet capacity for USA Navy
B5/8	1919 Mar	[Folder containing] Amended Machinery Specification of Rigid Airship R80 (25-L) [with specification for propellers for HM Airship No. R80 dated 1918 Jun & Sept]
B5/9	1919 Aug	Proposed Specification of Rigid Airship of R80 type, 1,250,000 cubic feet capacity, for USA
B5/10	1919 Aug	[Folder containing] Proposed Specification of Rigid Airship of 3,500,000 cubic feet capacity for USA Govt.
B5/11	-	[Folder containing] Proposals for building airships to meet USA Government requirements
B5/12	1919 Dec	[Folder containing] Specification of Rigid Airship of R80 type, 1,250,000 cubic feet capacity for naval service
B5/13	1919 Dec	[Folder containing] Specification of Non-Rigid Airship of 360,000 cubic feet capacity with Parseval type envelope
B5/14	1919 Dec	[Folder containing] Specification of Vickers Non-Rigid Airship of 500,000 cubic feet capacity with Parseval
B5/15	1920 Mar	[Folder containing] Specification of Wireless Telegraphy and Telephony Installation of SS Airship

B5/16	1920 May-Sept	[Folder containing] Specification of new design of sea scout airship of100,000 cubic feet capacity [with a note on special features of this design]
B5/17	1920 Nov	[Folder containing] Proposals for using non-rigid airships for the transport of mining machinery in Nigeria
B5/18	-	[Folder containing details of] Proposed Airship for Swedish Air Traffic Company

B6 Technical booklets - Barrow-in-Furness: Vickers Ltd.

B6/1	1918	Preliminary Report on Deceleration and Turning Circle Tests carried out on R26 13 leaves, 3 figs.
B6/2	1918	Stability and Controllability of Airships 32 leaves, 12 figs.
B6/3	1918	Report on Experimental Work carried out by Messrs. Vickers Ltd. in connection with Duralumin Spars for Handley-Page Vee Type Machines 26 leaves, 21 figs.
B6/4	1918	An Investigation into the Design of Braced Girders for Airship Construction I Text: 38 leaves
B6/5	1918	Design of Duralumin Struts and Girders II Plates: 33 plates
B6/6	[1919?]	Note on Water Recovery in Airships 22 leaves, 4 figs.
B6/7	1919	Speed and Head Resistance of Airships 38 leaves, 6 figs.
B6/8	1919	Variation in Lift and Performance of Rigid Airships with Change of Dimensions 32 leaves, 8 figs.
B6/9	[1920?]	The Method of Evaluating the Stresses in the Structure of a Zeppelin Type Rigid Airship 36 leaves, 15 figs.

B7 Publicity booklets - Barrow-in-Furness : Vickers Ltd.

B7/1	1918	Booklet No. 1: The Possibilities of Airship Transport Services 38 leaves, 6 plates [with 2nd (1919) edition]

		36 leaves, 3 plates (missing)
B7/2	1919	Booklet No. 2: War Productions 30 leaves, 12 photos on 5 leaves
B7/3	1919	Booklet No. 3: Metal Aeroplane Construction carried out by Vickers Ltd., Barrow 8 leaves
B7/4	1919	Booklet No. 4: Metal Aeroplane Construction 6 leaves, 7 photos
B7/5	1919	Booklet No. 5: Vickers Patent Mooring Gear for Rigid Airships 9 leaves, 2 figs. [with 2nd edition] 6 leaves, 2 figs.
B7/6	1919	Booklet No. 6: Special Tools for Rigid Airship Construction 8 leaves, 4 photos, 1 fig.
B7/7	1919	Booklet No. 7: London-Paris-Rome Airship Service [employing R80 airship] 34 leaves, 4 plates, 2 photos
B7/8	1919	Booklet No. 8: Preliminary Aircraft Catalogue 8 leaves, 9 plates
B7/9	1920	Booklet No. 9: Landing and Mooring Gear for Airships 10 leaves, 4 photos on 2 leaves, 2 plates
B7/10	1920	Booklet No. 12: Airships 2p printed leaflet, ill.
B7/11	[1920?]	Booklet No. 13: Airships and Balloons [printed catalogue version of No.8] 7 leaves, 10 plates
B7/12	1920	Booklet No. 14: Aeronefs et Aerostats [French edition of No. 13] 7 leaves, 10 plates
B7/13	1919	Booklet No. 18: Landing and Mooring Gear for Airships 6 leaves, 2 figs.

B8 Booklets

B8/1	1915	All about the Zeppelins and other enemy aircraft / F Walker 32p, ill.

B8/2	-	Airships for pleasure and sport 13p, ill
B8/3	1919	Airship attacks on England / F T von Buttlar-Brandenfels 36p

B9 Ephemera

B9/1	1921	[Service sheet for] Memorial Service held in memory of Edward Maitland, lost in R38 airship disaster [with] letter from mother of Ivo Little also lost in the disaster
B9/2	1921	[Commemorative postcard] HMA R34, the first aircraft to fly the Atlantic from East to West

BNW/BB - Airships 1922-1929

BB1/1	1922-23	[File untitled containing] reports and opinions by C D Burney and Vickers Ltd. on the financial and practical viability of the Burney Airship Scheme for a bi-weekly airship service to India with an extension to Australia
BB1/2	1923	[Folder entitled] Vickers Passenger and Mail Airship Scheme 1 [containing] ts. report and letter to A T Dawson
BB1/3	1925 Jan	[Report entitled] South African Airship Scheme / Airship Guarantee Co. Ltd. 29p, 7 photos, incl. R100 prototype design
BB1/4	1923-26	[File entitled] Reports, Memoranda, Design Committee [containing Reports / Airship Guarantee Co.] Experiments on airship fabric, mooring of airships to floating mooring masts, Critical loading conditions, Resumé of work on R100 etc.
BB1/5	1923-24	[File entitled] Miscellaneous [containing ts. & ms. reports / Airship Guarantee Co. Ltd. and BNW] Airship material; Visit to Pulham and Bedford; Development of the airship; Details of man hours in manufacture of R34 etc.
BB1/6	1924-25	[File entitled] Durlumin Sections [containing correspondence between BNW, James Booth & Co. (1915) Ltd., Vickers Ltd., and Naval Construction Works, Barrow-in-Furness and ms. notes / BNW]

		Helical tubes and testing of Duralumin tubes of various sections
BB1/7	1924	Indenture between Airship Guarantee Co. Ltd., London and the President of the Air Council to build, inflate and test an airship
BB1/8	1924	[Paper entitled] The Development of the Airship with Special Reference to Transport / C D Burney 11 leaves ts.

BB2 Airship Guarantee Co. Ltd., Howden 1925-29

BB2/1	1926 Sept	[Folder entitled] Airship Guarantee Co. Ltd. Dominion type airship mooring mast [containing] ms. description of the mast by BNW
BB2/2	1927	Diagram of Airship Guarantee Co. Ltd. Organisation Structure Blueprint
BB2/3	1925-27	Patent Specifications / Airship Guarantee Company Ltd. Improvements in or relating to airships etc. 13 items

BB3 R100 Airship Structure - Transverse Frames and Gasbag Wiring

BB3/1	1925 Jul	[File containing ms. notes & calculations / BNW on] Stressing Transverse Frames [with ts. paper] Stressing of Transverse Frames & Shear Wires 20 leaves, 7 tables, ts.
BB3/2	1926 Jun	[File entitled] New Strut Theory [containing ts. papers on] Materials of Construction used in Aircraft and Aircraft Engines - Strut formulae; A New Strut Theory with Applications to the Calculation of the Strength of open braced girders in compressing under simple and complex condition of loading / J E Temple
BB3/3	-	The Strength (longitudinally) of Airship Structures / J E Temple 14p, 10 figs.
BB3/4	1925-31	[Paper on] Structure & Stresses of Airship Frames [incl. ms. notes on] Efficiency of airships when used as load carriers; The application of production

		methods to high strength/ weight ratio structures; Parabolic loading; Investigation of riveting in spiral seam tubes; Analysis of primary stresses in the shell of a rigid airship
BB3/5	1925-29	[File] R100 Calculations [containing ts. reports & correspondence on] Design of transverse frames; Distribution of loads on transverse frames; Transverse frames catenaries; Circumferential mesh wiring; Deflated gasbag loads in R100 transverse frames; Factors of safety in the passenger coach structure; Summary of tests carried out at Leeds University
BB3/6	1927 Jan-Apr	[File entitled] Spider Production [containing] ms. notes / Airship Guarantee Co. Ltd., Rate Fixing Dept. on the construction and cost of the girders for the R100
BB3/7	1926 Feb-Jun	Girder Tests at Birmingham University 21 prints in 2 folders
BB3/8	[c.1926]	[Paper] Scheme of Structure for R100 wiring & longitudinal members 22 leaves, 8 figs. on 7 leaves, ts.
BB3/9	1927 Feb	[File entitled] R100 Transverse Frames [containing paper] Rigid Airship R100 The DEsign of Transverse Frames 18 leaves, 5 figs. on 4 leaves, ts.
BB3/10	1927	[File entitled] Fins and Rudders [containing ms. notes and calculations / BNW and others on] R & E actuating gear; Flat fins girder type; Top rudder and elevators; Wire loads, weight of top vertical fin
BB3/11	[c.1929]	[File entitled] Gersten & R100 Bracing [containing] photos of R100 In course of construction, and moored after 1st trial [with] 2 drawings of transverse frames
BB3/12	1927-29	[File entitled] Reports [containing ts. reports on subjects relating to R100 /Airship Guarantee Co. Ltd., Howden]: Report on model gasbag test; Transverse spider test; Outer cover; The strength of rigid airships; Report on estimated costs; Construction progress; American airship design competition; Report on conference at the Air Ministry; Report on electrical equipment; Report on girder tests at Birmingham University [with photos]; Shed clearances of R100

BB3/13	1929 Jan-Feb	[File entitled] Corrosion [containing] Correspondence between James Booth & Co. Ltd., The Airship Guarantee Company and Professors Bairstow and Batho re corrosion of girders in airship frame of R100
BB3/14	1929	[File entitled] Girder Corrosion [containing] Reports by Airship Guarantee Co. Ltd. on girder corrosion in airship frames
BB3/15 -		[File containing ms. notes / BNW et al.] Test of Mesh of Parallel Wire on Experimental Frame and Tension loaded transversely
BB3/16	-	[File containing ts. report on] Starfish Transverse frame 20 leaves, 4 figs.
BB3/17	-	[File containing ms. notes / BNW] Stresses on Transverse Frame
BB3/18	-	Proposals for Modifications in Mesh & External Systems of Wiring 4 leaves ts., 4 figs. on 2 leaves

BB4 R100 Airship Design and Testing

BB4/1	1925-30	[Papers on R100 inc. ms. & ts. reports on] Rigid airship 27L weights; Details of experimental work carried out in connection with rigid airship R100; Stressing of rigid airship R100; Criteria of design of R100 airship; Report on shed clearances of HMA R100; Comparison of heat energy consumed per passenger mile in RMS Orama and Airship R100; Resistance coefficients of 1/240 scale airship model M19; Wind Tunnel Tests on R100 model
BB4/2	1924-28	[File] National Physical Laboratory. Test reports on models of R100 [containing reports entitled] Experiments on a model of a 5 million cubic feet airship for the Airship Guarantee Company; Report on measurements made for Airship Guarantee Co. of the hinge movements on top vertical fin of 5 x 106 cu. ft. airship model; Measurements of the resistance of three rigid airship hulls; Resistance co-efficients of 1/240 scale airship model M19; Further experiments on airship model M19; Report on tensile

		tests of 50ft. lengths of stranded cables; Experiments on a model of the rigid airship R100

BB5 R100 Airship Gasbag Fabric, Engines, Tanks, Fuel and Trials

BB5/1	1925 Mar	[Paper entitled] The Disadvantages of Helium for Airships / PLT [P L Teed] 9 leaves, ts.
BB5/2	1926 Jul-1929 Feb	[File entitled] Airworthiness [containing] Reports, graphs and correspondence between Airship Guarantee Co. Ltd. and Professors Bairstow and Sutton Pippard re the airworthiness of R100
BB5/3	1926-28	[File entitled] Engines [containing ts. reports / Airship Guarantee Co. Ltd. on] Use of gas and combination of oil, gas and liquid hydrocarbon as a fuel for internal combustion engines; 10 hours endurance test of machinery in starboard wing power car of HMA R100; Two blade wooden airscrews with Condor 111 engines in tandem; Hydrogen engines; Electrical equipment for R100; Rolls-Royce Condor 111 engines; Specifications of cooking and light installations, oil cookers, radiators; Light and signals and rules of the air; Engine contract with William Beardsmore & Co. Ltd.
BB5/4	1926	[File entitled] Suggestions re Engine Systems for R100 [containing ts. and ms. reports / Airship Guarantee Co. Ltd. on] Hydrogen oil engine schemes; Machinery for R100; Main engines and starting gear for R100; Water recovery on R100; Notes on variable pitch airscrews
BB5/5	1928 Feb	[File entitled] Tanks [containing ms. notes / BNW et al., and ts. memorandum / Airship Guarantee Co. Ltd. on] R100 fuel tanks
BB5/6	1925-29	[File entitled] Fabric [containing ts. reports / Airship Guarantee Co. Ltd., and correspondence between Airship Guarantee Co. Ltd., B G Textilwerke et al. re] Material for gasbags; Fireproofing of passenger saloon; Tests on fabrics. [Includes 5 fabric samples]
BB5/7	1926-29	[File containing] Correspondence between the Airship Guarantee Co. Ltd., London and B G Textilwerke GMBH, Berlin re

		supply and testing of gasbags for R100
BB5/8	1929 Jun-Jul	Ts. & ms. instructions / Airship Guarantee Co. Ltd. for the first inflation of the R100
BB5/9	1929-30	[File entitled] Lift and Trim Trials of HMA R100 [containing ms. & ts. Reports on the trials of 1929]
BB5/10	1926-31	[File entitled] Weights [containing ms. and ts. estimates / Airship Guarantee Co. Ltd. of weight of R100 components]
BB5/11	[c.1929-30]	[File containing graphs showing performance; Dynamic lift at various angles of pitch; Engine speed; Channel tests etc.] / Airship Guarantee Co. Ltd.
BB5/12	1929 Dec	Description of launch of R100 16 DEc 1929 / BNW 6p on 3 leaves, ms.

BB6 BNW Correspondence

BB6/1	1924	Correspondence with A J Sutton Pippard, University College, Cardiff
	1926-28	Correspondence with Cmdr. C D Burney of the Airship Guarantee Co. Ltd. 3 files
BB6/2	1926	Correspondence with Thomas Rowntree, Air Ministry rep., and Maj. P L Teed of the Airship Guarantee Co. Ltd.
BB6/3	1926	Correspondence with A E Palmer, J E Temple and Maj. Waistell, all of the Airship Guarantee Co. Ltd.
BB6/4	1927-29	Correspondence with 1. Air League of the British Empire; Air Ministry; Albright & Wilson Ltd., chemical manufacturers; Amalgamated Engineering Union; Aluminium Plant and Vessel Co. Ltd.; A J Ashdown Ltd., engineers; Armstrong College Engineering Society 2. Bruntons, steel wire manufacturers; James Booth & Co. Ltd., Birmingham; Prof. L Bairstow; Cmdr. F L M Boothby; British Airships Ltd.; Broadway Press Ltd.; Prof. C Batho; C S Bamber of the Airship Guarantee Co. Ltd.; Barrow Engineering Society

3. Curtiss Aeroplane & Motor Co. Inc.; Callender's Cable and Construction Co. Ltd.; James Carson & Co. Ltd.; Egerton Cooper; Cambridge Engineering Laboratory

4. De Lavaud Holdings Corporation Ltd.; Maj. C E Dardier; S M Darlington; O Dixon; E Dunbar

5. Engineering and Allied Employers' National Federation

6. W Francis & Co. Ltd., electrical engineers; H D Fitzpatrick & Co., patent agents; A M Fenton; Messrs. Fescol Ltd.; Foster Instrument Co.

7. Wg. Cmdr. J H Herring; Capt. R C I Hunt; Hull Evening News; E H Hall; Hull Chemical & Engineering Society

8. Institution of Civil Engineers; Ioco Rubber & Waterproof Co. Ltd.; N Jones; P Jones

9. K Kinrade

10. C H Lenton; H R Lyon; Leeds University Engineering Dept.; London& North Eastern Railway

11. H Maxwell; M Millet; A Mee

12. National Physical Laboratory; Northern Command, York

13. Col. E O'Brien

14. R T Pollock; F Pryer, Peugeot (England) Ltd.; Patent Office; Prof. A J Sutton Pippard, University College Cardiff

15. Royal Aeronautical Society; J D Rennie, Blackburn Aero & Motor Co. Ltd.; Royal Airship Works

16. H A Scholle; Messrs Schroeder & Snowden; Supermarine Aviation Works

17. Messrs Templer Ltd.; J E Temple; W Thevenaz

18. University College, Hull; Vickers Ltd. and Vickers-Armstrongs Ltd.; H B Pratt; A T Dawson; F W Verry

19. G van Wassenaer; E J Waddington;

		Westland Aircraft Works; M W Wood; W S Williams; Rev. A Waring; Maj. A M Waistell; A E Webb
BB6/5	1928-29	Correspondence on transfer of BNW employment from Airship Guarantee Co. to Vickers Aviation Ltd. and thence to Supermarine Aviation Co.

BB7 Aeronautical Research Committee - Airship Stressing Sub-Committee

BB7/1	1924 Oct-Dec	[File entitled] ARC [containing reports on] The Airworthiness of Airships Panel; An experimental investigation into the properties of certain framed structures having redundant bracing members
BB7/2	1929 Jul-Nov	Correspondence inviting BNW to become a member of the Airship Sressing Sub-Committee
BB7/3	1929-31	Airship Stressing Panel Reports AS1 to 22 [missing nos. 10 & 14]
BB7/4	1930 May-Sept	Airship Stressing Sub-Committee Agenda and Minutes of Meetings Nos. 1 to 4

BB8 Printed material and BNW lecture notes on airships

BB8/1	1926	Some Technical Aspects of The Commercial Airship / BNW 1926 Feb 10 - London; Lloyds Register of Shipping - Staff Association Paper No. 5 13p, 9 figs.
BB8/2	1928 Jul 5	R100 Howden, Yorkshire / Airship Guarantee Co. Ltd., Howden 1928 23p
BB8/3	1930	Visit of His Majesty's Airship R100 to Canada 1930. [Souvenir published by the Advertising Club of Montreal] 96p, ill.
BB8/4	1930	HMA R100 [5 articles from Aircraft Engineering]
BB8/5	1933	The Airship Venture / Nevil Shute - London: Blackwoods 1933 May
BB8/6	1929	[File] Royal Aero Society lecture [containing] correspondence, ms. notes and ts. lecture on airships / BNW
BB8/7	1933 Jan	Notes and Lecture on Airships / BNW, for the Institution of Civil Engineers

BB8/8	1932	Articles on airships from German magazines [5 items in German]

BNW/C - Aircraft - Geodetic Construction

C1 BNW and Vickers (Aviators) Ltd Early Notes and Numbered Files

C1/1	1933-35	[File entitled] No. 1 Series of Miscellaneous Articles on the stressing of Geodetic fuselage [containing ms. notes and calculations / BNW, on] Treatment of forces in geodetic bracing bars; Bracing members; Geodetic fuselage analysis of test results; Stiffness of Vickers G4/31 geodetic wings. Remarks on Wallis geodetic construction, and A note on Wallis geodetic construction / Aeronautic Research Committee
C1/2	1930 Apr-1938 Feb	[File entitled] Tubes [containing] Correspondence between BNW and Prof. Batho at Birmingham University re large tubes, and Dr Aitchison of James Booth and Co. (1915) Ltd., re BHTA tubes and Duralumin
C1/3	1931 May-1933	[File entitled] No. 3 Work & Experiments on the Strength of Duralumin Tubes [containing ms. notes, calculations, reports and correspondence / Vickers (Aviation) Ltd.]
C1/4	1931 May-1932 Oct	[File entitled] No. 4 Work and Experiments on the Strength of Steel Tubes [includes reports on Duralumin Tubular Struts]
C1/5	-	[File entitled] No. 5 Experiments on Geodetic Channel Sections [containing ts. & ms. notes / BNW (?) Vickers (Aviation) Ltd.]
C1/6	1934-36	[File entitled] No. 6 Notes on elliptic integrals [containing ms. notes, graphs and calculations / BNW, on] The sparless wing; The geodetic wing torsional stress and torsional rigidity; New type geodetic fuselage torsion and shear moduli; B1/35 flexure test; Webless geodetic construction; B9/32 fuselage, method of approximate stressing adopted in C P back case and landing tail up case

C2 Working papers on Geodetic Construction - various aircraft

C2/1	1929 Oct-1930 Aug	[File untitled containing ms. notes / BNW, on] Method of construction of wings for heavier-than-air craft; Patent specifications for improvements in aircraft design; RAF staff college 7th course Airships; Correspondence between BNW, Aitchison of James Booth & Co. (1915) Ltd. and Bruntons Steel Wire Manufacturers, re sections of aluminium in connection with 'a rather novel method of making light alloy wings and fuselage structures'; Discussions on use of stainless steel in flying boat wings; Graphs of yield stress in steel tubular struts
C2/2	1932-33	[File entitled] Geodetic Wings Early Notes [containing ts. and Ms. notes / BNW, on] Theory of loss of lateral control due to wing twisting; Torsional rigidity of a wing with geodetic bracing; G4/31 monoplane wing
C2/3	1934-36	[File entitled] Geodetic Wings, Working Papers [includes ms. notes / BNW] Efficiency criteria B9/32 production wing data; G4/31 P V monoplane; Geodetic test wing permissible design stress; Examination of the behaviour of geodetic bars under flexure of the wing; Preliminary notes on Kussner's flutter speed formula / RAE, Farnborough
C2/4	1933-36	[File entitled] Geodetic Working Papers [containing ms. notes and calculations / BNW et al., on] 19/27 bomber Bristol Pegasus engines; 19/27 bomber design for maximum efficiency at 5000 ft.; G4/31 monoplane summary weights; Demonstration of the effect of increase of dimensions on the strength/weight ratio of a structure; Variable structure weight; The application of structural principles to the design of aircraft; G4/31 test wing
C2/5	1934-35	[File entitled] Early Notes on Geodetic Wellesley and Wellington [containing ms. notes / BNW, and ts. reports / Vickers (Aviation) Ltd. and Air Ministry, on] Long range bombing monoplane; G4/31 biplane - analysis of geodetic fuselage weights; B9/32 wing torsional deflection under torque; B9/32 fuselage tests; G4/31 monoplane test wing; Compression tests on thick walled Duralumin tubes etc.

C2/6	1935 Aug-1936 Apr	[File entitled] B9/32 [containing ms. notes, calculations & graphs / BNW, on] The B9/32 Wellington aircraft including elevator span tube, rudder torque, summary of tests on rudder span tip, and details of B1/35 aircraft, structural strength of wings in dive etc.
C2/7	1937 Feb-1940 Feb	[File entitled] B1/39 Calculations [containing ms. notes, calculations, graphs / BNW et al., on] The B1/39 bomber including details of fuselage structure weights, stressed skin design, wing weights etc.
C2/8	1935-36	[File entitled] Atlantic Type Flying Wing [containing] Memorandum - The Large Flying Boat in Relation to the Wallis Method of Construction / Director of Scientific Research; Heavy bomber - preliminary design assumption; six engined monoplane bomber scheme
C2/9	1938 Nov	[File] Bomber Aircraft. The Determination of the Most Economical Size / BNW; Vickers Armstrongs Ltd. 1938 39 leaves, 8 figs. [with] ms. notes for the paper comparing the Wellesley, Wellington, B1/35 and 4-engined bomber
C2/10	1939 Jun-1941 Jul	[File entitled] Long Range Bomber B1/35 [containing ms. and ts. Reports / Vickers-Armstrongs Ltd., and RAE Farnborough, on] Estimation of wing structure weight; Test on B1/35 tail unit; 6 engine high altitude long range bomber estimated wing weight; Pitching inertia
C2/11	1939 Oct-1940 Jan	[File entitled] DW1 [containing ms. notes / BNW, correspondence and memoranda / Vickers-Armstrongs Ltd., on] Wellington DW1 including details of coil and generator units, special materials etc.
C2/12	1941 Apr-1944 May	[File entitled] Steel Fabric [containing ms. notes and calculations / BNW et al., on] Steel fabric for aircraft covering.

C3 Vickers (Aviation) Ltd. and Vickers-Armstrongs Ltd, Official Reports

C3/1	1935 May 11	A Brief Note on Geodetic Construction / BNW - Weybridge : Vickers (Aviation) Ltd. 1935

		9 leaves, 8 figs. on 4 leaves, 4 plates (missing no. 1), ts.
C3/2	c.1937	The Effect of Gun Fire on a Geodetc Wing / [Vickers-Armstrongs Ltd.] 10 leaves, ts.
C3/3	1938 Mar 4	Report on British Airways Statement RE81 Comparing Wellington with Lockheed 14 / Vickers (Aviation) Ltd. 13 leaves, ms.
C3/4	-	Vickers Wellington for British Airways Ltd. Combined Passenger and Mailplane. Two Bristol 'Pegasus X' Engines - Vickers (Aviation) Ltd. RKP/36853 5 leaves, ts.
C3/5	1939 Mar	Wellington Technical Data concerning Proposed Adaptation and High Altitude Bomber with Pressure Cabin / Weybridge : Vickers-Armstrongs Ltd. RKP/43157 11 leaves, 2 folding plates
C3/6	1942 Jun	Wellington Proposed Development Hercules V1 Turbo Blower - Weybridge: Vickers-Armstrongs Ltd. RKP/62308 15 leaves, 2 folding plates, ts. (photostat copy)
C3/7	1944 Mar	Wellington adapted for Continental Passenger Transport - Weybridge : Vickers-Armstrongs Ltd. RKP/71073 6 leaves, 3 folding plates
C3/8	1944 Jul	The Cost of Air Transport - Weybridge: Vickers-Armstrongs Ltd. 27 leaves, ts. (photocopy)
C3/9	1945-46	Reports on wind tunnel experiments carried out on the Vickers Warwick; Directional stability tests; Rudder power at large angles of incidence; Rudder power and effect of dorsal fins [ts.] RKP/75045
C4	**Outside Reports**	
C4/1	1936	The Stress Analysis of a Tube Braced on the Geodetic Principle / A J Sutton Pippard - Imperial College of Science & Technology 62 leaves, 27 figs. on 16 leaves [duplicate ts.]
C4/2	1935-36?	[Papers] / A J Sutton Pippard: Vickers Geodetic Construction (11 leaves); Note on Distortion of Braced Tube (3 leaves);

		Geodetic Construction (2 leaves); Stress Distribution in a tube braced with Geodetic Bars (6 leaves, some ms.); The Torsional Stiffness of a Frame having Geodetic Bracing Members (3 leaves); The Torsional Stiffness of a Peapod Construction (3 leaves); The Torsional Stiffness of a Stressed Skin Wings (8 leaves); The Stress Analysis of a Tubular Structure Braced on the Geodetic Principles - A Comparison of Methods (6 leaves)
C4/3	1942 Sept-1943 Aug	[File containing] Reports on aircraft in the USA; Specifications for minimum size aircraft for New York Express Service; Precis on work of the Feddon mission reviewing American aircraft and American production techniques

C5 Lectures / BNW, and Congratulatory Letters

C5/1	1936-37	[File containing] Letters and telegrams congratulating BNW on the success of his 'geodetic construction' aeroplane [with newspaper cuttings and articles on the 'eggshell airplanes']
C5/2	1935-41	[File containing] ms. and ts. notes / BNW, for lectures given to various institutions on aircraft design and geodetic construction

C6 Printed Articles on Geodetics

C6/1	1936 Jan 16	Geodetic Construction / C M Poulson. Repr. from *Flight* magazine 4p, ill.
C6/2	1939 Jun	Vickers Wellington Bomber. Repr. from *The Aeroplane* 7p, ill.
C6/3	1940 May/Jun	Geodetic Construction / C M Poulson. Photocopy from *Aircraft Production* p143-8, 179-88
C6/4	1940 Nov 8	Triumph of the Wellington and Geodetic Construction. Repr. from *The Aeroplane* 15p, ill.
C6/5	[1939?]	Vickers Wellesley - Constructed under the Patents of the Vickers Principle of Geodetic Construction - Weybridge: Vickers-Armstrongs Ltd. 17p, ill.
C6/6	-	The Vickers Wellington I and II / C F Andrews - Leatherhead: Profile

Publications Ltd.
14p, ill.

BNW/D - Work on Bombs

D1 A Note on a Method of Attacking the Axis Powers

D1	-	A Note on a Method of Attacking the Axis Powers / BNW [with 1970 photocopy] 114 leaves, ill. ts.

D2 Files of Official Correspondence with Air Ministry, Ministry of Aircraft Production, Ordnance Board etc. Reports & Minutes of Meetings Held to Discuss Development, Testing and Use of Big Bombs. (all ts. unless otherwise stated)

D2/1	1940 Oct-1942 Nov	File No. 97: Aircraft design and production, meetings with Ordnance Board re stability tests on 10 ton and 4000 lb. bombs; Discussion of BNW paper on 'A Method of Attacking the Axis Powers' and possibility of bombing dams
D2/2	1940 Jul-1940 Nov	File No. 97A: Reports on literature search on German Dams; Correspondence with Ministry of Aircraft Production, Institution of Civil Engineers, Patent Agents etc. re German dams and possibility of bombing dams; Development of 10 ton and 4000 lb. bomb; Aircraft design
D2/3	1940 Dec-1941 Mar	File No. 97B: Special bomb gear for Wellington Aircraft; Continuing work on development of Big Bomb and discussions on appropriate detonators for multiple charge attack on German dams
D2/4	1941 Apr-1942 Apr	File No. 97C: Possibility of aerial attack on dams; High altitude stratosphere bomber and design of Big Bomber aircraft
D2/5	1942 May-1943 Jan	File No. 97D: Manufacture of spherical (bouncing) bomb, coating to make impervious to seawater; Highball and spherical bomb test reports
D2/6	1943 Jan-1947 Aug	File No. 97E: Spherical bomb trial reports; Notes on activity at Möhne dam prior to air attack; Reports on bomb damage to Sorpe and Möhne dams translated from the German
D2/7	1944 Apr-1949 Jun	File No. 97F: Reports on suitability of various aircraft for Highball; Release gear for Hornet aircraft; Development

			flights of Mosquito air turbine installation; Hot Gog trial reports; Highball trial reports
D2/8	1943 Jan-1944 Apr		File No. 97F2: Highball development and trials; Schedule of principal dates showing progress of Highball; Reculver trials reports; Special sight for Highball; Reports on various aircraft
D2/9	1943 Jan-Oct		File No. 97G: Baseball (spherical bomb for motor torpedo boats) design, development and testing
D2/10	1943 Jan-1954 Apr		File No. 97H: Upkeep manufacture and trials; Photography of underwater parts of bomb; Discussions on filling and handling Upkeep store; Use of Lancaster aircraft; Success of bombing Möhne and Sorpe Dams; Discussions on possible future use of Upkeep; Correspondence re reference book to be published 1950s
D2/11	1943 Mar-Jul		File No. 97I: Upkeep trials; Spinning trials with live store and components in Richmond Park; Preparation of Wellington stores
D2/12	1943 Jun-1944 Mar		File No. 97J: Discussions of counter measures against possible enemy use of Upkeep
D2/13	1943 Jun-1943 Jul		File No. 97K: Design of new range finding bombsight for use in precision bombing
D2/14	1943 May-1944 Mar		File No. 97L: The follow through bomb - research into penetration bombing; Introduction of the code word Tallboy bombs. [Includes one letter of 1951 May]
D2/15	1943 Oct-1944 Mar		File No. 97M: Dynamic unbalance of spinning shells
D2/16	1943 Jul-1946 Oct		File No. 97N: Manufacture of Tallboy (large); Conversion of Lancaster aircraft for Tallboy (large); Test reports on dropping of Grand Slam; Manufacture of Grand Slam. [Includes one letter of 1952 Feb]
D2/17	1943 Aug-1944 Oct		File No. 97O: Cancellation of an order for Tallboy (large); Manufacture of Tallboy (medium); Discussion of possible attacks on Rothensee ship lift and U boat pens at Brest
D2/18	1944 Nov-1952		File No. 97O2: Correspondence and report

	Feb	on attacks at U boat pens at Bergen and Brest and German battleship *Tirpitz*; Change of name of Tallboy (large) to Grand Slam; Manufacture of Tallboy (medium); Metallurgical tests; Penetration of Tallboy bombs into sandstone; Trials of bomb against concrete targets at Farge; Results of blast pressure measurements; Discussion of American type welded bombs; Photographs and reports of Tallboy model tests on armour plate
D2/19	1943 Jul-1944 Feb	File No. 97P: Design and manufacture of Tallboy (small) Order for 50 Tallboy (large) bombs; Ballistic and functioning trials of Tallboy (small); Failure of castings 511 and 536 Tallboy Midget and model trials
D2/20	1943 Aug-1944 May	File No. 97Q: Tarpon aircraft conversion for special store to be referred to as Tammany hall only; Trials of Avenger FN 795 with two and one store fitted; Report on tests of Tammany Hall installation Avenger; Tammany Hall installation advance instructions for use
D2/21	1943 May-1944 Jul	File No. 97R: Notes on penetration bombing proposed targets discussed - Salbo, Turano, Sorpe, Bisorte and Assuan dams, Rothensee ship lift, U boat shelter at St Nazaire and La Palice; Highball attack on North Italian railway tunnels; Report of Tallboy attack on E boat pens at Le Havre; Possibility of towing a Mosquito with a Liberator or Lancaster aircraft
D2/22	1944 Oct-1947 Mar	File No. 97S: Highball (new style) manufacture using magnesium alloy and tests on spinning the bomb using slow burning plastic cordite; Project 92204 (Card); Card trials
D2/23	1947 May-1951 Nov	File No. 97SA: Card manufacture, contract nos. - SB 64814/C11a; Impact testing of materials for Highball Card trials at Ashley
D2/24	1948 Jan	[Unnumbered file] Card Store MK11 (report, photographs and drawings by Messrs. Vickers-Armstrongs Ltd.)

D3 Upkeep, Dams and Effects of Bombing

D3/1	1940 Nov-1943	[File containing] Correspondence,

	Sept	reports and information on the Möhne, Sorpe and Eder dams - construction, importance and effects of bombing etc. [including] Air attack on dams (a report on the proposed method of attacking dams) by BNW, 1943, 27 leaves, ts., ill.; Report of Dr Pruss of the Ruhr Valley Dam Association 1943 Sept on the air attack on the Möhne and Sorpe dams (English translation 1945, 4 leaves, photocopy), and other reports on effect of bombs
D3/2	1943 Mar-Sept	[File containing] Discussion of Upkeep; Minutes of meetings on Upkeep and Highball; Possibility of employing Upkeep to disrupt the Italian diagrams / BNW]; Important dates in the war work of BNW 1939-43, ts.
D3/3	1950	[Folder containing paper on] Destruction and protection of dams / Prof. Dr. Ing. Otto Kirschmer on the effects of wartime bombing on Möhne, Sorpe and Eder dams. (Translated by E Gros 1950) 23 leaves, ts., ill.

D4 Highball and Card Development and Trials

D4/1	1943 Jun	Highball installation, advance instructions for use - Weybridge: Vickers- Armstrongs Ltd. 41 leaves, ms.
D4/2	1942 Apr-1943 Jun	[File entitled] Highball [containing ms. notes / BNW, and correspondence and reports on] Spherical bomb surface torpedo report; Highball trials with different spheres, Weymouth 1943; Highball Wellington; Manston trials; Mosquito prototype trials; Range of Highball
D4/3	1943 Aug-1944 Aug	[File containing papers on] Reculver trials on Highball; Highball railway tunnel trials; Report on underwater trajectories and detonation points of stores; Highball impact tests; Countermining and sympathetic detonation trials; Trials at HHY
D4/4	1943-45	[Loose ms. notes, some by BNW, calculations notes and graphs plus some correspondence dealing with] Highball - velocity space curves; Calculations of torque to spin spheres; Results of tests; Trials with spheres of different materials; Aircraft dimensions; Calculations for sextant sight

D4/5	1943 Feb-1947 Jul	[Loose ms. notes, calculations and graphs plus some correspondence and reports on] Highball Weymouth and Reculver trials 1943; Ashley Walk trials 1944; Highball trials May, June, Sept 1944 at HHY; Schedule of details required for special equipment for Mosquito aircraft; Tarpon trials; Power required to drive Highball; Mosquito trials 1945; Highball trials at Wells 1945; New fuse of pistol for Highball 1946; Tammany Hall trials at Wells; Discussion about Card 1947
D4/6	1944 Sept-1954 Apr	[File containing ms. notes, drawings and calculations for proposed installations] Instructions for ground crew servicing Highball; Sea Mosquito installation; Hornet installation weights and volumes; Design, stressing and manufacture of Mosquito and Hornet mountings; Results of tests on Card at Ashley Walk 1947; Correspondence and minutes of meetings
D4/7	1945	Report of Messrs. Vickers-Armstrongs representative on his visit to the USA in connection with the Speedee Highball Project. Mar-May 1945 Ms. & ts. Notes

D5 Tallboy and Big Bomb Development and Trials

D5/1	1940 Jul-1941 Apr	[File entitled] Big Bomb Technical Data, Preliminary Investigations, Calculations and Discussions; [containing ms. note / BNW, & ts reports on] Work done by a bomb; Energy value of explosion; Deceleration forces acting on bomb casing during penetration; Bombing probabilities; Bomb craters etc.
D5/2	1943 Aug-1945	Tallboy working papers, ms. notes / BNW; calculations, graphs and reports on Tallboy trials (small, medium, large); Assessment of damage and earth penetration characteristics
D5/3	1943 Sept-1945 Nov	Road Research Laboratory reports on Tallboy bomb penetration and impact trials (photocopies)
D5/4	-	The weight of bombs in relation to their targets. Report on use and trials of Tallboy (medium and large) 11 leaves, ts. with ms. addition, 22 figs.

D5/5	1943 Feb-1947 Jun	[File no. 117 entitled] Development of War Weapons, Tallboy MKIII [containing correspondence and reports on] Scale model tests of a strengthened Tallboy with a view to making it capable of withstanding greater deceleration; Manufacture of Tallboy MKII and MKIII; Problems with castings; Penetration tests
D5/6	1945-46	Report by Air Comm. P Huskinson CBE MC on his visit to the USA Nov1945-Jan 1946 to obtain information on large bombs and HE bomb fillings

D6 Tallboy and Big Bomb Targets

D6/1	1943 Feb-1944 Jun	German Coastal Defences - reports and photographs / Air Ministry
D6/2	1939 Oct-1944 Jul	[File on the] Rothensee Ship Lift [containing reports on] The significance of the ship hoisting works Rothensee for the inland canal; Drawings and photographs of the ship lift; Report on destruction of model underground shafts by explosives / DSIR
D6/3	1939	Report 1939 survey test on open trench after bombing / DSIR. Attack on battleships with high capacity armour piercing bomb
D6/4	-	[Paper on] Proposal for dealing with German warships (advocating use of big bomb) 5 leaves, 2 figs. ts.

D7 Bomb Damage Assessment Reports 1943-45

D7/1	1943 Jan - 1945 Mar	Air reconnaissance photographs of damage to Möhne and Eder Dams, 41 photographs with copies of reports on air attack on Möhne and Sorpe Dam.
D7/2	1944 Sep - Nov	Brest U boat pens - correspondence on and photographs of damage to U boat pens caused by Tallboy hits / Naval Staff Office. 22 leaves, 47 photographs.
D7/3	1945	[File] British Bombing Research Mission 1945, [containing] . A brief survey of the effects of air attack on the city of Aachen / Operational Research Section, Bomber Command. . Report on demolition of top level

		tunnels at Marquise-Mimoyecques, France / The Royal Engineers. . Report on the Aachen air-raid shelters / Ministry of Home Security, Research & Experiments Dept, Feb 1945.
D7/4	1945 May 19	Report on damage by special bombs at Bremen, Hamburg and Ijmuiden / Air Ministry. 48 leaves, illustrated, typescript.
D7/5	1945	Investigation of bomb damage to the U boat shelters at Bergen / Air Ministry - HQBC and Coastal Command 1945. Text 3 leaves, photographs 5 leaves, typescript.
D7/6	1945 Apr 20-25	Report on technical mission to Germany to investigate damage resulting from Tallboy, Grand Slam and Upkeep bombs / Ordnance Board 20-25 April 1945. 61 leaves, 13 figures. [with colour postcard of pens 1972].
D7/7	1945	Diary of Barnes Wallis' trip to Germany to inspect bomb damage 1945. 5 leaves, typescript; 5 leaves, manuscript.
D7/8	[ca 1945]	10 Air reconnaissance photographs of bomb damage inflicted by Tallboy and Deep Penetration Bombs.
D7/9	1945	Preliminary investigation into the sinking of the Tirpitz [photographs spoiled by flood]. Text 3 leaves; Performance of Tallboy bombs 1945.

D8 Letters of Congratulation on Success of Bomb Raids

D8/1	1943 May	Letters of congratulation to BNW following the raid on the German dams [with BNW replies].
D8/2	1944 Nov	Letters of congratulation to BNW on the sinking of the German battleship, Tirpitz.
D8/3	1945 Mar	Letters of congratulation on BNW's Fellowship of Royal Society and on the development of the 10 ton bomb.

D9 The Dam Busters Printed Histories, Film Script and Publicity Material

D9/1	[nd]	Now it can he told …. the story of a very secret weapon - Upkeep and Highball. Photocopy from unidentified journal volume 19 no 4 page 50-52 illustrated.
D9/2	1963 Jan	The Dam Busting Weapon by Sir B N Wallis FRS. 5 leaves, 1 diagram. These background notes were issued on the occasion of the release of previously classified information on the design, development and use of the weapon.
D9/3	1943 May	Geheime Katastrophen 17 Mai 1943 by Wilfrid von Ruden. Magazine article on documentary film by Helmulz Euler describing the attack on the Möhne dam. Printed in Heimatkalender des Kreises Soest 1973 page 81-84. In German. With translation Secret Disasters 17 May 1943. 6 leaves, typescript.
D9/4	1963	Dam Busters - 617 Squadron's Epic First Operation / Humphrey Wynn. Article in Officer, Number 10 Summer 1963, p 2-8, illustrated,
D9/5	1972 May	Dam Busting - the 'uncivil engineering' behind the famous wartime raid / Dr A R Collins. Article in New Civil Engineer May 1972 p 48-52 illustrated.
D9/6	[nd]	Development: Highball [photocopy from unidentified publication on Mosquito. Chapter 7 p 74-78 plus Appendix 17. A Survey of Mosquito Production and Serial Number Batches, p 423-431].
D9/7	[nd]	Operation Up-keep and Highball - Memories of Wartime Trials on the Bouncing Bomb / E A G Taylor. p. 5-10 JRNSS, vol 22 No 1.
D9/8	1952 Oct	The Dam Busters, Screenplay by R C Sherriff. 1952 Oct 24, copy No 20, 104 leaves, typescript. With letter 1952 Nov 24, from Associated British Picture Corporation Ltd, [to] Barnes Wallis, White Hill House, Effingham, Surrey / W A Whitaker enclosing screenplay - The Dam Busters.
D9/9	1953 Dec	A second copy of The Dam Busters screenplay 1953 Dec 18, copy No 26, 118 leaves, typescript.
D9/10	1955 May	World Premiere, The Dam Busters, in the gracious presence of HRH The Princess

		Margaret, at the Empire Theatre, Leicester Square, May 16 1955. 2 leaves (plus insert ticket reservation slip).
D9/11	1955 May	World Premiere, The Dam Busters, in the gracious presence of HRH Princess Margaret. Programme, May 16 1955. 64p, ill.
D9/12	1955 May	Repeat World Premiere, The Dam Busters, in the presence of their Royal Highnesses the Duke and Duchess of Gloucester. Programme, May 1.7 1955. 64p, ill.
D9/13	1955	Stills from the film, The Dam Busters, numbered 1-128, missing nos 33, 41, 42, 51, 52, 65, 66, 67, 78, 80, 81, 82, 85, 86, 87, 88, 90, 103, 105, 107.
D9/14	1955	The Dam Busters are coming. The story of the film. 4p, ill. (publicity leaflet for the film).
D9/15	1955	Associated British Pictures presents Richard Todd and Michael Redgrave in the Dam Busters. 8p, ill,
D9/16	1955 May	The Story of the Dam Busters. A review of the film and the events it portrays. Printed in, Achievement. 26p, ill.
D9/17	1955	Collection of press cuttings and press reviews of the film The Dam Busters.

D10 Royal Commission on Awards to Inventors

Section D10 comprises 7 parts, all numbered as D10 (3 parts) and then A-C; D; E-I; J-O (4 parts labelled evidence)

D10	1951	Papers, correspondence and evidence assembled by Barnes Wallis in support of his claim to the Royal Commission on Awards to Inventors. Includes historical outline of the development of the bouncing bomb and reports on the damage caused by the air raids on the Möhne dam.
		Part 1 -
		Part 2 -
		Part 3 -
		A-C 'Evidence'
		D 'Evidence'

		E-I 'Evidence' J-O 'Evidence'
D10/2	1951 Mar	Letters of congratulation received by BNW on grant of £10,000 by Royal Commission on Awards to Inventors.

D11 Post War Correspondence on Dam Raids etc.

D11/1	1949 - 1950	[File entitled] Correspondence between B N Wallis and Wing Commander B G Morris [Air Ministry, London] re Möhne, Eder and Assouan dams.
D11/2	1963 May - 1968 Sep	[File containing] Correspondence between BNW and David Irving re Irving's publications on dam raids, German secret weapon etc.
D11/3	1969 Sep - 1971 May	[File containing] Correspondence between BNW and H van Dyk Soerewyn re German fin stabilized missiles.

BNW/DA - Investigation of V2 Rockets

DA/1	1943 - 1944	[File entitled] Flying Bombs and Rockets [containing reports and ms notes / BNW on] the flying rocket, its design and performance.
DA/2	1944 Jul-Aug File No 115	[File entitled] Pilotless Aircraft [containing reports on] Balloon barrage defence against the flying bomb [includes coloured sketch].
DA/3	1944 - 1945	[File entitled] Rocket Bombs [containing] Correspondence with War Office and Ministry of Aircraft Production re V2 rockets.

BNW/E – Post War Aircraft Developments

E1 Notes and Working Papers

E1/1	1944 - 1949	[File containing typed and ms notes on] Aircraft development including working papers / BNW on high speed jet and Fleet Air Arm report on future aircraft policy.
E1/2	1945	[File containing ms notes on geodetic construction including] Flexural stiffness of geodetic wings; Memo on torsional stiffness of geodetic wings etc.
E1/3	1945	[Ms notes / BNW on] Stratosphere Chamber erected at Weybridge.

E1/4 1945 - 1949 [Typed and ms reports / BNW on] Staffing levels and suggested salaries for Aeronautical Research and Development Section, Vickers-Armstrongs Ltd.

E2 Specifications

E2/1 1945 Dec Specification RKP/78417 Vickers-Armstrongs Ltd VS2 Four Engined Civil Transport - Internal Combustion Turbine Engines.
4 leaves, Appendix A-F, 3 drawings.

E2/2 1947 - 1950 [File containing] Specification No B35/46 (issue 11) Medium Range bomber/Ministry of Supply. 20 leaves plus 1 leaf amendments. Specification No B14/16 Medium Range Bomber / Ministry of Supply. 22 leaves. Handley Page HP80 and Vickers New Bomber built to these specifications 1950.
3 leaves, ms.

BNW/EA - Guided Missile and Pilotless WCA

EA1 Working Papers and Reports

EA1/1 1948 - 1955 [File entitled] Missile [containing typed and manuscript reports / BNW on] Long range flight; Pilotless transonic bombers; Bomber interception and the unique anatomy of wing controlled aerodynes; The choice of homing systems f or guided weapons; Unmanned air freighters; Factors affecting speed range of the missile; The problem of guided missiles etc.

EA1/2 1950 - 1951 [File entitled] Vickers-Armstrongs Ltd Research and Development Department. Programme for Defence Weapon [containing Reports and memoranda RAE Farnborough and Vickers-Armstrongs Ltd on] Intake efficiency at supersonic speeds; Green Water working party report on pilotless interceptor; Requirements of Air Staff regarding weapons or missiles for the defence of this country; R & D programme for defence weapon.

EA1/3 1951 Jun 7 - Jul 18 [File] P L Teed [containing typed reports on] Discussion on Application of Infra Red Techniques to G W abstracted from minutes of second meeting of the Guided Weapons Advisory Board [and] Addendum to present position in relation to infra red as a means of homing / P L Teed.

EA1/4	1950 and 1951	[File containing] Letters Apr 1951 concerning [report] Guidance and Annihilation Defence / Scientific Advisor to the Air Ministry 1950. 11 leaves & 7 leaves appendix.
EA1/5	[nd but post 1958]	[Paper by B N Wallis] Momentum Bombing / B N Wallis - Weybridge: Vickers-Armstrongs Ltd. 12 leaves, 8 figs, typescript, photocopy.
EA1/6	1949	[Report] Visit to RAE by Squadron Leader Hunter-Tod on 6th May 1949 [to discuss the rate of build up of acceleration of a guided missile when beam riding and when homing] 4 leaves, typescript signed J H Hunter-Tod.
EA1/7	c. 1949 - 1950	Miscellaneous loose ms notes / BNW on Economics of Interception and The Fundamental Importance of Long Range Interception.
EA1/8	1958 Jan 7	Notes on Sir William Penny's visit / [BNW?] 3 leaves, typescript [defence against missile attack].

EA2 Correspondence

EA2/1	1948 Sep - 1950 Aug	[File entitled] Correspondence with Sir Henry Tizard [Ministry of Defence, London] [re missile defence system and improvements for launching aeroplanes and other flying bodies]
EA2/2	1948 Nov - 1950 Sep	[File entitled] Copies of Correspondence between Sir Ben Lockspeiser (Chief Scientist Ministry of Supply], Mr Garner [Ministry of Supply] and B N Wallis re development programme of wing controlled aerodynes.
EA2/3	1949 Dec - 1950 May	[File entitled] Correspondence with Admiral Sir Charles Simeon [of Vickers-Armstrongs Ltd] re analysis of the interception problem for a future missile.
EA2/4	1950 Apr-Jun	[File entitled] Experiments at Larkhill [containing correspondence and reports on missile testing].
EA2/5	1950 Jun	[File entitled] Correspondence with Sir Hew Kilner [of Vickers-Armstrongs Ltd] re Heston Contract 1951 Jan for design study of PRU Aircraft; Electronic self-seeking

		device; Correspondence with Dr Griffith, Rolls-Royce and English Steel Corporation.
EA2/6	1950 Mar - Aug	[File entitled] Correspondence with Air Marshal Sir Victor Goddard [Air Ministry, London] re pilotless wing controlled aerodyne.
EA2/7	1950 Oct - 1951 Sep	[File entitled] Correspondence with Sir Ralph Cochrane [Air Chief Marshal] [consists of reports on progress to date and proposed research programmes]
EA2/8	1952 Feb - Mar	[File entitled] Correspondence with S S C Mitchell [Ministry of Supply re missile]

BNW/EB – Wing Controlled Aerodyne – Wild Goose

EB1 Wild Goose WCA Reports and Working Papers

EB1/1	1944 Oct - 1946 May	[File entitled] Wild Goose Working Papers [contains ms notes and calculations on ideas of aircraft design going back to 1944, Wild Goose not mentioned until 1946]. Maximum economic range of aircraft; Navy type recce aircraft; Possible improvement in fuel consumption; A study of the design and performance of long range aircraft; Lecture notes Bristol University 1945, WG1, WG (Wild Goose) fixed incidence body; Streamline body; A note on high lift devices; Basic considerations underlying Wild Goose design; 60,000 Wild Goose fluid suspension gear; 60,000 Wild Goose WG wing drag; Wild Goose, position of mechanical axis; Height record A/C
EB1/2	[nd but one paper 1947 Dec]	[File entitled] Wild Goose Working Papers [containing ms notes and calculations / BNW] Paper on Wild Goose; 63 leaves, photocopy [incomplete]. The rolling moment due to controlled differential incidence; Moment due to and re downward gusts; Bairstows airship shapes; Inertia coefficients; The development of Wild Goose.
EB1/3	1946 - 1952	[File] Wild Goose Aerodynamic Characteristics [containing BNW ms notes on] Estimate of minimum drag; WG auto pilot; Predannack - test gliders etc.
EB1/4	1949	[File] WCA Trials No 1 Report No 93020-4 [containing] Reports from Thurleigh; Analysis of wind tunnel tests on model WCA / Research & Development Dept

		Vickers-Armstrongs [includes 10 photographs]; BNW ms notes on series of WCA take offs at Thurleigh.
EB1/5	1949	Analysis of Wind Tunnel Tests on Model Radio Controlled WCA - Weybridge. 12 leaves, typescript.
EB1/6	1947 - 1948	The Application of the Aerodynamic Properties of three dimensional bodies to the Stabilization and Control of Aerodynes / B N Wallis. 110 leaves, typescript [with index and ms notes / BNW] plus original typescript [incomplete] with ms notes.
EB1/7	1947?	[File entitled] Drafts and Working Papers - [containing papers ms and typed notes with ms amendments / BNW on] The Trends of Research in Aeronautics.
EB1/8	1949	[File entitled] WCA - Draft reports on Progress of Experiments at R & D Department [containing ms and typed notes / BNW on] The identification of WCA research types; Special aerodynamic research contract interim report; Review of work in the Dept of Aeronautical Research and Development, MOS contracts and A conspectus of work in hand.
EB1/9	[nd]	[File containing ms and typescript notes / BNW on] Gyro stabilised aircraft; The wing controlled aerodyne and the performance of the wing controlled aerodyne.
EB1/10	1950 - 1951	[File entitled] WCA Controls [containing ms and typescript notes / BNW on] The nature of the controls; Possible courses of action to improve the overall reliability of the wing sweep control system; WCA controls; Step and proportional controls.
EB1/11	1951	Notes, reports and photographs of WCA launching trolley.
EB1/12	1953 Sep 12	[Folder] Record of the first successful flight and landing of a wing controlled aerodyne at Predannack. 8 photographs.

EB2 Supersonic Flight and Defence Possibilities

EB2/1	1946 - 1952	[File entitled] Pilotless Jet-Propelled Aircraft [containing ms notes and calculations / BNW] The supersonic drag

		of infinite cones; Naval AA weapon; Address at Weybridge on the trends of research at Vickers; High altitude heavy bomber; Economic speed of jet propelled aircraft; Jet propelled aircraft drag and thrust at any speed; Supersonic flight all up weight, wing loading and drag; Ackerets theory; Minimum drag in supersonic flight.
EB2/2	1948 Dec	[Folder containing draft paper] The Future Development of Air-Power in England. 41 leaves, typescript and 46 leaves, ms including sections on unmanned photo reconnaissance aircraft, classification table for different possible manned and unmanned aircraft etc.
EB2/3	1952 Sep - Oct	Design Study for a Photographic Reconnaissance Aircraft / B N Wallis - Weybridge Vickers-Armstrongs (Aircraft) Ltd. 58 leaves, 3 figures, photos 5 leaves. [With folder] Plates accompanying design study for a photographic reconnaissance aircraft - Weybridge: Vickers-Armstrongs Ltd. Contract No 6/AIR/6892/CB6 (b). Plates nos 1 to 15, hand coloured, showing launching trolley, bomber conversion, servicing etc of variable geometry aircraft.
EB2/4	[nd]	Green Lizard - Data; Record of Firings, Use of Equipment and Projectiles Primer E No 17 / Vickers-Armstrongs Ltd, Newcastle-on-Tyne.
EB2/5	1952 Feb	[File entitled] Notes and Papers used at the Visit of Aeronautical Research Council to Weybridge 13 Feb 1952. [containing] Analysis of wind tunnel tests on model of radio controlled WCA; Calculation of drag on bodies of revolution in supersonic flow; Wing controlled guided missile; A note on the wing controlled aerodyne.
EB2/6	1953 May -	[File entitled] The Problem of Long Range Flight [containing ms notes and calculations] Long range general purpose A/C for RAF; Long range supersonic; Correspondence on RD motors; Arrow aircraft; Swallow stability; Optimum conditions for high values of L/D; The problem of long range flight; Long range supersonic reconnaissance aircraft; PRU project.

EB3 Wild Goose: Official Correspondence, Notes and Reports [Vickers-Armstrongs Ltd R & D Department Numbered Files]

EB3/1	1947 Feb - 1949 Jan File151	File [containing correspondence, ms notes and reports on WCAs]. Letters re Selsyn system of control, small rockets and electrically operated strut type actuators; Report limit of range of homing apparatus; Visit to TRE Great Malvern, 1947; Letters re rocket propelled free flying models and subsonic elliptical model; Tests on motors; Interceptor aircraft; Wing controlled aerodyne development programme; Extracts from the paper on The Design and Work of the Farnborough High Speed Tunnel; Note on spar casting; Rear intakes for Wallis aircraft; General correspondence on progress on WCA; Report on conference regarding Wild Goose development contract; Model aircraft flight-tests using cordite propulsion; Correspondence on low thrust cordite motors; Draft specification of wing controlled aerodyne to be built by the Heston Aircraft Co; Report on shape of bodies for supersonic speeds and discussions of Adder installation in the manned WG; RR expendable jet engine for supersonic guided missile.
EB3/2	1949 Feb - 1949 Jun File No 1511	File [containing correspondence, ms notes and reports on missiles and WCA]. Wind tunnel tests - Pitching moments of Young type body shape and modified Young body shape; Correspondence on weight of aerodyne and use of Adder engines; Survey of position with regard to Vickers-Armstrongs project anti-aircraft missile; Ground and airborne trials on radio control gear; Design of WCA; Letters to suppliers; Precautions on pneumatic system; Wild Goose trials.
EB3/3	1949 Jul - 1950 May File No 1512	[File containing correspondence, minutes of meetings etc]. Supplies for construction of:: Wild Goose, Casting alloy for Manufacture of pressurised hydrogen peroxide tanks; Model for catapult launching; Determination of centre of gravity of the aerodyne and the adjustment of the launching cradle; Notes supplied by Wing Commander Boyd regarding remote control aircraft; Fatigue tests on wings; Flight envelope for P117 design

		study; Chalgrove Aerodrome, suitability for WCA flight trials; Heston aircraft single seater manned WCA; New aerodrome for Wild Goose experiments if have to leave Thurleigh; Learning to fly the wing controlled aerodyne.
EB3/4	1950 Jun - Dec File No 1513	File [containing correspondence, minutes of meetings test reports on WCA]. Contract 6/Air/2171/CB.6(b) supply of components; Tizard given leave from National Physical Laboratory to assist BNW at Vickers-Armstrongs Ltd; Project 93023 - launching tube and report on trials at Risdale range Aug 1950. Aerodyne flight trials, report and recommendations; Notes on pros and cons of blunt nosed bodies or pointed nosed bodies in supersonic flight; Propulsion motor trials; Defence missile.
EB3/5	1951 Jan-Jun File No 151z4	[File entitled] Wild Goose General File [containing correspondence, test reports, notes, minutes of meetings on WCA]. Project Nos 93006, 93019, 93022, 93023, 93025 Contract Nos: 6/Air/2171/CB.6(b), 6/Air/3371/CB.6(b), 6/Air/4055/CB.6(b). Works Order Nos 443, 475, 477, 593.
EB3/6	1951 Jul - 1951 Dec File No 1515	[File entitled] Wild Goose General File [containing] Contract Nos 6/Acft/2171/CB.6(b), 6/Air/3371/CB.6(b), 6/Air/4055/CB.6(b). Works Order Nos 443, 475, 477, 593. Report on visits to Predannack to discuss programme of tests for new launching head and decide on policy regarding new type of mechanical braking system; Correspondence re supply of materials; Correspondence re project Green Lizard; Model test results; Memoranda of meetings at Predannack; Notes on meeting at Portland re sonic homing missile development programme
EB3/7	1952 Jan - 1953 Dec File No 1516	[File entitled] Wild Goose General File - Project Nos 93006, 93019, 93020, 93022, 93023, 93024, 93025. Contract Nos 6/Acft/2171/CB. 6(b), 6/Air/4055/CB.6 (b). Works Order Nos 443, 475, 477, 593. Correspondence re supply of equipment for above contracts; Reports on cold motor unit trials at Weybridge and Green Lizard project; Minutes of meetings of R & D department; Programme for flying trials; Wild Goose development programme.
EB3/8	1954 Jan - 1958 Dec	[File entitled) Wild Goose General File - Project Nos 93020, 93022, 93023, 93024,

	File No 1517	93025. Report on first flight of auto-pilot aerodyne; Correspondence with Rolls-Royce Ltd, Blackburn & General Aircraft Ltd, etc re supply of components including minutes of soar engines meetings of R & D department, Vickers-Armstrongs Ltd.
EB3/9	1959 Jan-Oct 1965 Jun-Aug File No 1518	[Swallow design and MWDP Contract] Correspondence re contract. Cost estimates. Report on visit to Paris by Admiral Buzzard; Naval application of variable geometry aircraft; Minutes of meetings held to discuss the project; Some correspondence with Langley Field USA re Swallow development; Correspondence 1965 on article in The Times Aviation Supplement.

EB4 Wing Controlled Aerodyne - Contract Files

EB4/1	1948 Mar - 1953 NovFile 151 no 1	[File entitled] Contracts No 1 - No 6 AIR/2171/CB.6 (B) and Heston aircraft subcontract form. Correspondence re contract on special aerodynamic research.
EB4/2	1949 Jan - 1954 Jul File 151 no 2	[File entitled] Contracts No 2 - No 6 Correspondence re contract for Wild Goose wing mechanism and design construction and endurance tests including negotiations on the design and patent clauses to be included in the order; Termination of the contract.
EB4/3	1949 Apr - 1960 Jun File 151 no 3	[File entitled] Contract No 6/ AIR/4055/CB-6(B) and Elswick W/D 4852. Correspondence re contracts for wing controlled models and launching equipment. Includes development programme for financial year 1952/3 and cancellation of the project.
EB4/4	1953 Sep - 1954 Sep File 151 no 4	[File entitled] Contract No 4 - No 6/AIR/10112/CB-6(C). Correspondence re contract and its termination.
EB4/5	1954 Nov - 1958 Jan File 151 no 5	[File entitled] Contract No 5 - No 6/AIR/11395/CB-6(C). Correspondence re contracts for special aerodynamic research on Wild

BNW/EC - Wing Controlled Aerodyne - Swallow

EC1 Wing Controlled Aerodyne Committee Meetings [Swallow] Vickers-Armstrongs Ltd

EC1/1	1953 Jun - 1955 Nov	[File entitled] Wing Controlled Aerodyne Committee Meeting notes [containing notes

		of meetings re joint Ministry of Supply - Vickers-Armstrongs scheme for development of subsonic-supersonic aircraft; Reports on wing controlled aerodyne research and development programme, with particular reference to Swallow.]
EC1/2	1953 Jul - 1957 May	[File entitled] Wing Controlled Aerodyne Committee Meetings etc. Correspondence [containing] Letters between Major Teed and G R Edwards, both of Weybridge works and Major General Dunphie of Vickers-Armstrongs, London, enclosing and discussing draft WCA reports annotated by BNW and others; Minutes of meetings held at Predannack; WCA research and development programme and costs; Visit to Australia re Swallow trials etc.
EC1/3	1958 Jan - Dec File No 151	[File entitled] WCA Committee [containing] correspondence re brochure OR330, GOR339, and Swallow project; Notes on discussions held at Weybridge re Swallow aircraft. Report of visit by US Mutual Weapons Development Agency to Weybridge; Estimated costs of Swallow project; Address to USA visitors, 1958 May 9; American MWDP team visit; Notes on visit to NASA, Langley Field.

EC2 Development of the Swallow Aircraft
Vickers-Armstrongs (Aircraft) Ltd
Weybridge numbered files

EC2/1	1954 Jan - 1955 Dec Original File No 175	[File entitled] Swallow [containing correspondence between Vickers-Armstrongs Ltd and University of Bristol, Ministry of Supply, Sondes Place Research Institute, etc; Notes, minutes of meetings, quarterly reports on] Visiting dignitaries to see Swallow project; Swallow research and development; Radar search net; Radar invisibility; Swallow performance and cost; Influence of lift / drag ratio on the all-up-weight and performance of supersonic aircraft; Arrangement of Lockheed pumps for wing actuation and bearings; List of work in hand; Swallow telemetering; Proposals regarding the flutter investigation of reconnaissance aircraft Swallow; WCA reports.
EC2/2	1956 Jan - 1957 Dec Original File No 175	[File entitled] Swallow [containing correspondence, notes, minutes of meetings, quarterly reports etc.] Comments on report on Swallow flutter; Theory of viscous flow as applied to the

		pivotal bearing of a variable sweep wing; Weight estimates; Discussions of design and manufacture of models for the 3ft and 8ft supersonic wind tunnels and free flight tests; Aberforth free flight model no 1; Trial specification; Insulation for supersonic aircraft; Swallow development; The genesis and development of the idea of Swallow.
EC2/3	1958 Jan-Dec Original File No 175	[File entitled] Swallow [containing correspondence, notes, minutes of meetings, quarterly reports etc on] Supersonic free flight model trials; Tactical intelligence; Improvement of hydraulic servo mechanism systems; Variable geometry aircraft; Discussions on engine performance; American visitors; Meeting to discuss necessary information to design a Swallow aircraft; Swallow drag tests.
EC2/4	1958 Original File No 175A	[File entitled] Swallow - Correspondence, Langley Field 1958.

EC3 Working Papers and Reports on Engine Controls, Engine Position and Capabilities, and possible use of Swallow for Defence Purposes

EC3/1	1958 Mar - 1959 Jul Original File No 1	[File entitled] Swallow [containing ms notes / BNW and reports typescript - Vickers-Armstrongs (Aircraft) Ltd on] Small turbo jet engines suitable for Swallow aircraft; Visit to NASA, USA 1958 Nov; Cost estimates of Swallow programme; Potential of Swallow as a fighter/strike aircraft; Swallow research programme, Swallow N wing design limitations; Pivot tests [with 6 photos].
EC3/2	1957 Nov - 1959 Jun Original File No 2	[File entitled] Swallow working papers [containing ms and typed notes / BNW on] The evolution of the Swallow; Economic flight; Swallow stability and control; Considerations governing the position of engines on Swallow aircraft; The pitching moment of the Swallow; Pitch control; GOR 339.
EC3/3	1957 Feb - 1958 Mar Original File No 3	[File entitled] Swallow Working Papers. Specific Weight of Power Plant [containing ms notes / BNW on] Swallow transport; Engine controls; Azimuth bearing; A note on the Swallow concept; GOR 339; The influence of the specific weight of power plant on the all-up weight of aircraft.

EC3/4	1947 - 1950 Original File No 4	[File entitled] Swallow Working Papers - Range [more strictly a pre Swallow file but containing data relevant to Swallow calculations] [ms notes BNW reports and calculations on] The Tractrix; Unmanned bomber; Expendable bomber; Manned expendable bomber; Most economical speed for a jet propelled aircraft at subsonic speeds; Radar ranges; Beam at sea level; Ephemeral engines.
EC3/5	1957 Feb - 1959 Apr Original File No 5	[File entitled] OR 330 Swallow Recce Bomber Wing-mounted Engine Controls [containing ms notes, calculations and graphs / BNW on] Recce Swallow lift force exerted on the intake due to change of momentum; Wing engines - inertia loads on pivot bearing; Swallow sword supports for engine nacelles; A note on the use of external engine pods as aircraft controls; Considerations governing the position of the engines on Swallow aircraft.
EC3/6	1958 Mar - Nov Original File No 6	[File entitled] Disposal of Power Units on Airframe [containing ms notes, calculations etc on] Aerodynamic characteristics required in a long range supersonic aircraft; PTFE wing pivot test; Couples on engine pod control mechanism RB 121 engines; Forces on nacelles and support blades.
EC3/7	1954 Nov - 1955 Dec Original File No 7	[File entitled] Swallow Working Papers containing typed reports, ms notes and calculations / BNW on] The influence of the lift / drag ratio in the all-up-weight and performance of supersonic aircraft; A note on the natural laws governing the performance of aircraft; Supersonic long range; Minimum radius of turn; Optimum altitude supersonic; Conditions governing design of jet engines at high altitudes; Recce bomber equipment weights and volumes.
EC3/8	1954 May - Nov	[File entitled] Swallow Working Papers [containing typed and ms notes and reports / BNW et al mainly on defence] [flood damaged] A note on the dynamics and economic principles affecting the design of military aircraft; Reports on visits of dignitaries to see Swallow project; Estimated performance of RB 115; Air defence of GB fighter aircraft; Suggested research programme for Swallow; Radar horizon.

EC3/9	1959 Sept	[File entitled] High Supersonic Swallow [containing working papers, ms notes, calculations, graphs etc / BNW on] Wing operating mechanism; Notes on the design of supersonic Swallow; Super Swallow stability; Properties of slender deltas and arrowheads.
EC3/10	1955 Jan - 1957 Apr Original File No 2	[File entitled] Swallow Development Priorities I, II and III [containing typed reports on] Wing controlled aerodyne; Swallow development; RN and RAF aircraft priorities I, II and III; Swallow aircraft project; The problems of supersonic flight; Swallow revised programme; Swallow research and development.
EC3/11	1956 Aug - Nov Original File No 3	[File entitled] Working Papers on Swallow L/D etc [containing ms notes, calculations etc / BNW including] Calculations of pressure distributions; Graphs showing (L/D) max v Mach no and the altitude and sweepback at which (L/D) max is obtained; Type 002 Swallow utilization of space; Sweepback of the Mach line.
EC3/12	1957 Nov Original File No 4	[File containing report entitled] Vacuum Insulation. An Interim Report on Work in Connection with Vacuum Insulation / BNW 12 leaves, 2 tables, 11 figures, typescript with ms notes.
EC3/13	1957 Aug Original File No 5	[File containing report entitled] Manned Research Aircraft Type 008 / [BNW]. 5 leaves, 13 graphs, typescript.
EC3/14	[nd] Originally unnumbered	[File containing reports on] The influence of size on performance of aircraft; Armament weights of the Swift aircraft; Type 003 subsonic-supersonic research aircraft.

EC4 Internal Reports on Wind Tunnel Tests - Weybridge Vickers-Armstrongs (Aircraft) Ltd Department of Aeronautical Research and Development

EC4/1	1959 May	[File entitled] Wind Tunnel Models [containing] Swallow wind tunnel tests reference sheets 3 leaves [App 3 leaves] 13 figures [with] Photographs of Vickers Swallow 1/10th scale model tests RAE, Bedford 1958 and Imperial College tests 1959.
EC4/2	[nd] Report No RD 011/1	Low Speed Wind Tunnel Tests of a Cambered and Twisted Model of the Swallow with 25o

		sweep of the Leading Edge of the Afterwings / R M Harris. 54 leaves, ill.
EC4/3	[nd] Report No 64	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration. I Cambered and Twisted Afterwings Alone / R M Harris. 24 leaves, ill.
EC4/4	[nd] Report No 65	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration. II Cambered and Twisted Models with 75o Swept Forewing / R M Harris. 20 leaves, ill.
EC4/5	[nd] Report No 66	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration. III Cambered and Twisted Models with 80o Swept Forewing / R M Harris. 18 leaves, ill.
EC4/6	[nd] Report No 67	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration IV Correlation of results of Afterwings alone and in conjunction with 75 o and 80 o Swept Forewings / C W Hayes and R M Harris. 22 leaves, ill.
EC4/7	[nd] Report No 68	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration V Model without Camber or Twist having 75 o Swept Forewing / RM Harris. 14 leaves, ill.
EC4/8	[nd] Report No 69	Subsonic Wind Tunnel Tests of the Longitudinal Characteristics of Swallow in the Low Speed Configuration VI Cambered and Twisted Models with an 80 o Swept Forewing and a Central Body / R M Harris. 22 leaves, ill,
EC4/9	1963 Nov	Low Speed Wind Tunnel Tests of one Solid and two Ducted Small Aspect Ratio Rectangular Wings having Plain Leading and Trailing Edge Full-span Flaps / C W Hayes. 33 leaves, ill.

EC5 Imperial College of Science and Technology Aeronautics Department Reports

EC5/1	1959 Oct Technical Note 1	Pod/Wing Interface Tests of a Swallow Model fitted with 7.0" long Engine Pods at a Mach Number of 1.8 / F G Irving - London: I C. 5 leaves.
EC5/2	1959 Oct Technical Note2	Measurement of the Drag of a 7.0" long Swallow Engine Pod Model at a Mach Number of 1.8 / F G Irving - London: I C. 3 leaves.
EC5/3	1959 Nov Technical Note 7	Pod/Wing Interface Test of a Swallow Model fitted with 7.0" long Engine Pods at a Mach Number of 1.8. Stage IV: Pitched and yawed pods / F G Irving - London: I C. 4 leaves.

EC6 Papers and Official Reports on Supersonic Flight and the Design of Suitable Aircraft by B N Wallis

EC6/1	1954 Nov	The Influence of the Lift/Drag Ratio on the All-up Weight and Performance of Supersonic Aircraft.
EC6/2		*Missing from original index*
EC6/3	1957 Jan	A Note on a Proposed New Type of Aircraft / B N Wallis - Weybridge Vickers-Armstrongs (Aircraft) Ltd. 71 leaves, 52 figures.
EC6/4	1957 Dec	A Note on the Swallow Concept / [B N Wallis] 10 leaves including graph on Delta v Arrowhead shape.
EC6/5	1957 Jul - 1958 Mar	A Note on the Relation between Acceleration Wing Loading and Minimum Radius of Turn / [B N Wallis] 14 leaves ms [with] The Fundamental Principles of Long Range Supersonic Flight. 18 leaves, typescript, 15 figures.
EC6/6	[nd]	The Swallow Project. Proposal for a research aircraft capable of wide military applications (including strike reconnaissance duties) 14 leaves [incomplete], 13 drawings Descriptive; 6 drawings Performance; 3 drawings Aerodynamic; 3 graphs Stability and Control; 4 drawings Engineering Test; 2 graphs Time Scale and Cost.

EC6/7	1958 Apr	The Swallow Project. A Variable Geometry Aircraft. 16 leaves, 7 tables, 20 figures.

EC7 Patent Files

EC7/1	1954 Feb - 1959 Dec File No 334 1954 Sept - 1961 Mar	[File in two Sections - Swallow Patents and Pancake Patents] List of Swallow patents supplied by Brewer & Son. Correspondence re various Swallow patents; Swallow Delta; Note on maximum lift/drag ratio; Swallow aircraft; Forebody for Swallow counteracting turbulence over delta aerofoil; Pressurized wing; Vacuum insulated skin; Complete specifications for Swallow tail delta: Improved aeroplane fuselage or forebody structure; Claims in Swallow US patent case referred to in official action 1956. Pancake - Correspondence re patenting a method of reducing the susceptibility of an aircraft to detection by radar or other apparatus. Patent application no 26247/54; US patent application 541797 for Pancake cancelled; Renewal of various patents; Patent specifications and correspondence.
EC7/2	1960 Jan - 1967 Aug File No 334	Correspondence re various Swallow patents, Swallow tailed delta; Vacuum insulating panel filling; Dial pivot arrangement for engine/wing mounting; Swallow forebody structure; Swallow controls. Specifications 715, 175 / 1958 Sept 8 Improvement in and relating to insulating materials. 832, 761 and 832, 762 / 1960 Apr 13 Improvements in aeroplanes 839, 647 / 1960 Jun 29 Improvements relating to aeroplanes. Possible US patent infringement of variable geometry design in 1963.
EC7/3	1955 Apr - 1966 May File No 335	[File entitled] Improvements in Pivot Bearings [containing correspondence and specifications on] Improvements in pivot bearings no 12068/55; Improvements relating to bearings no 22542/58; Improvement in pivot bearing (PTFE) 857, 832/61; Hydraulic rate term generator 20248/58 Italian patent.
EC7/4	File No 336	[File entitled] Y-Spar In Swallow-Tail Delta Aircraft No 16251/15 Pressure Cabin in Swallow-Tail Delta Aircraft No 16252/55. Containing correspondence and specifications for the above patents.

EC7/5	1955 Aug File No 337	[File entitled] Use of Zone-Plate in Sighting Apparatus (H Jeffree). Correspondence and specifications for the above patent No 30833/55
EC7/6	File No 338	Improvements in radio telescopes; Telescope mountings; Giant radio telescopes for Australia; Opposition from Germany, Carl Zeiss to Wallis's patent regarding altazimuth mounting for telescopes. US Patent. Drawing 'Proposed Design for a Giant Radio Telescope' scale various.
EC7/7	1956 Jul - 1962 Feb File No 339	[File entitled] Pivoting Engine Units of Variable Sweep Wings. 28424/56 [containing] Correspondence and specifications for the above patent No 28424/56 and queries over Australian, American and Dutch patents.
EC7/8	1956 Aug - 1960 Mar File No 340	[File entitled] Roller Bearings, Push-Pull Linkages, Phase-Advance Servo- Motor (ARB Nash) [containing] Correspondence and specifications for the above patents 38685/56 and 38686/56.
EC7/9	1957 Aug - 1967 Sept File No 341	[File entitled] Apple Turnover [containing] Correspondence arid specifications for a novel method of low-level bombing, Momentum Bombing codenamed Apple Turnover, 31761/57.
EC7/10	1959 Jan - Mar File No 343	[File containing] Patent Survey of Wild Goose and Swallow. Provisional patent specifications for means of ensuring stability and control of flying body and improved means for controlling the deflection of loaded structures.
EC7/11	1959 Mar - 1962 Jan File No 344	[File entitled] Automatic Correction for Failure of Wing Mounted Engine - Swallow. [containing] Correspondence and specifications for the above patent no 18883 / 1959.
EC7/12	1959 Sept- 1968 Aug File No 345	[File containing] Correspondence on and provisional patent specifications for improvements in aeroplanes; Swallow pitch stability; Slotted delta; Articulated delta; Casca aerofoils; Variable camber aircraft; Counterpitch jet lift for cambered duct; High altitude aircraft;

		Vulture wings; Ducted wings. Patent Nos 32139/59, 32140/59, 32783/59, 32140/59, 30765/60, 34890/59, 40191/60, 4611/61, 19355/62, 28549/64, 28457/64. Abandonment of cambered duct and variable camber aircraft patent applications; Questions over American patent application 1968.
EC7/13	1962 Jan - Nov File No 348	[File entitled] General Patent Matters within BAC Group [containing] List of patent cases and BAC Ltd serial numbers.

BNW/ED – Hypersonic Aircraft

ED1 Cascade Working Papers 1959 – 1960

ED1/1	1959 - 1960	[File entitled] Cascade Delta [containing ms and typescript notes / BNW on] Meeting with Lord Weeks; Note on performance of Cascade aerofoils; Plan form and lift drag ratio; STOL Cascade aircraft; The bomber and the recce Cascade aircraft; Cascade aircraft model 230; A note on the G max of the Cascade
ED1/2	1960	[File entitled] The Development of Aircraft Capable of Economical Performance at all Speeds: The Philosophy of Cascade [containing a report with the above title / BNW and a paper on Cascade lifting surfaces]
ED1/3	1960 Jul	[Paper entitled] Cascade Aircraft - Objective and Preferred Aerodynamic Form. 3 leaves, typescript.

ED2 Hypersonics Working Papers - Files 019 1960 – 1962

ED2/1	1960	[File entitled] File 019 No 1 [containing ms notes, working papers on] Wing design; Variation of bending resistant material weight with taper ratio and thickness chord ratio; Visit to Bristol Siddeley Engines Ltd; Long range supersonic aircraft; Range equation for an aircraft with inclined jet engines; Notes on design of special purpose military aircraft; Proposal type 019; Recce bomber.
ED2/2	1961	[File entitled] 019 File No 2 [containing ms notes, working papers and calculations] Jet lift; Isothermal flight; Performance [of aircraft] 65,000 lb AUW; 40,000 lb strike aircraft; Balance equations.

ED2/3	1962	[File entitled] 019 File No 3 [containing ms notes, working papers and calculations on] The range formula and other equations relating to an aircraft with a deflected jet; Performance calculations; Range formula for case of varying height and speed (incorporating jet lift at constant angle of jet to body); The acceleration of a given residual mass to some desired velocity; Visit to Bristol Siddeley Engines Ltd 1962 Mar 19.

ED3 Design and Form Calculations, Rectangular Fuselage etc - Working Papers & Reports 1960 – 1970

ED3/1	[nd] ca 1960?	[File entitled] New Type of A/C [containing] A Note on the Design of a New Type of Aircraft / BNW
ED3/2	1960 May	[File entitled] Transatlantic Aircraft [containing typed reports on] Proposal for M3.0 transatlantic aircraft and transatlantic aircraft AUW 150,000 lb.
ED3/3	1960	[File containing miscellaneous loose working papers ms notes and calculations / BNW on] The use of flap control to provide synthetic stability; A note on variable camber aircraft; A survey of the trend of invention in the dept of Research and Development at V-A (Aircraft); The de Laval nozzle, etc.
ED3/4	[nd] ca 1962 - 1964	[File entitled] Hypersonic Flight [containing working papers ms notes, calculations and graphs] Lecture on problems of hypersonic flight; The characteristics of [2] sails in hypersonic flow by Daskin & Feldman; Acceleration of given residual mass to some desired velocity; Relation between TET, TPT, wing area, capture area and jet lift in isothermal flight; Range formulae; Airbreathing VLR.
ED3/5	[nd] ca 1966?	[File containing ms and typed notes / BNW] A note on aircraft design and manufacture; BAC (Operating) Ltd, Weybridge branch Research and Development Department; A note on a programme for the development of long range transport in the Department of Research and Development, Weybridge.

ED3/6	1965 - ca 1970?	[File entitled] Wing Body Combinations [containing ms and typed notes and reports on] Range augmentation by jet lift from vectored thrust; Lift coefficient; Comparison of lift of flat plate wing and body of revolution; Wind tunnel tests to determine the non-linear aerodynamic characteristics of some low aspect. Ratio wings and wing body combinations / C W Hayes; Model of rectangular flapped wing.
ED3/7	ca 1967	[File entitled] Data SST Type Aircraft Note on Hypersonic Sails [containing working papers, ms notes and calculations / BNW et al on] Structural filling materials; Minimum drag body revolution; Modified Newtonian flow; Fuels for hypersonic aircraft; The characteristics of [2] sails in hypersonic flow / Daskin & Feldman.
ED3/8	1969 - 1970	[File containing ms calculations and graphs on] Skin friction formulae; Wave drag; Drag and L / D.
ED3/9	ca 1970	[File containing ms and typed notes and reports / BNW on] Formulae for the estimation of drag at high supersonic speeds; Albatros form drag; Design of power units for high speed aircraft; Cambered duct aircraft; L/D ratio of the Concorde under cruising conditions; Rectangular fuselage; Interference drag between neighbouring slender bodies at zero yaw in supersonic flow / Imperial College of Science & Technology Technical Note No 13.
ED3/10	1970s	[Typed reports and papers on rectangular fuselage and new type of aircraft - The Universal Aircraft].
ED3/11	1970s?	[Loose ms notes working papers and calculations by BNW on rectangular fuselage and new Universal Aircraft, 4 files].
ED3/12	1960 Sept	[File entitled] Air Defence of Great Britain. Wing Commander Lambert’s visit Friday 2nd September 1960 [containing] Correspondence, memoranda of meetings and discussions on air defence.

ED3/13	1965 - 1966	[File entitled] New TSR [containing ms notes and typed report on replacement for TSR2; The limits of performance of terrestrial aircraft].

ED4 Hypersonic Wind Tunnel Tests 1964 - 1970

ED4/1	1964	[File entitled] No 1 [containing results of wind tunnel tests] WT 44, 48, 47. Key to tests and WT numbers.
ED4/2	1964 May - Jun	[File entitled] File No 2 Wind Tunnel Tests Low aspect Ratio Wings [containing reports on] Wings WT 48a-f and 48N a-g and bodies WT 53 and WT 54.
ED4/2b	1965	[File entitled] Low Aspect Ratio Wing-bodies Lateral Coefficients [containing] graphs and results of yaw tests and wind tunnel tests WT 49/53b.
ED4/3	1964 - 1965	[File entitled] No 3 [containing results of wind tunnel tests for] Wings of varying aspect ratio but constant area; Ducted wings with various flap settings on 3c square body; Notched ducted wings on 3c square body; Summary curves of all tests; AR 1.25 ducted wing with various flap settings.
ED4/4	1965 - 1968	[File entitled] File No 4 [containing] Wind tunnel tests - Curve fitting to test results for square ducted wing on 3c square section body; Comparison of circular and square section bodies WT 53 and WT 56; Zero lift tests WT 49/53; WT 60 various wing and nose settings.
ED4/5	1968 - 1969	[File entitled] File No 5 Inc Dard rep 89 [containing] Wind tunnel tests - Rectangular plates various aspects; 0.16 AR rectangular plates with flaps; 0.44 AR delta truncated; Wing body combinations, [with] DARD report no 89 Wind tunnel tests to determine the characteristics of some low aspect ratio wings and wing-body combinations.
ED4/6	1969	[File entitled] File No 6 [containing] Results of wind tunnel tests for various wing configurations at various temperatures. WT 64, 65, 66, 66a, 66b.
ED4/7	1970	[File entitled] File No 7 [containing] Results of wind tunnel tests for models of different scale at different temperatures. WT 67, 68, 69.

ED4/8	1959 - 1970	[File entitled] Wind Tunnel Model Reference Sheets.
		Imperial College Tests
ED4/9	1963	[File entitled] Imperial College Wind Tunnel Tests, WT 67 and R and D Tests WT 68.
ED4/10	1966 - 1969	[File containing typed and ms notes on] Progress with drag tests on a heated blade in the water tunnel at Imperial College of Science and Technology; Base drag of flat plate; Heat transfer test.

ED5 Correspondence

ED5/1	1961 - 1968	Correspondence between BNW, BAC, Bristol Siddeley Engines Ltd, Imperial College, etc re aircraft design and development with reference to Vickers research and development programme.
ED5/2	1968 - 1971	File 185 [containing] Correspondence between BNW, Hawker Siddeley, Rolls-Royce, Imperial College etc re airships and various aircraft including supersonic.
ED5/3	1971 - 1977	Post retirement correspondence [File containing correspondence between BNW, Leo d'Erlanger, J G Marley of Wolfson Institute of Interfacial Technology, Rolls-Royce et al re aircraft design including supersonic]

ED6 Reports on Supersonic Flight by Barnes Wallis 1960 – 1970

ED6/1	1960 Oct	A note on the Development of Variable Geometry Aircraft / B N Wallis. 6 leaves, App I-IV, 6 figs, typescript, photocopy [with typescript master sheets and 1st draft copy with ms amendments].
ED6/2	1961 Feb 14	The Command of the Air Part I / [B N Wallis] 32 leaves, App I, II 1-8, III, 25 figs, typescript & photocopy [with typescript master sheets].
ED6/3	1961 Mar	Limited Jet Lift / B N Wallis 6 leaves, typescript [with photocopy of first 6 leaves with ms amendments].

ED6/4	1961?	[File containing reports entitled] Cambered Duct Aircraft 10 leaves, typescript, 7p ms, figs 3-5. The Philosophy of Peace 9 leaves, typescript with ms amendments.
ED6/5	1962 May	Manned Aircraft - A Note on Sustained Flight above 100,000 feet and the Possibility of the Subsequent Development of Weightless Flight / B N Wallis. 20 leaves, App, II 1-7, 24 figs, typescript, photocopy [with master sheets and first draft typescript with ms amendments].
ED6/6	1970 Aug	Design of Subsonic and Supersonic Wings / [B N Wallis?] 3 leaves, App I, 12 figs, typescript.
ED6/7	[1963]	The Strength of England / BNW. 20 leaves, typescript.
	1963 Jun - 1964 May	[with file entitled] The Strength of England [containing] Correspondence re the article for The Times newspaper.

BNW/F – Submarines

[Note: Loose papers as far as has been possible have been grouped together in broad subject groupings. Some of the papers are incomplete.]

F1 Working Papers

F1/1	1946?	[File entitled] Low Drag Bodies [containing ms notes and working papers / BNW on] Underwater bodies, torpedoes and submarines.
F1/2	1965 Jul	[File entitled] Copy No 1 BNW [containing report] The Vickers Ltd Proposal for a New Type of High Pressure Submarine. 10 leaves, 9 figs, typescript. [with questions on this raised at a meeting of submarine experts at Bath, 2 leaves, typescript and Vickers reply].
F1/3	1965	[File entitled] Submarine I [containing typed reports and ms notes / BNW on] High pressure submarine; Liquid oxygen engine; Design and performance of submarines; Theory of submarine design.
F1/4	1965 - 1966	[File entitled] Submarine II [containing reports and miscellaneous ms notes / BNW on] Meeting at Weybridge and Vickers

		House on submarine proposals; Preparation of fuel and lox for combustion; Experiments to be made at mingling of gaseous CO2 and liquid O2; 10ft pressure hull; Power installation for submarine; Design of an ideal power plant; Thermal efficiency of a jet; First approach to a design of a high speed submarine; Hydrostatic pressure in sea water; Submarine aerofoils.
F1/5	1965 - 1966	[File untitled containing ms notes, working papers and correspondence / BNW on] Stratosphere chamber cooler data; First approximation to a design of a high speed submarine; Notes on Admiralty questionnaire concerning material and structure of submarine; A note on the shape, displacement, hull weight and buckling pressure of submarines; Density of air and CO2.
F1/6	1965?	[File untitled containing ms notes and working papers / BNW on] Submarine propulsion by Olympus Gas Turbine; New submarine; Cruising range and fuel; Submarine multiple transverse frame system; Operating depth and design of hull; Proposed heat transfer test at Imperial College; Lox submarine; Price of Lox.
F1/7	1967?	[File entitled] Essential Data for Submarines [containing reports, ms notes and working papers / BNW on] Liquid oxygen submarine; Notes on visit of Commander Belton, R N Staff College, Greenwich 1967; New submarine; Correspondence with MOD.
F1/8	1965 - 1966?	Miscellaneous Loose Notes and Working Papers / BNW et al. on Submarine Design including;
F1/8/1		Theoretical heat engine cycles.
F1/8/2		Curved panel under uniform radical pressure; Calculations relevant to square hull; Condensation of gaseous carbon dioxide at very low temperatures.
F1/8/3		Proposal for a new type of submarine vessel; New submarine design; Requirements for a long range submarine with high speed; USA submarines.

F1/8/4		Jet propulsion for submarine vessels; The low speed pressure jet; Molecular weight of the products of combustion of CH2 and O2; Methane as a source of power for submarines; Deep submerged jet propulsion.
F1/8/5		Radius of plating; Load in girders of submarine; Submarine panels; Submarine transverse girders; Submarine frames 18" pitch, 36" deep.
F1/8/6		Miscellaneous.
F1/9		[Booklet] Managing Steels for Ultra-High Strength Applications - London : The International Nickel Company (Mond) Ltd [with 9 ms graphs of stress test results].

F2 Correspondence

F2/1	1964 - 1968 Original File No 193	File of correspondence between BNW, University of Bristol, BOC, Imperial College of Science and Technology etc re development of submarine design.
F2/2	1970 Jul - Nov Original File No 193	File of correspondence between BNW, Rolls- Royce, and BOC re use of Lox in submarines.

BNW/G – Outside Interests and Consultancies

G1 Miscellaneous

G1/1	Nov 1933 - 1935 Feb	[File containing] Correspondence between BNW and Aluminium Plant & Vessel Co Ltd, London on design of petrol type transport tanks, including tank design and mounting, and lorry suspension.
G1/2	1937 Sun-Aug	[File containing] Correspondence between BNW and Roadway Automotive Products Ltd re problem with air intake in cylinder internal combustion engine; Includes calculations by BNW entitled "A Consideration of the Velocity of the Exhaust Gases of an Internal Combustion Engine, through an Orifice".
G1/3	1937	[File containing ms notes, calculations and diagrams / BNW on design of rowing boats including papers on] Zürich rowing 36 (swivels) 16th stroke; Integration of accelerometer diagrams; Power absorbed by skin friction.

G1/4	1968 - 1973	[File containing] Correspondence between BNW and Bath Institute of Medical Engineering re Wallis' presidency and design of walking aids.

G2 Cricket and Golf Balls

G2/1	1936 Aug 24	[Report] Wind Tunnel Tests of Golf Balls / Vickers (Aviation) Ltd, Weybridge. 12 leaves including 9 photographs.
G2/2	1947 - 1949	[File containing] Working papers on cricket balls and surface loading of spheres / BNW [with] draft of letter to The Times newspaper in reply to J R Jardine.
G2/3	1949 - 1964	Correspondence between BNW and various cricket clubs, cricket ball manufacturers and KLC Legg of the Department of Aeronautical and Automobile Engineering.

G3 Isaac Newton (Optical) Telescope 1947-55

G3/1	1947 Nov	[Folder containing] Correspondence [between] P L Teed and English Steel Corporation Ltd re ageing of alloys [with] rough ms notes and calculations.
G3/2	1947 - 1949	[Folder containing ms notes and calculations / BNW on] Strip wound tube and flexible and inflexible structures. 56 leaves [with] letter from Astronomer Royal to BNW 1947 Dec 18. Letter and provisional patent specification from patent agent. 1949 Jul 22.
G3/3	1947?	[Folder] Optical Telescope [containing] various notes / BNW [probably late 1940s],
G3/4	ca. 1947	[Folder containing] Grubb, Parsons & Company Astronomical Instruments Trade Catalogue, Newcastle-Upon-Tyne. Late 1940s.
G3/5	1950 - 1955	[Folder] Mechanical Design Committee - Isaac Newton Telescope [(BNW was on this committee) containing] Correspondence, minutes of meetings, reports, memoranda, 1950 May 30 - 1955 Dec 25.
G3/6	1950	[Folder] Isaac Newton Telescope [containing] ms notes / BNW and Mechanical Design Committee first meeting report, 1950 Oct 31; Spectroscope

		Committee first report, 1950 Apr; Memorandum on mechanical design and diagrams.
G3/7	1947	[Book] Photographic Giants of Palomar / James Fassero - Westernlore Press, California, USA, 1947. 60 leaves, ill.

G4 Radio-Telescope (Australia) 1954 – 1963

G4/1	1954 Dec - 1955 Jan	[Folder] Correspondence [between] Blackett, Lovell and BNW re wind loading of Jodrell Bank telescope.
G4/2	1955	[Booklet] A Proposal for a Giant Radio Telescope - Sydney: Division of Radiophysics Commonwealth Scientific and Industrial Research Organisation. 43 leaves, ill,
G4/3	1955 Apr-May	[Folder containing] Letters to BNW from E G Bowen et al, in Australia re design of telescope dish.
G4/4	1955	[Folder containing] Telescope notes and calculations including proposed design drawings [includes] 5 drawings.
G4/5	1955 Sep	[Folder containing] Report by BNW on Giant Radio Telescopes. 13 leaves, typescript, plates 1-14, drawing of proposed design.
G4/6	1955 Nov 23	[Booklet] Specification of a Giant Radio Telescope for which a design study is required. 15 leaves.
G4/7	1956 Jan 4	[Booklet] Appendices to Specification. 17 figs.
G4/8	1956 Feb	[Folder containing] Notes on Radio Telescope / Freeman Fox. 5 leaves, typescript, 2 drawings.
G4/9	1957	[Booklet] Radiophysics Division Commonwealth Scientific and Industrial Research Organisation - Commonwealth of Australia - Proposed Radio Telescope - Design Study by Freeman, Fox & Partners, London.
G4/10	1957 - 1958	[Folder containing] Notes and comments on proposed radio telescope / BNW typescript & ms

G4/11	1957	[Folder containing paper] The Giant Radio Telescope at Parkes. 2 leaves, typescript, 3 leaves, draft. Annotated by BNW after Sept 1957.
G4/12	1961 Oct 31	Speeches at opening ceremony of Radio Telescope.
G4/13	1961	[Booklet] CSIRO 210 foot Radio Telescope, 1961. 13 leaves, ill.
G4/14	1963	Offprints relating to the Australian Radio Telescope received from Dr E G Bowen 1963. 9 items.

G5 Central Electricity Generating Board

G5/1	1966 - 1967	[Folder containing] Correspondence [between] BNW and Central Electricity Generating Board re cooling tower design and aerodynamic problems. 1966 Jan - 1967 Feb. 65 leaves, 2 photostat drawings.
G5/2	1966 Feb 3 - Oct 11	[Folder entitled] CEGB Cooling Tower [containing ms notes and drawings / BNW including] Research scheme outline. 19 leaves, 4 figs; Notes on Imperial College Aeronautics Department discussion 1966 Mar 2 and typed notes on cooling tower.
G5/3	1966	[Folder entitled] CEGB Cooling Tower [containing working papers and ms notes / BNW et al].
G5/4	1966	[Folder entitled] Cooling Tower. Heat Transfer [containing working notes / BNW] and letter from CEGB (D Bervidge) to Sir Harold Hartley 1966 Mar 16.
G5/5	1962 - 1967	[Folder containing] Collected reports / CEGB and reprints re Ferrybridge Tower collapse. [including] State Electricity Commission of Queensland report on dry cooling towers 1963 Apr. 39 leaves, typescript; CEGB The ellipsoidal cooling tower project : Performance of inclined Forgo-type radiators. 8 leaves typescript. The Duty and Development of Modern Power Station Plant / F H S Brown, 1962 Dec 12. Institution of Mechanical Engineers Ferrybridge Cooling Towers : collapse, models, wind tunnel, tests, analysis, recommendations. Engineering 1966 Sep 2.

10 items.

G6 Airship Revival

G6/1	1969 Jan - 1971 Apr	[Folder containing] General correspondence between BNW, British Transport Staff College, BAC et al re airship revival. Proposed Airship for Shell International Gas Ltd.
G6/2	1971 Feb - Nov	[Folder containing] Correspondence between BNW and Shell International Gas Ltd re design of methane carrying airship.
G6/3	1971 - 1972 Jan	[Folder containing] Correspondence and technical information from BOC and Philips re cryogenic apparatus for liquefying gas.
G6/4	1971	[Folder containing] Draft paper on methane airship / BNW. 3 leaves, ms and 3 leaves, typescript.
G6/5	1971	[Folder containing] Working notes and calculations for Shell Methane Airship / BNW. 25 leaves, ms.
G6/6	1971?	[Paper entitled] The Shell International Gas Ltd Methane Airship / BNW. 5 leaves, ms.
G6/7	1971?	[Paper entitled] A Note on the Efficiency of Airships when used as Load Carriers / Anon [BNW?] 4 leaves, typescript.
G6/8	1971?	[Folder containing] Working notes and calculations for Shell Airship / BNW. Includes sample of carbon fibre sent to BAC in 1970.
G6/9	[nd]	[Paper entitled] Airship Revival Reasons Against / BNW. 2 leaves, ms.
G6/10	1971 Jun 7	[Letter] 1971 Jun 7 Rolls-Royce Ltd [to] BNW re risks of ignition of methane when being carried by airship transporters. 1 leaf, typescript.

G7 Messina Bridge 1971

G7/1	1971	[Folder containing ms notes and calculations / BNW on] Messina Tunnel and Messina Floating Bridge.

G7/2		[Folder containing graphs ms notes, drawings and calculations on] Bridge construction and the geotube. 29 leaves.
G7/3	1971 Jul - Oct	[Folder of correspondence [between] Alan Grant & Partners and BNW concerning the Messina Bridge. Description of plans; Advice from Sir Harold Harding; Costain construction progress booklet and The New Channel Bridge - Report of a conference at Surrey University.]

BNW/H – Correspondence with BNW re Lectures and Talks

H1	1957 Jun 26	[Folder entitled] Eton College - First Hundred Lecture, The Strength of England / BNW. 10 leaves, typescript and 25 leaves, plates.
H2	1958 Mar 18	[Folder entitled] Lecture given to MWDP at R and D [containing] Photostat copy of The Fundamentals of Long Range Flight / BNW [with] holograph amendments [in poor condition].
H3	1958 Oct	[Folder entitled] Lecture: RAF Staff College, Bracknell [containing] Future Trends in Aircraft Development / by B.N. Wallis. 10 leaves, typescript, annotated and unannotated copies; correspondence 2 leaves, typescript.
H4	1959 Jan 28	[Folder entitled] Lecture CH [containing] The Strength of England / by B N Wallis for Christ's Hospital. 12 leaves, typescript; and correspondence re photographs for Christ's Hospital Science Journal.
H5	1959 Feb 28	[Folder entitled] Lecture: Bristol University Engineering Society [containing] The Strength of England / by B N Wallis. 13 leaves, typescript.
H6	1959 Mar 17	[Folder entitled] Lecture: Imperial Defence College: visit to Weybridge - Talk by BNW on Swallow [containing] Notes on talk; List of slides, and Weybridge works internal memoranda. 6 leaves.
H7	1959 Apr 27	[Folder entitled] Lectures RAFFC Manby No 1 [containing] Abstract of lecture on Swallow aircraft. Ms notes, List of

slides and correspondence.

H8	1959 Jun - Dec	[Folder entitled] Lectures RAFFC Manby No 2 [containing] Correspondence re variable geometry lecture; Includes comments on state of the RAF, BNW's research, etc.
H9	1960 Feb - May	[Folder entitled] Lectures RAFFC Manby No 3 [containing] Correspondence and lecture The Development of Aircraft Capable of Economical Performance at all Speeds: The Philosophy of Cascade / by B N Wallis. 10 leaves, typescript with 1 leaf of ms notes.
H10	1960 Jul - Nov	[Folder entitled] Lectures RAFFC Manby No 4 [containing] Correspondence and lectur
H11	1960 Dec - 1961 Feb	[Folder entitled] Lectures RAFFC Manby No 5 containing] Correspondence, Analysis of lecture; List of slides, ms notes and The Philosophy of Peace. 5 leaves, typescript, annotated.
H12	1961 Jul-Dec	[Folder entitled] Lectures RAFFC Manby No 6 [containing] Correspondence and The Command of the Air / by B N Wallis. Ms and typescript editions annotated; List of slides.
H13	1962 Jan - Apr	[Folder entitled] Lectures RAFFC Manby No 7 [containing] Correspondence and list of slides.
H14	1962 Nov 19	[Folder entitled] Lectures RAFFC Manby No 8 [containing] Correspondence re postponing lecture due to BNW's ill health and lecture at Manby [not given]. 11 leaves, typescript.
H15	1959 Dec 30	[Folder entitled] Lecture Institution of Civil Engineers: Christmas lecture [containing] Correspondence, press release and programme for lecture, etc.
H16	1959 Dec 30	[Folder entitled] Lecture Institution of Civil Engineers: Christmas lecture for young people, [containing] Transcript of tape recording of lecture High Speed Communications Link the Commonwealth. 21 leaves, typescript with transcription of questions and answers from lecture, 2 leaves, typescript.
H17	1959 Apr - Dec	[Folder entitled] Lecture Stoke on Trent Association of Engineers [containing]

		Correspondence re The Reginald Mitchell Memorial Lecture for the Stoke on Trent Society of Engineers; Commentary [of film about the Swallow aircraft] and Synopsis of lecture on supersonic flight. 3 leaves, typescript [with] list of film shots.
H18	1959 May - 1960 Jul	[Folder entitled] Lecture Cambridge University Engineering Society [containing] Correspondence re lecture on The Strength of England; Commentary on film shots and list of slides.
H19	1958 Jun - 1959 Jul	[Folder entitled] Lectures St Bees [School] Cumberland, prize giving and opening of new science labs. 1959 Jun 27 correspondence [containing] Letters [between] BNW [and] T C Wykes, Headmaster of St Bees [School]. 18 leaves.
H20	1959 Apr - Jul	[Folder entitled] Correspondence, St Dunstan's College, Catford [containing] [3] Programmes for Speech Day and rough notes for BNW speech. 20 items.
H21	1959 Dec - 1960 Mar	[Folder entitled] Royal Holloway College Council [containing] Correspondence [between] Edith C Batho, Principal [and] BWNW re lecture The Strength of England. 9 leaves.
H22	1960 Feb 22	[Folder entitled] The Engineering Materials and Design Exhibition and Conference [containing] Opening address / BNW. 7 leaves, typescript.
H23	1962 Jun - 1962 Oct	[Folder containing] Text, figures and photographs for Strength of England lecture at Birmingham University and St Albans College of Further Education. 41 leaves.
H24	1963 Apr 24	[Folder containing] RDI Oration, Artist or Engineer? / BNW. 14 leaves, typescript (annotated) [with] Journal of the Royal Society of Arts vol CXI [containing] Artist or Engineer?
H25	1965 Sep	[Folder entitled] Lecture British Association for the Advancement of Science, Cambridge [containing] The Strength of England. 20 leaves typescript (with ms annotations) + 1 list of slides.

H26	1965 Oct 27	[Folder entitled] Lecture College of Art & Technology, High Wycombe [containing] Science and Art / BNW. 8 leaves, typescript.
H27		[Folder entitled] The Worldfriends 8th International Youth Science Fortnight [containing] Correspondence [between] BNW [and] the British Association for the Advancement of Science asking to speak at Eighth and Ninth London International Youth Science Fortnight [includes] programmes. 32 items.
H28	1965 Feb - 1969 Jan	[Folder entitled] Twickenham College of Technology [containing] Correspondence re lectures 1966 Feb 17 and 1969 Nov 18. 23 leaves.
H29	1966 Mar 23 -	[Folder containing] RDI Oration to Royal Society of Arts. Man the creator / BNW. 11 leaves, typescript [with] Journal of the Royal Society of Arts vol. CXIV in which the lecture was printed.
H30	1966 Jun - Nov	[Folder entitled] Institution of Mechanical Engineers - Automobile Division Coventry Graduates and Students Section [containing] Correspondence with BNW re lecture The Strength of England 1967 Oct 3. 22 leaves.
H31	1966 Nov 3	[Folder entitled] Central School of Art and Design [containing lecture] The Relationship between Science, Technology & Art / BNW. 7 leaves, ms.
H32	1967 Feb 20	[Folder entitled] Cambridge Philosophical Society [containing lecture notes] Man the Creator, or the Relationship between Science, Technology and Art / BNW. 7 leaves, ms. Man the Creator / BNW. 15 leaves, typescript.
H33	1967 Apr - Oct	[Folder containing] Correspondence [between] Kingston College of Art and BNW re lectures on Relation between Science, Technology and Art and Bouncing Bomb.
H34	1967 Sep - Oct	[Folder containing] Correspondence [between] BNW and Horsham Air Training Corps re illustrated lecture on the

		bouncing bomb. 4 leaves.
H35	1967 Jun - Nov	[Folder containing] Correspondence [between] BNW and Caterham Hill County Secondary School re talk on the Dam Busters. 6 leaves
H36	1967 Mar - 1970 Jul	[Folder containing] Correspondence [between] BNW and Royal Navy Staff College, Greenwich re talk on hypersonic aircraft and new type of submarine. Includes calculations and ms notes / BNW. 37 leaves.
H37	1960 - 1972	[Folder entitled] Lectures Miscellaneous [containing notes for] St Edwards School, Oxford 1960 Nov 20 on Strength of England; Effingham Women's Institute 1966 Apr 25; Science Fortnight 1966 Aug 6 on Technological Application of Science; Middleton Airport, Teesside 1966 Sep 7 list of slides; St Albans Man the Creator; Royal Institution 1972 Dec 8 on [Strength of England]. 14 leaves.
H38	1963 Jan - 1968 Oct	[Folder entitled] Royal Naval College Dartmouth [containing] Correspondence re lectures to Royal Naval College, [with] Lectures The Strength of England, 3 leaves, typescript; List of slides used 14 May 1964; and The Limits of Performance of Terrestrial Aircraft. 4 leaves, typescript. 54 items.
H39	1968 Jan - Oct	[Folder entitled] Chartered Engineers Lecture Portsmouth, 1968 Sep 18 [containing] Correspondence re lecture for Council of Engineering Institutions. 17 items.
H40	1968 Apr - 1969 Jan	[Folder entitled] Christs Hospital, Hertford [containing] Correspondence re lecture at Christ’s Hospital 1968 Sep 27. 13 items.
H41	1967 Oct - 1968 Dec	[Folder entitled] Royal Observer Corps [containing] Correspondence re lecture to No 1 group Royal Observer Corps, 1968 Oct 10. 17 items.
H42	1967 Oct - 1969 Oct	[Folder entitled] Imperial College of Science and Technology: Department of Mechanical Engineering, H G Wells Society [containing] Correspondence concerning 3

		sets of lectures, with list of slides used. 26 items.
H43	1968 Jan - Dec	[Folder entitled] Guy's Hospital prize giving 1968 Oct [containing] Correspondence and order of proceedings re prize giving. 20 items.
H44	1967 Jan - 1969 Mar	[Folder entitled] University of Surrey [containing] Correspondence re lecture to Mechanical Engineering Society 1968 Oct 28. 19 items.
H45	1967 Nov - 1969 Jan	[Folder entitled] Air cadets - Eastbourne, Thursday 1968 Oct 3 [containing] Correspondence re lecture to air cadets. 16 items.
H46	1967 Oct - 1968 Oct	[Folder entitled] Loughborough Electrical Engineering Society, Tuesday 1968 Nov 5 [containing] Correspondence re lecture to Loughborough University Engineering Society and photograph of Mach Number diagram. 23 items.
H47	1968 Dec - 1969 Jan	[Folder entitled] Glyn Grammar School [containing] Correspondence re lecture 1969 Feb 5 to Aeronautical Society. 5 items.
H48	1968 Apr - 1969 Jan	[Folder entitled] The Institution of Electrical Engineers [containing] Correspondence re lecture 1969 Feb 24. 8 items.
H49	1969 Jan - Mar	[Folder entitled] Box Hill School, Mickleham [containing] Correspondence re Dam Busters lecture 1969 Feb 28. 10 items.
H50	1968 Dec - 1969 Feb	[Folder entitled] University of Oxford - Dept of Engineering Science, [containing] Correspondence re Maurice Lubbock Memorial Lecture 1969 May 9 and lecture to the Guthrie Society Westminster Medical School 1969 May 6. 9 items.
H51	1968 Nov - 1969 Mar	[Folder entitled] Manor House School, Little Bookham, [containing] Correspondence re Dam Busters lecture 1969 Mar 12. 4 items.

H52	1968 Oct - 1969 Jan	[Folder entitled] City University Lecture File (April) [containing] Correspondence re lecture to City University. 10 items.
H53	1968 May - 1969 Sep	[Folder entitled] Lecture Notes [containing] Correspondence re lecture to Hunterian Society 6 Jan 1969 and lecture The Strength of England. 17 leaves, typescript. 30 Items.
H54	1966 Oct - 1967 Dec	[Folder containing] Correspondence [between] BNW [and] Horley County Secondary school concerning presentation of prizes. 1966 Nov 30. 5 leaves, includes programme 8 leaves, typescript.
H55	1968	[Folder containing] Correspondence [between] BNW [and] St Thomas's Hospital Medical and Physical Society concerning talk 1968 Feb 20. 6 leaves, typescript.
H56	1967 Nov - 1968 Mar	[Folder containing] Correspondence [between] BNW [and] the Electricity Council, Horsley Towers Training Establishment Strength of England lecture [includes] Brief Guide to Electricity Supply Industry and description of Horsley Tower. 5 leaves.
H57	1967 Oct - 1968 Sep	[Folder containing] Correspondence [between] BNW and University of Manchester and Institute of Science and Technology Liberal Studies Ctte and Students Union re cancelled Strength of England lecture 1968 Mar 11. 13 leaves.
H58	1967 Sep - 1968 Mar	[Folder containing] Correspondence [between] BNW and Design & Industries Association concerning talk 1968 Apr 4 subsequently cancelled. 7 leaves, typescript.
H59	1966 Sep - 1968 Mar	[Folder containing] Correspondence [between] BNW and University of Kent concerning lecture Strength of England cancelled due to health. 11 leaves, typescript and ms.

H60	1968 Jul - 1969 Jan	[Folder containing] Correspondence [between] BNW and University of London Goldsmith's College Union concerning Strength of England lecture cancelled. 14 leaves.
H61	1969 Apr	[Folder containing] Correspondence [between] BNW and Queen Elizabeth's Foundation for the Disabled re Dam Busters lecture 1969 Apr 9. 7 leaves.
H62	1967 Nov - 1970 Sep	[Folder containing] Correspondence [between] BNW and Guild of Air Pilots and Air Navigators re Strength of England lecture, 1969 War 24. 18 leaves, typescript [includes] Newsletter 1969 Aug 12 pp and Man In Space Booklet 15 leaves.
H63	1968 Oct - 1969 Jan	[Folder containing] Correspondence [between] BNW and Atomic Energy Research Establishment, Harwell re cancelled lecture. Description of flood in [letter] 1968 Dec 12.
H64	1969 Mar - May	[Folder entitled] Lecture No 1408 (Dorking) Squadron Air Training Corps [containing] Strength of England lecture cancelled due to ill health. 7 leaves, typescript.
H65	1969 Feb - Nov	[Folder entitled] Lecture Canterbury Technical College [containing] Strength of England lecture and associated correspondence. 15 leaves.
H66	1969 Jun - Oct	[Folder containing] Correspondence [between] BNW and Charing Cross Hospital Medical School: Golding Society re Strength of England lecture. 7 leaves.
H67	1969 May - Oct	[Folder containing] Correspondence [between] BNW and University College London: Chemical and Physical Society re Strength of England lecture. 7 leaves.
H68	1968 Aug - 1969 Jan	[Folder containing] Correspondence [between] BNW and Art Workers Guild re The Creative Engineer lecture planned for 1969 Nov but cancelled. 11 leaves.
H69	1968 May - 1969 Dec	[Folder containing] Correspondence [between] BNW and Medical Society of

		London re Strength of England lecture. 16 leaves (some damaged by flood).
H70	1969 Jun - Dec	[Folder containing] Correspondence [between] BNW and Mathematical Society of Birmingham University. (Presidential address) re lecture on Examples of Engineering Inventions.
H71	1970 Jan - Feb	[Folder containing] Correspondence [between] BNW and Dorking Four Hills Venture Unit re Dambuster lecture 1970 Feb 10. BNW had to cancel due to illness but Mr Startup gave the talk. 8 leaves.
H72	1969 Oct -	[Folder containing] Correspondence [between] Queen Mary College (Sir Harry Melville) and BNW re cancelled lecture. 4 leaves, typescript.
H73	1969 Apr - 1970 Feb	[Folder containing] Correspondence [between] BNW and Cambridge University Engineering Society re Strength of England lecture, cancelled due to illness. 14 leaves, typescript.
H74	1969 Jul - Aug	[Folder containing] Correspondence [between] BNW and Institute of Bankers (Lincoln and District Centre) re Dambusting operations, lecture cancelled due to lack of time. 11 leaves.
H75	1967 Dec - 1970 Apr	[Folder containing] Correspondence [between] BNW and University College London Engineering Society. Details of talks and dates. All cancelled. 22 leaves.
H76	1969 Dec - 1971 Jan	[Folder containing] Correspondence [between] BNW and Eton College Aeronautical Society. Lecture 1970 May 26, cancelled. 9 leaves.
H77	1970 Jul - Oct	[Folder containing] Correspondence [between] BNW and President of Imperial College H G Wells Society re lecture The General Trend In Transport. Also re BNW's presidency, subsequently accepted. 10 letters, typescript plus ms notes on speech. 2 leaves.
H78	1969 Jun - 1970 May	[Folder containing] Correspondence [between] BNW and Institute of Science Technology London Branch re Strength of

		England lecture 1970 Oct 12, cancelled due to security considerations. 12 leaves, typescript.
H79	1970 Aug - Oct	[Folder containing] Correspondence [between] BNW and University of Sussex Bio-Medical Engineering Society re lecture cancelled due to ill health. [Poster] The effect of high speed transport on human relationships.
H80	1970 Nov - 1971 Apr	[Folder containing] Correspondence [between] BNW and British Medical Association re Strength of England lecture. 4 leaves.
H81	1970 Sep - 1971 Apr	[Folder containing] Correspondence [between] BNW and Borough Polytechnic Physical Society re lecture. 7 leaves.
H82	1971 Mar - May	[Folder containing] Correspondence [between] BNW and The Monday Club re lecture cancelled. 5 leaves
H83	1971 Dec - 1972 May	[Folder containing] Correspondence [between] BNW and Charing Cross Hospital Medical School (West London Medico-Chirurgical Society) re Basic Strength of England lecture 1972 May 3. 15 leaves.

BNW/HA – BBC TV Programme 'Why not? Why not?' screened 1967 Jan 19 covering BNW's Career

HA1	1967 Feb 5	Letter from producer [Glyn Jones] discussing implications and including transcript of part of the interview with Ben Lockspeiser (not broadcast).
HA2	1967 Jan - Aug	Letters from friends, colleagues and general public following the broadcast. The letters are arranged alphabetically by correspondent's surname and include some interesting reminiscences by BNW in reply.
HA2/1		A - B
HA2/2		C - E
HA2/3		F - H

HA2/4	I - N
HA2/5	O - R
HA2/6	S - Z

BNW/I – Technical Drawings – Airships

I1 Airships [78 x 140 cm and smaller]

I1/1	1919 May 22	Vickers Rigid Airship [25L] - Weight Distribution and Balancing Diagram. 1 blueprint.
I1/2	1920 Nov 27	New Mooring Mast Head (Pulham) General Arrangement. 1 dyeline.
I1/3	1925 - 1929	Tube making machinery. Flange Generating Mechanism and General Arrangement of Erection Jig for Tubular Booms. 2 tracings.
I1/4	1925 - 1929	General Arrangement of HMA 100. Drawing No 93032 sheet 58. 1 dyeline.
I1/5	1925 - 1929	Diagrammatic Arrangement of Gasbag Netting on R100. Drawing No 93032 sheet 44. 1 photocopy.
I1/6	1925 - 1929	Arrangement of 8 ft Model of R100. Drawing No 93032 sheet 46. 1 dyeline.
I1/7	1928 Feb	Airworthiness - R100 ship 57% full and in pitch nose down, working case. Drawing No 107 Y4 sheets 1 and 2. 2 blueprints.
I1/8	1927	Aeronautical Inspection Directorate. HMA R100 Inspection of hull structure and hull structural wiring; fins, rudders, passenger saloon, corridors, power and control cars; Installation inspection and steel trials - Analysis of Operations. 3 blueprints.
I1/9	1925 - 1929	[R100 details of main frame structure]. 4 tracings

I2 Variable Geometry Aircraft Swallow (78 x 140 cm and smaller)

Swallow Development

I2/1	1957 - 1959	[GA drawings, plan and sections showing wing sweep and position of engines]. 5 tracings, 1 dyeline.
		Swallow Design Types and Wing Pivots
I2/2	1957 Oct 23	Type 006 Variable Geometry Research Aircraft - 4 RB 10B Engines. Drawing No 00600 Sheet 83. Scale 1/24 1 dyeline, hand coloured.
I2/3	1958 Jul 17	Preliminary Cabin layout for supersonic airliner / Vickers-Armstrongs (Aircraft) Ltd Weybridge. Drawing No 00700 sheet 41. Scale 1/48 1 dyeline, hand coloured.
I2/4	1958 Sep 23	Type 012 Swallow Aircraft Design Guidance Drawing. Drawing No 01200 sheet 17. Scale 1/24 1 dyeline, hand coloured.
I2/5	1958 Oct 29	Military Type Based on Spec OR 339 High Speed Altitude. Drawing No 01200 sheet 21. Scale 1/48 1 dyeline.
I2/6	1959 May 19	Basic Structure Layout / Vickers-Armstrongs (Aircraft) Ltd, Weybridge. Drawing No 01200 sheet 71. 1 dyeline.
I2/7	1959?	Wing pivot for 30,000 lb Swallow. 3 tracings.

I3 Cascade (78 x 140 cm and smaller)

I3/1	1959 - 1960	[Schemes for wing configurations - showing mid wing, low wing and high wing]. 1 dyeline, hand coloured.
I3/2	1959 - 1960	[Slip stream for high supersonic, low supersonic and subsonic Cascade]. 1 tracing and 1 dyeline, hand coloured.
I3/3	1959 - 1960	Figure 2 Subsonic Flow. 1 dyeline, hand coloured.
I3/4	1959 - 1960	[Air Duct]. 1 tracing, hand coloured.

I3/5	1959 - 1960	Mach 3 "Cascade" Transport 72 seats AUW 150,000 lb / Vickers-Armstrongs (Aviation) Ltd Weybridge. Scale 1/50 1 dyeline.
I3/6	1959 - 1960	Cascade Aircraft 96 seater airliner AUW 150,000 lb / Vickers-Armstrongs (Aircraft) Ltd, Weybridge. Drawing No 01893 sheet 15 Scale 1/48 1 dyeline.
I3/7	1959 - 1960	Cascade Delta AUW 50,000 lb. Scale ¼"-1' 1 tracing, hand coloured and 1 dyeline.
I3/8	1959 - 1960	Cascade Aircraft Bomber AUW 45,000 lb / Vickers-Armstrongs (Aircraft) Ltd. Weybridge. Drawing No 01893 sheet 17 Scale 1/24 1 dyeline, hand coloured.
I3/9	1959 - 1960	Cascade Aircraft Reconnaissance AUW 45,000 lb / Vickers-Armstrongs (Aircraft) Ltd. Weybridge. Drawing No 01893 sheet 19. 1 dyeline, hand coloured.
I3/10	1959 - 1960	Cascade AUW 45,000 lb Drawing No 01893 sheet 21 Scale 1/24 1 dyeline, hand coloured.
I3/11	1959 - 1960	[Cascade section, plan and end views showing geometrical mean chord, ground incidence, wing span etc]. Drawing No W100. 1 tracing and 1 dyeline, hand coloured.
I3/12	1959 - 1960	[Cross section of fuselage showing fuel, airtrunk, orifice area, capture area]. 1 tracing.

I4 Aircraft with Cambered and Ducted Wings (78 x 140 cm and smaller)

I4/1	1960s	High Altitude Aircraft. [Ducted body with variable geometry wing]. 2 tracings.
I4/2	1960s	Long Range and Very Long Range Hypersonic Aircraft [with ducted wing] for passengers and freight. 4 tracings.

I4/3	1960s	[General arrangement drawings and various schemes of cambered duct and special purpose aircraft]. 8 tracings, 6 dyeline prints.
I4/4	1960s	Experimental Aerofoil for R and D Tilting Tunnel. General arrangement and details. 2 tracings of aerofoil and flaps.

I5 The Universal Aircraft (78 x 140 cm and smaller)

I5/1	1967 - 1971	[Aerodynamics - angle of jet thrust, Mach lines etc). 8 tracings, 1 dyeline print.
I5/2	1967 - 1971	[Schemes for passenger float and luggage hold]. 4 tracings, 4 dyelines, some hand coloured.
I5/3	1967 - 1971	[Schemes for fuselage structure and bracing]. 4 tracings, 3 dyelines, 1 hand coloured.
I5/4	1967 - 1971	Universal Aircraft Wind Tunnel Model Drawings WT 60, 62, 63, 64, 65, 65a, 65b, 66, 67, 69, 70, 71. Drawing series number 02092. 23 tracings, 2 dyeline prints [with] 2 schedule sheets.

I6 Submarine (77 x 152 cm and smaller)

I6/1	1965 - 1966	[General arrangement drawings for various designs of proposed submarine. Elevations, plans and sections showing missile chamber and torpedo tubes, hull structure and engine positions]. 5 tracings.
I6/2	1965 - 1966	[Detail drawings of proposed hull structure]. 5 tracings.
I6/3	1965 - 1966	[Detail drawings of engines and engine positions etc]. 12 tracings, 2 dyelines.
I6/4	1966 Jun	SS No 2 General arrangement drawings profile, plans, sections - Vickers Ltd, Barrow-in-Furness. 4 sheets, dyeline.
I6/5	1965 - 1966	[Stratosphere Chamber] Assembly of Cooler 1 dyeline.

I7 Outside Consultancies

I7/1	1947 - 1955	[Newtonian telescope design drawings]. 4 tracings.
I7/2	1955 - 1961	Proposal for a design of a giant radio telescope. CSIRO Australia. 1 tracing, 9 dyelines.
I7/3	1971	Methane Airship - Arrangement showing inner skirt when filled with methane etc. 3 tracings.
I7/4	1971	Proposed design for Messina Floating Bridge. 2 tracings.
I7/5	1970s	Coxed Pairs - arrangement drawings. 3 tracings, 3 dyelines / J F Wellicome.

BNW/J - Photographs

J1 Personal and Family

J1/1	Pre 1922	Pre 1922 photo of BNW including BNW in RNVR uniform. 3 prints and 1 postcard.
J1/2	1917	Artists Rifles, group photo. 1 print.
J1/3		Photos of E A Masterman and P L Teed. 3 prints.
J1/4	1943	617 Squadron, Scampton. Celebration and royal visit. 2 prints.
J1/5	[ca 1955?]	BNW in his study. 3 prints.
J1/6	1965	BNW in study and with Jack Morpurgo 1965. 8 prints.
J1/7	1960 and 1965	BNW with model of Swallow type aircraft. 22 prints.
J1/8	1965	BNW in study with model of airship R100. 3 prints.
J1/9	1965	BNW in study. Colour prints by John Steele for his Fellowship of Royal Photographic Society. 8 prints.
J1/10		Reginald Mitchell Memorial Lecture. Photographs taken in Lord Mayor's parlour prior to lecture. 2 prints.

J1/11	1960	Barnes Wallis opening the Engineering Materials and Design Exhibition and Conference. 1 print.
J1/12	1965	Olympic Engineering Exhibition BNW with Mr Brewer. 2 prints.
J1/13	1967	Engineering Exhibition at Olympia 1967. BNW opening exhibition and inspecting the exhibits. 12 prints.
J1/14	1960s	Dinner Speech [BBC copyright]. 7 prints.
J1/15	1965	Loughborough University honorary degree. 3 prints.
J1/16	1967 Jan	Stills from BBBC TV programme “Why not? Why not?” on BNW life and work 1967 Jan. 45 prints.
J1/17	1977	Photos of BNW in Tyldesley Model Flying Club tie. 7 prints,
J1/18	1974	Photos of BNW with models of R100 and Swallow aircraft. 14 prints.
J1/19	[ca 1960?]	BNW in study and with model of Wild Goose. 2 prints.
J1/20	1960 and 1970	Portrait of BNW 1960 : 2 prints, and BNW beside portrait 1970 : 1 print.
J1/21		Photos of BNW from boy to old man. 6 prints.
J1/22		Honorary degree ceremony Edinburgh University. 2 prints.
J1/23	1970	BNW with Alec Grant, receiving presentation. 2 prints.
J1/24	1960s?	BNW at 617 Squadron reunion, Scampton. 8 prints.
J1/25	1970s	BNW with grandchildren 1970s. 6 prints.

J1/26	1965 & 1975	BNW at home in White Hill House, Effingham, Surrey. 6 prints.
J1/27		BNW with wife and children at Stratosphere Chamber [?], Weybridge. 1 print.
J1/28	[nd]	BNW delivering speech in presence of Mayor on unidentified occasion. 1 print.

J2 Technical

J2/1	1913 - 1919	Airship R9 moored. 7 copies.
J2/2		Airship R23 (18L) in flight over St Paul's Cathedral on Armistice Day, 11 Nov 1918. 5 copies.
J2/3		Airship R24 moored. 4 prints and 6 copies.
J2/4		Airship R80 moored and in flight. 2 prints and 3 postcards.
J2/5		Airship R34 in flight. 1 postcard.
J2/6		Airship construction, Barrow. 19 prints.
J2/7	1922 - 1930	Airship construction - Design team [?] Barrow. 1 print.
J2/8		Airship construction - R100 spiral tubes and tube making apparatus designed by BNW. 8 prints.
J2/9		Airship construction - R100 girder joints (main frame). 6 prints.
J2/10		Airship construction - R100 laying out and tensioning transverse frame. 8 prints.
J2/11		Airship construction - R100 tube basic girder. 8 prints.
J2/12		Airship construction - R100 bracing wires. 5 prints.

J2/13		Airship construction - R100 main frame. 6 prints.
J2/14		Airship construction - R100 covering and engine. 4 prints.
J2/15		Airship construction - R100 passenger quarters. 6 prints.
J2/16		R100 at mooring mast and in flight over Atlantic [with letter of explanation 1967]. 2 prints.
J2/17		R101 in flight 1 print.
J2/18	1924	2R3/LZ/Z6 "Los Angeles" [German / US postcards 1924]. 10 postcards.
J2/19	1935	Visit of Parliamentary Air Committee to Weybridge 1935. 1 print.
J2/20		Wellesley / Wellington Geodetics. 5 prints.
J2/21	1938?	King George VI inspecting Wellesley aircraft. 1 print.
J2/22	1940?	Wellington aircraft with degaussing ring fitted. 5 prints.
J2/23		Wellington with crews and weapon. 2 copies.
J2/24		Bouncing bombs installation in aircraft. 11 prints.
J2/25	1943	Trial of bouncing bomb, in Lancaster aircraft, film stills, signed Barnes Wallis. 1 print.
J2/26	1943	Damage to dams. 7 prints.
J2/27		Ten-Ton Tess bomb on exhibition and being dropped from aircraft. 2 prints.
J2/28		Bombs (Tallboy) - aerial reconnaissance photographs.

		2 prints.
J2/29	1943 - 1944	Building U boat pens at Bremen 1943 - 1944. 60 prints - all German.
J2/30	ca. 1943	Bomb damage - in Germany - general views of bombed housing and factorie
J2/31	1944	Damage to U boat pens, Brest and E Boat Pens, Le Havre, 1944. 51 prints.
J2/32	1945	Stratosphere Chamber, Weybridge. 15 prints.
J2/33	1947 - 1969	Weybridge Research & Development Department projects photographs. 33 prints.
J2/34	1958	BNW at unidentified occasion possibly Langley Field. 2 prints.
J2/35	1968	Weybridge flood. 1 print.
J2/36	1953	Wild Goose on launching trolley, Predannack, Cornwall.
J2/37	1954	Swallow research programme outlined on blackboard. 1 print.
J2/38	1950s	Swallow on launching trolley - Predannack, Cornwall. 3 prints, 5 copies.
J2/39	1965	Model of Swallow swing-wing aircraft. 2 prints.
J2/40		Model of PR aircraft shown in rail borne take-off and as high speed dive bomber. 5 prints.
J2/41	1954 Nov 25	Blackboard calculations for Swallow wing pivot Predannack. 1 print.
J2/42		Model of Swallow type aircraft in subsonic and supersonic attitude. 2 prints.
J2/43	1958	Visit to Langley Field NASA Research Center. 1 print, 2 copies.

J2/44		Swallow wind tunnel test WT5. 15 prints.
J2/45		Swallow wind tunnel test WT14. 18 prints.
J2/46		Cascade model. 13 prints.
J2/47		Cascade wind tunnel test WT24. 11 prints.
J2/48	1958 - 1959	Swallow wind tunnel tuft tests with triangular sections on wing. 36 prints.
J2/49	1959	Swallow wind tunnel tuft tests with looped wedges on wing 1959 Jan 9-14. 33 prints.
J2/50	1959	Swallow wind tunnel tuft tests unadorned 1959 Jan 15. 29 prints.
J2/51	1959	Swallow wind tunnel tuft tests with front wing bar. 17 prints.
J2/52	1959	Swallow wind tunnel tuft tests with front and rear wing bars. 16 prints.
J2/53	1959	Swallow wind tunnel tuft tests with fuselage baffle and bars. 17 prints.
J2/54	1959 Feb	Swallow wind tunnel tuft tests with fuselage baffle. 14 prints.
J2/55		Hypersonics wind tunnel test WT72 Schlieren photos. 15 prints.
J2/56		Hypersonics wind tunnel test WT73 Schlieren photos. 5 prints.
J2/57		Imperial College Pod/Wing Interference Tests Stages II and III Schlieren photographs. Test nos 25 to 126. 66 prints.
J2/58		Re-entry trajectories [?] 9 prints.
J2/59		CSIRO radio telescope Australia design drawing and construction photographs.

		5 prints.
J2/60	1961 Oct 31	Opening ceremony for CSIRO radio telescope. 5 prints.
J2/61	1960s	Vickers cold chamber photos - icing of ships. 4 prints.
J2/62		Photo reproductions of maps and graphs used in lectures and papers. 28 prints.
J2/63		Figures 1-7, photographs of structures, mainly geodetics, used in article by RSA. 7 prints.
J3/1	1928 Sep	R100 from ground level, port side looking towards the nose.
J3/2	1928 Sep	R100 looking aft from passengers' quarters.
J3/3	1928 Sep	R100 passengers' quarters from outside.
J3/4	1928 Sep	R100 looking towards the nose.
J3/5	1928 Sep	R100 on the port deck looking aft.
J3/6	1929 Nov	R100 [similar view to J3/1].
J3/7	1929 Nov	R100 from ground looking toward the nose.
J3/8	1929 Nov	R100 showing control gondola.
J3/9	1929 Nov	R100 showing windows to passenger quarters.
J3/10	1929 Nov	R100 entrance gangway looking towards passenger quarters.
J3/11	1929 Nov	R100 port deck looking aft.
J3/12	1929 Nov	R100 showing balcony round dining saloon.
J3/13	1929 Nov	R100 balcony and dining saloon.
J3/14	1929 Nov	R100 dining saloon.

BNW/K – Films

All the films listed were deposited with the National Film Archive by the Science Museum in May 1979

1A	[Wild Goose Test Flight]

1B	[Wild Goose Test Flight]
2	[Wild Goose and Swallow Tests] + ¼" tape commentary by Barnes Wallis
3	[Evolution of a New Type Aircraft]
4	Construction of HMA R100 Airship
5	Construction of HMA R100 Airship + ¼" tape commentary by Barnes Wallis
6	Green Lizard Experimental Bursting Systems for Bow Cones.
7	[Wellesley Material]
8	The Swallow: Evolution of a Supersonic Aircraft
9	Swallow [part 2]
10	[Walking Studies] – For medical research purposes
11	[Swallow Tufted Model 13 x 9 Tunnel, October 1955]
12	Wing Controlled Aerodyne 3
13	Poseidon Missile Horizontal Launching 100 Feet Depth Model Scale 1/100
14	[Bouncing Bomb Tests]
15	[Poseidon Test Tank]
16	Centenary of Vickers showing works and products
17	Sir Barnes Wallis
18	From R100 to Swallow: Achievement During Four Decades
19	"The Dam Busters" (part 1)
20	[Bouncing Bomb Test Compilation + "Dam Busters" Extract]
21	[Model Dam] – Tests for bouncing bomb using model dam.
22	[Bouncing Bomb Land Tests]

All the above are 16 mm films apart from items 21 and 22, which are 35 mm nitrate. Brackets around a title indicates that no

official title appears on the film. The bracketed title has been supplied by the NFA and is intended to be descriptive of the film's contents.

BNW/L – Newspaper Cuttings

L1	1944 - 1974	Articles about Barnes Wallis.
L2/1-3	1928 - 1935	Articles on airships, mainly R100.
L2/4-5	1970 - 1974	Articles on airship revival.
L3	1943 - 1978	Articles on dam busting weapon.
L4/1-2	1944	Articles on the sinking of the battleship Tirpitz
L5	1945	Articles on the 10 ton bomb.
L6	1958 - 1959	Articles on the Swallow swing-wing aircraft.
L7	1970	Articles on Concorde.
L8	1959 - 1976	Miscellaneous articles - Radio telescope for Australia, Obituaries for Robert McLean and Commander Burney etc.

Name and Keyword Topical Index

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