Mandel Lenkowsky Early Vertical Flight Development Collection, 1936-1946

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2004
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Collection Overview

Repository: National Air and Space Museum Archives
Title: Mandel Lenkowsky Early Vertical Flight Development Collection
Identifier: NASM.1989.0099
Date: 1935-1952
Extent: 2.18 cubic feet (2 records center boxes)
Creator: Lenkowsky, Mandel
Language: English

Summary: This collection includes notebooks containing scientific notes and mathematical calculations, a random assortment of journals and periodicals, published reference books, and a few advertising and promotional brochures all pertaining to American experimental military and commercial vertical flight from the late 1930s to the late 1940s. The collection also contains photographs of the following helicopters: Sikorsky XR-1, XR-4, YR-4, XR-5, XR-6, XR-6A, VS-300; Kellet XO-60 and XO-61; and Rotachute P-4. Also included are photographs of helicopters by Pitcarin, Landgraf, Greyhound Bus, Spratt, Berliner, Ochmichen, and DeBothezat.

Administrative Information

Acquisition Information
Leslie Lenkowsky, gift, 1989, 1989-0099, NASM

Processing Information
Arranged and described by Roseann E. MacLean, 2004.
Encoded by Amanda Buel, 2015.

Preferred Citation

Restrictions
No restrictions on access
Biographical Note

Mandel Lenkowsky was a civil and aeronautical engineer. He attended the Guggenheim School of Aeronautics at New York University from September 1933 until June of 1937. He later attended the School of Engineering at Princeton University from October to November of 1943. His post graduate work detailed the development of rotary wing aircraft. Lenkowsky was employed as an aeronautical draftsman at the U.S. Naval Air Station, Lakehurst, New Jersey, from February 1941 until June of 1941. In August of 1941, Lenkowsky was employed by the Army Air Forces (A.A.F.) Materiel Center, as a project engineer. Lenkowsky resigned from the Army Air Forces at Wright Field in Dayton, Ohio, in October of 1944 to dedicate full time to the completion of his book on the development of the helicopter.

Scope and Contents

The Mandel Lenkowsky Early Vertical Flight Development Collection contains correspondence, manuscript notes, notebooks of scientific and mathematical notes, periodicals, and published reference materials about experimental military and commercial vertical flight from the 1930s to the 1940s. The collection includes photographs of the Sikorsky XR-1, XR-4, YR-4, XR-5, XR-6, XR-6A, VS-300; Kellet X0-60 and X0-61; and Rotachute P-4 helicopters; as well as the Berliner, DeBothezat, Greyhound Bus, Landgraf, Ochmichen, Pitcairn, and Spratt helicopters.

The collection contains chapters from Mandel Lenkowsky's unpublished manuscript, *The Helicopter*, and his correspondence with Macmillan Publishing Company. The book was scheduled for publication in the summer of 1945. In his correspondence, Lenkowsky stated he would like to focus primarily on the development of the Focke helicopter (Germany, 1934-37) and was trying to secure rights to mention it in his book. There is no evidence in the collection that Lenkowsky completed the book or that it was ever published.

Arrangement

The collection is arranged into the following series:

Series I: Correspondence and Manuscript Notes

Series II: Scientific and Mathematical Notes, Aircraft Drawings, and Published Works

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:
Subjects:
Aeronautics
Aeronautics, Commercial
Aeronautics, Military
Aeronautics, Military -- Research
Helicopters
Helicopters -- Flight testing
Kellet XO-60 Autogiro
Kellet XO-61 Autogiro
Periodicals
Sikorsky (USA) R-4 (H-4) Family
Sikorsky (USA) R-6 (H-6) Family
Sikorsky (USA) VS-300 Family
Sikorsky (USA) XR-4
Sikorsky (USA) XR-5
Sikorsky (USA) XR-6
Sikorsky (USA) XR-6A

Types of Materials:
Notebooks
Photographs
Publications
### Container Listing

**Series 1: Correspondence and Manuscript Notes, 1941-1945**

This series covers correspondence between Mandel Lenkowsky and the military service and Macmillan Publishing Company regarding the possibility of publishing his manuscript on the development of the helicopter. The manuscripts appear to be unfinished works of Mandel Lenkowsky on the helicopter. The dates of this material range from 1941 until 20 May 1945.

| Box 1, Folder 1 | Correspondence, Coast Guard and Selective Services, 1941-1945 |
| Box 1, Folder 2 | Correspondence-Government Agencies: Civil Service, War Department, Navy, WMC, etc., 1943-1945 |
| Box 1, Folder 3 | Correspondence- Klemin, Summerill Tubing, Spicer Manufacturing Corp., Sikorsky, 1943-1944 |
| Box 1, Folder 4 | American Helicopter Society letter with membership list, May 20, 1945 |
| Box 1, Folder 5 | Correspondence with Macmillion Publishing Company, 1944-1945 |
| Box 1, Folder 6 | Type written manuscript entitled: "Outline for Proposed Helicopter Book", undated |
| Box 1, Folder 7 | Mandel Lenkowsky "The Helicopter Today: Its Background and Its Future", 1943 |
| Box 1, Folder 8 | "Helicopter Problems," "Early Helicopters," "Successful Helicopters," and "Sikorsky's Helicopters" [Lenkowsky?, unfinished chapters], undated |
| Box 1, Folder 9 | "Let's Take a Ride in the XR-4", "Types of Aircraft", "Preface", and "The How and Why" [Lenkowsky?, unfinished chapters], undated |
| Box 1, Folder 10 | "Preface", "Ch. 1-Meet the Helicopter" and "Ch.2 The Mechanics of Flight" [Lenkowsky?, unfinished chapters], 1943 |
| Box 1, Folder 11 | Miscellaneous notes and parts of publications regarding rotary wing aircraft, undated |
Series 2: Scientific and Mathematical Notes, Aircraft Drawings, and Published Works, 1935-1952

This series contains scientific and mathematical notes, aircraft drawings, and published works. The published works are organized by aircraft model, then company or government institution. It also contains two poems written about the helicopter, photographs of the XR-1, XR-1A, XRG-XRGA, XO-6, Debothezat, Berliner, Ochmichen, Pitcairn, Landgrat, VS-300, Greyhound Bus, Sprah, Kellet XR-8, XR-4, XR-5, XR-6 also XR-6A, YR-4, YR-4B helicopters, military and civilian, and personal photos. The photos are arranged by aircraft type, then chronologically.

Box 1, Folder 13  Project Record Computation Book, project record no. MX-245 [XR-6 Engine, YR-4A, XR-8 Blades], February 23, 1942-December 1943

Box 2, Folder 1  Project Record Computation Book, Project Record no.1, March 29, 1943

Box 2, Folder 2  Project Record Computation Book, Project Record no. 2, October 27-29, 1943

Box 2, Folder 3  Project Record Computation Book miscellaneous, [Rotary Wing Parachute, 6 pages dispersed], undated

Box 2, Folder 4  Mathematical notes, Sikorsky reports on helicopters and miscellaneous models [including: R-1A, R-4B, R-5, R-6A, XR-8, XR-9, XR-10], circa September 4, 1941-February 2, 1945

Box 2, Folder 5  Miscellaneous mathematical notes and manuscript notes written about the history of helicopters, rough drawing of a helicopter, drawings of airfoils [models including XR-4, XR-8, R-6A, engine P-V XHRP-1, Focke 284, referencing several technical manuals], June 1945

Box 2, Folder 6  Miscellaneous materials on limits of helicopter design, [Diehl, Bernett, and Howard], 1952

Box 2, Folder 7  Helicopter Flight Demonstration [VS -300, XR-4], April 20, 1942

Box 2, Folder 8  Flight Demonstration of the XR-4 Aircraft Project List for 1943, April 27, 1942

Box 2, Folder 9  Army Air Forces Memorandum Report on XR-4, A.A.F.41-18874, December 30, 1942

Box 2, Folder 10  Army Air Forces Memorandum Reports on YR-4B, A.A.F.42-107237, December 7, 1943 and June 13, 1944

Box 2, Folder 11  *Some Considerations of Roughness Experienced During Helicopter Flight*, model YR-4A, April 18, 1944

Box 2, Folder 12  *Flight Test Measurements of Stress and Motion of the Main Rotor Blades*, Model YR-4A, May 18, 1944

Box 2, Folder 13  Army Air Forces Specification for A.A.F. model R-4B [Sikorsky Aircraft Model VS-316-A-2], October 21, 1943
Box 2, Folder 14  Army Air Force Specification on A.A.F. Model R5-A; Information on Load Distribution for XR-5, Drawing of XR-5 Helicopter, Rotor Hinge locations, March 23, 1944

Box 2, Folder 15  Army Air Forces Specification for A.A.F. Model R-6A , January 10, 1944

Box 2, Folder 16  Sikorsky Aerodynamics Report Utility Cargo Twin Engine Helicopter, May 17, 1944

Box 2, Folder 17  Basic Instruction Manual for Army Pilots and Mechanics for model Y0-60 Aircraft. Report number 000.10 , August 7, 1943

Box 3, Folder 1  Army Air Forces Memorandum Reports on Y0-60, A.A.F.42-13607; serial numbering-47-1668-A and addendum #1, undated

Box 3, Folder 2  XR-1A Three view Platt-Le Page Aircraft Company, 5x700, September 15, 1941

Box 3, Folder 3  XR-6, XR-6A Sikorsky Aircraft General Arrangement Drawing VS-06-01-1001, September 16, 1943

Box 3, Folder 4  XO-61 Autogiro Pitcairn three view drawing #7111, August 11, 1941

Box 3, Folder 5  Miscellaneous drawings of helicopters

Box 3, Folder 6  An Aerodynamic Analysis of the Autogiro Rotor, 1934; Wind Tunnel Tests of a 10ft Diameter Gyroplane Rotor, 1935; National Advisory Committee for Aeronautics


Box 3, Folder 8  Bibliography of Rotary Wing Aircraft, US Army Air Forces Greyhound Looks Ahead to Integrated Air-Bus Service, 1945

Box 3, Folder 9  Contribution to the Aerodynamics of Rotating–Wing Aircraft, Part I and II, G. Sissingh, December 1939

Box 3, Folder 10  The Flight of Helicopter, H.B. Squire [pages are stuck together please do not photocopy], October 1935

Box 3, Folder 11  Journal of the Aeronautical Sciences, May 1942, April 1943, June 1943, and September 1936

Box 3, Folder 12  "Lectures on Rotary Wing Aircraft," Alexander A. Nikolsky, October 1, 1943

Box 3, Folder 13  National Advisory Committee for aeronautics Technical Note No.626, Static Thrust Analysis of the Lifting Airscrew by Montgomery Knight and Ralph A. Hefner, December 1937

Box 3, Folder 14  Notes on Helicopter Design Theory: A Series of Lectures Delivered March-April 1944 at Princeton University, Alexander A. Nikolsky, 1944
Box 3, Folder 15  
*Performance of Rotating Wing Aircraft*, by K. Hohenemser, No. 871, July 1948 National Advisory Committee for Aeronautics [Ingenieur-Archive, Vol.8], December 1937

Box 3, Folder 16  
*Physical Principles of the Helicopter*. Lecture Notes by J.A. J. Bennett Department of Aeronautical Engineering, Princeton University, undated

Box 3, Folder 17  
*Rotary Wing Aircraft: A series of articles*, Aircraft Engineering, James A.J. Bennett, January 1940-August 1940

Box 3, Folder 18  
*Rotorplane Airworthiness (Part-06)*, Papers by Montgomery Knight and Walter Castles , January 29, 1942

Box 4, Folder 1  
*The Story of the Helicopter* by Devon Francis, 1946

Box 4, Folder 2  
*A Study of Auto-gyro Rotor Blade Oscillations in the Plane of the Rotor Disc* by John Wheatley

Box 4, Folder 3  
*Transactions of the A.S.M.E*, April 1939

Box 4, Folder 4  
Various newspaper/periodical clippings concerning the helicopter, undated

Box 4, Folder 5  
Four news articles on the early helicopter, 1939-1945

Box 4, Folder 6  
Helicopter Poetry: "The Stump Jumper's Lament"; "The Hell Cop"

Box 4, Folder 7  
Photographs Model X0-61, X060 and Rotachutes P-34, also photographs of Kellet Aircraft Corp. employees, early 1940s

Box 4, Folder 8  
Photographs, various group shots involved with the XR-5, X060 captions on back of some photos, YR-4B rotor and hub

Box 4, Folder 9  
Photographs "Manny", XR-4, XR-5, XR-6 also XR-6A, YR-4, YR-4B. Photographs circa 28 Mar 1945, May 11, 1942

Box 4, Folder 10  
Photographs XR-1, XR-6, XR-6A, Debothezat, Berliner, Ochmichen, Pitcairn, Landgrat, VS-300, Greyhound Bus, Sprah, Kellet XR-8

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