Smithsonian
National Air and Space Museum

Ralph Hazlett Upson Collection

Kate Igoe

1997

National Air and Space Museum Archives
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https://airandspace.si.edu/archives

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Collection Overview

Repository:	National Air and Space Museum Archives
Title:	Ralph Hazlett Upson Collection
Date:	1911-1968 (bulk 1940-1960)
Identifier:	NASM.XXXX.0177
Creator:	Upson, Ralph Hazlett, 1888-1968
Extent:	7 Cubic feet (21 boxes)
Language:	English .
Summary:	This collection contains Upson's papers and notebooks. The material consists of notebooks, both general (1911-35) and experimental (1928-68) and reference files on a variety of aeronautical subjects. The collection also contains material from Upson's teaching career, as well as miscellaneous personal documents.

Administrative Information

Acquisition Information

Francis A. Upson, gift, 1974, XXXX-0177

Curtiss-Wright Corporation

Processing Information

The National Air and Space Museum (NASM) received these materials in 1974. This was a donation from Frances Upson, the wife whom Ralph Upson met aboard ship on his way to the 1913 Gordon Bennett Race. Original order, when identified, has been maintained.

Upson's book *Free and Captive Balloons* will not be found in this collection, but is contained within the holdings of NASM's Library. The researcher may also wish to consult the NASM Archives' Aerospace Vehicle and Engine Drawings Collection (XXXX-0002), which includes 138 drawings of the Aircraft Development Corporation's MC-2.

Preferred Citation

Ralph Hazlett Upson Collection, Acc. XXXX-0177, National Air and Space Museum, Smithsonian Institution.

Restrictions

No restrictions on access.

Conditions Governing Use

Permissions Requests

Biographical Note

Ralph Hazlett Upson (1888-1968) was an aeronautical engineer, inventor and pilot. After graduation from Stevens Institute of Technology (ME 1910) he rocketed to prominence by winning the International Balloon Race (1913) and American National Balloon Race (1913, 1921). He worked as chief engineer of the aeronautical department of Goodyear Tire and Rubber Co. (1914-1920), during which time he flew the first United States Navy coastal patrol airship on a demonstration flight (1917) and served on the Navy Design Mission to Europe (1918-19). He then moved to the Aircraft Development Corp. (Chief Engineer 1922-27) while serving as chairman of the Lighter-Than-Air (LTA) division of the Aeronautical Safety Code Commission, US Bureau of Standards (1922-24). He went to work for Aeromarine-Klemm Corp. and a number of other companies (1928-42), during which time he designed the first successful metal-clad airship, the ZMC-2 (1929). After a brief tenure at H. J. Heinze Co. (Chief of Aeronautical Engineering (1942-44) he moved into academia at New York University (NYU, Research Specialist and Lecturer 1944-46) and the University of Minnesota (Professor of Aeronautical Engineering 1946-56; Professor Emeritus 1956-1968). Upson then worked for Boeing (Research Specialist 1956-64) and remained an active consultant until his death.

Scope and Contents

This collection contains Upson's papers and notebooks. The material consists of notebooks, both general (1911-35) and experimental (1928-68) and reference files on a variety of aeronautical subjects. The collection also contains material from Upson's teaching career, as well as miscellaneous personal documents.

There is approximately seven cubic feet of correspondence, reports, manuscripts, notebooks and various other materials.

Arrangement

Contents::
- Series 1: Personal and Career
- Subseries 1: Personal
- Subseries 2: Career
- Subseries 3: Education
- Subseries 4: Authorship
- Subseries 5: Correspondence
- Series 2: Notepads and Notebooks
- Subseries 1: Notepads and Appointment books
- Subseries 2: Notebooks
- Series 3: Subject files
- Series 4: Miscellaneous

General

An artifact from this collection, the Early Bird plaque of Ralph Upson, was transferred to the Aeronautics Division of the National Air and Space Museum.

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

Aeronautical engineers
Aeronautics
Airships
Periodicals
ZMC-2

Types of Materials:

Correspondence
Diaries
Letters
Notebooks
Photographs
Publications

Names:

Aeromarine-Klemm Corp
Aircraft Development Corporation
American National Balloon Race
Goodyear Tire and Rubber Company
International Balloon Race
United States. National Bureau of Standards. Aeronautical Safety Code Commission
Upson, Ralph Hazlett, 1888-1968

Container Listing

Series 1: Personal and Career

Scope and Contents: The career and personal life of Ralph H. Upson were so related as to form a harmonic whole, difficult to compartmentalize. An interest in education expressed itself in both employment by universities and volunteer work with primary school students. A lifetime's accumulation of knowledge was channeled into the writing of a substantial collection of articles and reports. Only materials related *directly* to Upson's career and personal life are included in this series; more general materials concerning projects Upson may have been involved with can be found in Series 3: Subject Files.

1.1: Personal

Box 1, Folder 1	Personal and Biographical information
Box 1, Folder 2	Photographs of R.H. Upson
Box 1, Folder 3	Personal correspondence
Box 1, Folder 4	Early Birds
Box 1, Folder 5	Wingfoot Lighter-Than-Air Society , 1958 - 1965
Box 1, Folder 6	Wingfoot Lighter-Than-Air Society , 1968

1.2: Notebooks

Box 6, Folder 5	Notebooks #0 and #1 , 1909 - 1910, 1926-12 - 1927-09
Box 7, Folder 1	Notebook #2 , 1927-09 - 1928-10, 1930-09
Box 7, Folder 2	Notebook #3 , 1928-08 - 1929-04
Box 7, Folder 3	Notebook #4 , 1929-03 - 1930-06
Box 7, Folder 3	Notebooks #6 and #7 , 1930-10 - 1931-06, 1933-01 - 1933-04
Box 7, Folder 5	Notebooks #8 and #9 , 1933-04 - 1933-08, 1933-08 - 1934-03
Box 7, Folder 6	Notebooks #10 and #11 , 1934-03 - 1934-08, 1934-08 - 1935-06
Box 8, Folder 1	Notebooks #12 and #13 , 1935-06 - 1936-02, 1936-02 - 1936-11
Box 8, Folder 2	Notebooks #14, #15 and #16 , 1936-11 - 1937-04, 1937-04 - 1937-11, 1937-11 - 1938-06

Box 8, Folder 3	Notebooks #17 and #18, 1938-06 - 1939-04, 1939-04 - 1939-12
Box 8, Folder 4	Notebook #19 , 1939-12 - 1940-09
Box 8, Folder 5	Notebook #21 , 1941-09 - 1942-05
Box 8, Folder 6	Notebooks #22, #23, #24a and #24 and #25, 1942-05 - 1942-12, 1942-12 - 1943-07, 1943-04 - undated
Box 9, Folder 1	Notebooks #27, #29, #30 and #31 , 1945-01 - 1945-04, 1945-10 - 1946-01, 1946-01 - 1946-05, 1946-05 - 1946-09
Box 9, Folder 2	Notebooks #32, #33, #34 and #35 , 1947-09 - 1948-03, 1947-03 - 1947-09, 1946-09 - 1947-02, 1948-03 - 1948-08
Box 9, Folder 3	Notebooks #36, #37 and #38 , 1950-06 - 1951-03, 1949-03 - 1950-06, 1948-08 - 1949-03
Box 9, Folder 4	Notebooks #39, #40 and #41 , 1952-05 - 1952-10, 1951-10 - 1952-05, 1951-03 - 1951-10
Box 9, Folder 5	Notebooks #42 and #43 , 1954-09 - 1955-10, 1952-10 - 1954-09
Box 9, Folder 6	Notebooks #44, #45, #46 and #47, 1956-12-26 - 1957-03-19, 1956-10-01 - 1956-12-26, 1956-07-16 - 1956-09-28, 1955-10 - undated
Box 9, Folder 7	Notebooks #48, #49, #50 and #51 , 1957-06-11 - 1957-10-29, 1957-10-29 - 1958-01-23, 1957-03-19 - 1957-06-11, 1958-01-23 - 1958-03-15
Box 10, Folder 1	Notebooks #52 and #53 , 1958-06-27 - 1959-06-17, 1958-03-16 - 1958-06-27
Box 10, Folder 2	Notebooks #54 and #55 , 1960-07-08 - 1961-08-04, 1959-06-18 - 1960-06-07
Box 10, Folder 3	Notebooks #56 and #57 , 1962-11-06 - 1963-11-07, 1961-08-14 - 1962-11-06
Box 10, Folder 4	Notebook #58 , 1963-11-07 - 1966-06-20
Box 10, Folder 5	Notebook #59 , 1966-06-28 - 1968-08-01

1.3: Career

Box 1, Folder 7	Patents and Patentable Ideas of R.H. Upson
Box 1, Folder 8	The Boeing Company
Box 1, Folder 9	General Mills, Inc.: correspondence
Box 1, Folder 10	General Mills, Inc.: reports

Box 1, Folder 11	General Mills, Inc.: reports
Box 2, Folder 1	Hofgren, Wegner, Allen, Stellman and McCord
Box 2, Folder 2	Honeywell
Box 2, Folder 3	National Center for Atmospheric Research: Consulting
Box 2, Folder 4	University Corporation for Atmospheric Research

1.4: Education

Box 2, Folder 5	Primary School Science
Box 2, Folder 6	Second Grade Science
Box 2, Folder 7	Fifth Grade Science
Box 2, Folder 8	Sixth Grade Science
Box 2, Folder 9	Eighth and Ninth Grade Science
Box 2, Folder 10	Aeronautical Engineering Class Notes
Box 2, Folder 11	Astronautics Casebook: Professor R. Street
Box 2, Folder 12	Geometric Calculation

1.5: Authorship

Box 2, Folder 13; Box 2, Folder 13	"Principles of Aerodynamic Design" by R.H. Upson , 1951-11
Box 3, Folder 1; Box 3, Folder 1	"On the Prediction of the Aerodynamic Drag of Missiles" by Marvin L. Luther and Ralph H. Upson , 1952-11
Box 3, Folder 2; Box 3, Folder 2	"Simple Approximation of Mis sile Drag" by R.H. Upson , 1959-12
Box 3, Folder 3; Box 3, Folder 3	Scientific Ballooning Handbook edited by R.H. Upson - materials , 1966-05
Box 3, Folder 4	"Handbook of General and Aerodynamic Data" , undated
Box 3, Folder 5	Drafts of textbook materials by R.H. Upson

Box 3, Folder 6	Articles and letters to editors by R.H. Upson
Box 3, Folder 7	Material for articles by R.H. Upson for aviation
Box 3, Folder 8	Drafts of articles by R.H. Upson
Box 3, Folder 9	Presentations by R.H. Upson
Box 3, Folder 10	Reports by R.H. Upson , 1938
Box 3, Folder 11	Reports by R.H. Upson , 1939
Box 3, Folder 12	Reports by R.H. Upson , 1944 - 1953
Box 4, Folder 1	Reports by R.H. Upson , 1955 - 1968
Box 4, Folder 2	Draft reports by R.H. Upson

1.6: Correspondence

Box 4, Folder 3	Correspondence , 1946 - 1957
Box 4, Folder 4	Correspondence , 1958
Box 4, Folder 5	Correspondence , 1959
Box 4, Folder 6	Correspondence , 1960 - 1961
Box 4, Folder 7	Correspondence , 1962 - 1963
Box 4, Folder 8	Correspondence , 1964 - 1965
Box 4, Folder 9	Correspondence , 1966
Box 4, Folder 10	Correspondence , 1967 - 1968, undated

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Series 2: Notepads and Notebooks

Scope and Contents: As an inventor and engineer, Upson had a great stake in recording and preserving the origins of his ideas and their development. He kept meticulous notes for nearly his entire adult life. The first subseries found here includes notepads and appointment books, which consist mainly of personal notes and reminders. The notebooks, which make up the second subseries below, contain sketches of possible inventions, equations, calculations and notes.

Separated Materials: Notebooks # 20, #26, and #28 are missing.

2.1: Notepads and Appointment books

Box 5	(#1): Notepad, November 1, 1911 to May 1, 1912
Box 5	(#2): Notepad, May 2 to July 10, 1912
Box 5	(#3): Notepad, July 11 to October 1, 1912
Box 5	(#4): Notepad, October 2, 1912 to May 5, 1913
Box 5	(#5): Notepad, May 6 to August 31, 1913
Box 5	(#6): Notepad, September 1 to October 11, 1913
Box 5	(#7): Notepad, October 12, 1913 to February 10, 1914
Box 5	(#8): Notepad, February 11 to July 31, 1914
Box 5	(#9): Notepad, August 1, 1914 to January 31, 1915
Box 5	(#10): Notepad, January 31 to July 20, 1915
Box 5	Notepad, Second Half of 1915
Box 5	(#11): Notepad, January 1, 1914 to May 9, 1916
Box 5	(#13): Notepad, June 1916 to January 12, 1917
Box 5	Notepad, January to September 1917
Box 5	Notepad, October or November 1917 to November 1918
Box 5	Notepad, 1921
Box 5	G.B. Race , 1921
Box 5	Detroit, Winter, 1931-1922

Box 5	Detroit, Spring, 1922
Box 5	Detroit, Summer, 1922
Box 5	Detroit, Autumn, 1922
Box 5	National Races, 1923
Box 5	Notepad, January to November 1923
Box 5	Notepad, June to August 1924
Box 5	Notepad, November 1923 to May 1924
Box 5	Notepad, May to November 1925
Box 5	Notepad, October 1925 to May 1926
Box 5	Notepad, August 1926 to February 1927
Box 5	Notepad, February to July 1927
Box 5	Notepad, July to November 1927
Box 5	Notepad, November 1927 to July 1928
Box 5	Notepad, July 1928 to May 1929
Box 5	Notepad, [?] to December 1, 1930
Box 5	Notepad, June 20, 1932 to March 4, 1933
Box 5	Notepad, December 1, 1930 to December 1, 1931
Box 5	Notepad, December 1, 1931 to June 20, 1932
Box 5	Notepad, March 4, 1933 to [?]
Box 5	Notepad, May 1934 to January 1935 Notes: [noted inside, "previous book lost"]
Box 5	Notepad, January 1935 to June 1935
Box 5	Notepad, June 1935 to February 1936
Box 5	Notepad, March to September 1936
Box 5	Notepad, September 1936 to April 1937

Box 5	Notepad, April to November 1937
Box 5	Notepad, November 1937 to September 1938
Box 5	Notepad, September 1938 to April 1939
Box 5	Notepad, May to November 1939
Box 5	Notepad, December 1939 to April 1941
Box 5	Notepad, March 1941 to February 1942
Box 5	Notepad, February to August 1, 1942
Box 5	Notepad, August 1, 1942 to June 1, 1943
Box 5	Notepad, June 1, 1943 to March 10, 1944
Box 5	Notepad, April 17, 1944 to February 1945
Box 6, Folder 1	Notepads, March 1945 to February 1946, December 1948 to June 1951, June 1951 to January 1955, February 1946 to August 1947, August 1947 to December 1948, undated
Box 6, Folder 2	Oversized Notepads: National Balloon Race[s] 1919, 1920, 1921, Gordon Bennett 1920 and May 1929 to [?]
Box 6, Folder 3	Appointment Calendar , 1927
Box 6, Folder 4	Appointment Calendar , 1928

2.2: Notebooks

Scope and Contents: Note: Notebooks #20, #26 and #28 are missing.

Note: Because of its slightly greater size, Notebook #5 (June 1930 to December 1931) is to be found in Box 21, Folder 1.

Box 6, Folder 5	Notebooks #0 (1909 to 1910) and #1 (December 1926 to September 1927)
Box 7, Folder 1	Notebook #2 (September 1927 to October 1928 and September 1930)
Box 7, Folder 2	Notebook #3 (August 1928 to April 1929)
Box 7, Folder 3	Notebook #4 (March 1929 to June 1930)
Box 7, Folder 4	Notebooks #6 (October 1930 to June 1931) and #7 (January to April 1933)
Box 7, Folder 5	Notebooks #8 (April to August 1933) and #9 (August 1933 to March 1934)

Box 7, Folder 6	Notebooks #10 (March to August 1934) and #11 (August 1934 to June 1935)
Box 8, Folder 1	Notebooks #12 (June 1935 to February 1936) and #13 (February to November 1936)
Box 8, Folder 2	Notebooks #14 (November 1936 to April 1937), #15 (April to November 1937) and #16 (November 1937 to June 1938)
Box 8, Folder 3	Notebooks #17 (June1938 to April 1939) and #18 (April to December 1939)
Box 8, Folder 4	Notebook #19 (December 1939 to September 1940)
Box 8, Folder 5	Notebook #21 (September 1941 to May 1942)
Box 8, Folder 6	Notebooks #22 (May to December 1942), #23 (December 1942 to July 1943), #24a and #24 (April 1943 to [?]) and #25
Box 9, Folder 1	Notebooks #27 (January to April 1945), #29 (October 1945 to January 1946), #30 (January to May 1946) and #31 (May to September 1946)
Box 9, Folder 2	Notebooks #32 (September 1946 to February 1947), #33 (March to September 1947), #34 (September 1947 to March 1948) and #35 (March to August 1948)
Box 9, Folder 3	Notebooks #36 (August 1948 to March 1949), #37 (March 1949 to June 1950) and #38 (June 1950 to March 1951)
Box 9, Folder 4	Notebooks #39 (March to October 1951), #40 (October 1951 to May 1952) and #41 (May to October 1952)
Box 9, Folder 5	Notebooks #42 (October 1952 to September 1954) and #43 (September 1954 to October 1955)
Box 9, Folder 6	Notebooks #44 (October 1955 to [?]), #45 (July 16 to September 28, 1956), #46 (October 1 to December 26, 1956) and #47 (December 26, 1956 to March 19, 1957)
Box 9, Folder 7	Notebooks #48 (March 19 to June 11, 1957), #49 (June 11 to October 29, 1957), #50 (October 29, 1957 to January 23, 1958) and #51 (January 23 to March 15, 1958)
Box 10, Folder 1	Notebooks #52 (March 16 to June 27, 1958) and #53 (June 27, 1958 to June 17, 1959)
Box 10, Folder 2	Notebooks #54 (June 18, 1959 to July 7, 1960) and #55 (July 8, 1960 to August 4, 1961)
Box 10, Folder 3	Notebooks #56 (August 14, 1961 to November 6, 1962) and #57 (November 6, 1962 to November 7, 1963)

Box 10, Folder 4	Notebook #58 (November 7, 1963 to June 20, 1966)
Box 10, Folder 5	Notebook #59 (June 28, 1966 to August 1, 1968)

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Series 3: Subject files

Scope and Contents: This series is composed of files maintained by Upson for his own research and the development of projects pursued by him. The researcher especially interested in the inventions of Ralph Upson may wish to consult the files below on metalclad airships, balloons, flight instrumentation and re-entry and recovery.

Where files were found together and labelled by Upson, their integrity has been preserved.

Box 10, Folder 6	Aircraft Design
Box 10, Folder 7	Aircraft Design: Shell Structures
Box 11, Folder 1	Aircraft Design: Wing Geometry
Box 11, Folder 2	Airfoils
Box 11, Folder 3	Airship Disasters
Box 11, Folder 4	Airships: Design
Box 11, Folder 5	Airships, Metalclad: Technical Reports
Box 11, Folder 6	Airships, Metalclad: Technical Reports
Box 11, Folder 7	Airships, Metalclad: Technical Reports
Box 11, Folder 8	Airships, Metalclad: ZMC-2 and Metalclad Rigid Airship Development
Box 12, Folder 1	Airships, Metalclad: ZMC-2 and Metalclad Rigid Airship Development: Articles
Box 12, Folder 2	Airships, Metalclad: ZMC-2 and Metalclad Rigid Airship Development: Correspondence
Bin 12, Folder 3	Airships, Metalclad: ZMC-2 Photographs
Box 12, Folder 4	Airships: Miscellaneous
Box 12, Folder 5	Airships: Non-rigid
Box 12, Folder 6	Alternative Energy Sources
Box 12, Folder 7	Astronomy
Box 12, Folder 8	Astronomy: Solar Eclipse June 30, 1954
Box 12, Folder 9	Atmosphere
Box 12, Folder 10	Atmosphere: Reports

Box 12, Folder 11	Aviation Accidents and Flight Safety
Box 12, Folder 12	Balloons: Aerodynamics
Box 12, Folder 13	Balloons: High Altitude Performance
Box 13, Folder 1	Balloon Logging Systems Report 1964
Box 13, Folder 2	Balloons: Manuscripts and Publications
Box 13, Folder 3	Balloons: Miscellaneous
Bin 13, Folder 4	Balloons: Neoprene Balloons and Balloon Aerodynamics
Box 13, Folder 5	Balloons: Preliminary Design
Box 13, Folder 6	Balloons: Shapes and Stresses
Box 13, Folder 7	Balloons: test samples and data materials
Box 13, Folder 8	Balloons: Wind Response
Box 13, Folder 9	Bending of Structural Elements
Box 13, Folder 10	Bibliographies
Box 14, Folder 1	Boeing Aircraft
Box 14, Folder 2	Boeing Scientific Research Laboratories: Reports
Box 14, Folder 3	Boeing Scientific Research Laboratories: Reports
Box 14, Folder 4	Boeing Scientific Research Laboratories: Reports
Box 14, Folder 5	Compressibility
Box 14, Folder 6	De-Icing
Box 14, Folder 7	Flatt, Joseph: Correspondence and Patents
Box 14, Folder 8	Flight Control
Box 14, Folder 9	Flight Control
Box 14, Folder 10	Flight Control: The Upson Air_zon
Box 15, Folder 1	Flight Instrumentation, Angle of Attack and Path Control

Box 15, Folder 2	Flight Instrumentation, Angle of Attack: Articles
Box 15, Folder 3	Flight Instrumentation, Angle of Attack: Correspondence
Box 15, Folder 4	Flight Instrumentation, Angle of Attack: Giannini Controls Corporation
Box 15, Folder 5	Flight Instrumentation, Angle of Attack: Graphs and Charts
Box 15, Folder 6	Flight Instrumentation, Angle of Attack: Jet Aircraft
Box 15, Folder 7	Flight Instrumentation, Angle of Attack: Miscellaneous
Box 15, Folder 8	Flight Instrumentation, Angle of Attack: Related Patents
Box 15, Folder 9	Flight Instrumentation, Angle of Attack: Reports
Box 15, Folder 10	Flight Instrumentation, Angle of Attack: Safe Flight Instrument Corporation
Box 15, Folder 11	Flight Instrumentation, Angle of Attack: Safe Flight Instrument Corporation
Box 15, Folder 12	Flight Instrumentation: Reports
Box 16, Folder 1	Flight Instrumentation: Reports
Box 16, Folder 2	Flight Instrumentation: Stall Warning Indicator
Box 16, Folder 3	Flight Instrumentation, Stall Warning Indicator: General Correspondence
Box 16, Folder 4	Flight Instrumentation, Stall Warning Systems: Articles and Miscellaneous
Box 16, Folder 5	Flight Instrumentation, Stall Warning Systems: Correspondence
Box 16, Folder 6	Flight Instrumentation, Stall Warning Systems: Correspondence with the Civil Aeronautics Administration
Box 16, Folder 7	Flight Instrumentation, Stall Warning Systems: Related Patents
Box 16, Folder 8	Gas and Leakage
Box 16, Folder 9	International Air Safety Seminar: Reports
Box 17, Folder 1	Mathematics
Box 17, Folder 2	Mathematics
Box 17, Folder 3	Meteorology
Box 17, Folder 4	Missile Calculations

Box 17, Folder 5	Missiles
Box 17, Folder 6; Box 17, Folder 6	NACA Reports , 1945 - 1958
Box 17, Folder 7	NASA Reports , 1958 - 1959
Box 17, Folder 8	NASA Reports , 1960
Box 17, Folder 9	Oceanic Research
Box 17, Folder 10	Orbits, Circular
Box 18, Folder 1	Orbits, Elliptical: Correspondence and Calculations
Box 18, Folder 2	Orbits, Elliptical: Raw Data
Box 18, Folder 3	Orbits, Elliptical: Reports
Box 18, Folder 4	Parachute, Ballute
Box 18, Folder 5	Parachute, Controllable-Glide
Box 18, Folder 6	Parachutes
Box 18, Folder 7	Phugoid Curves
Box 18, Folder 8	Propulsion
Box 18, Folder 9	Recoverable Launch Vehicles
Box 18, Folder 10	Re-Entry and Recovery: Analysis and Research
Box 19, Folder 1	Re-Entry and Recovery: Articles
Box 19, Folder 2	Re-Entry and Recovery: References
Box 19, Folder 3	Re-Entry and Recovery: Reports , 1959 - 1961-08
Box 19, Folder 4	Re-Entry and Recovery: Reports , 1961-10
Box 19, Folder 5	Re-Entry and Recovery: Reports , 1961-12 - 1965
Box 19, Folder 6	Regulatory Agencies
Box 19, Folder 7	G.T. Schjeldahl Company
Box 19, Folder 8	Space Exploration

Box 19, Folder 9	Space Exploration: The Moon
Box 19, Folder 10	Space Survey , 1961
Box 20, Folder 1	Supersonic Transport
Box 20, Folder 2	Turbulence
Box 20, Folder 3	Unmanned Craft
Box 20, Folder 4	War Production Board: Wind Turbine Project Report Chapters 1 to 7
Box 20, Folder 5	War Production Board: Wind Turbine Project Report Chapters 8 through Appendices
Box 20, Folder 6	Miscellaneous Articles
Box 20, Folder 7	Miscellaneous Design Calculations
Box 20, Folder 8	Miscellaneous Reports
Box 20, Folder 9	Miscellaneous

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Series 4: Miscellaneous

Box 21, Folder 1	Notebook #5 , 1930-06 - 1931-12
Box 21, Folder 2	Drawing of Class ZMC Airship, General Arrangement (29½ by 72") Flight Instrumentation, Angle of Attack: Graph "Report on The Contraction of Satellite Orbits Under the Influence of Drag" by King-Hele, Cook and Walker, 1959-11

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