



Frank J. Malina

THE FRANK J. MALINA COLLECTION



THE FRANK J. MALINA COLLECTION

at the California Institute of Technology

Guide to a Microfiche Edition

EDITORS

Judith R. Goodstein

Carol H. Bugé

*Institute Archives: Robert A. Millikan Memorial Library
California Institute of Technology
Pasadena, California*

1986

Cover: Frank Malina, Paris, 1961

Library of Congress Catalog Card Number: 86-81368

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Chronological Biography

- 1912 Oct 2 Frank Joseph Malina born in Brenham, Texas, son of Frank and Caroline Malina
- 1930 Malina enters Texas A&M
- 1934 bachelor's degree in mechanical engineering, Texas A&M
- 1934-1936 teaching fellow, California Institute of Technology (Caltech)
- 1935 master's degree in mechanical engineering, Caltech
- 1936 master's degree in aeronautical engineering, Caltech
- 1936 co-founder Daniel Guggenheim Aeronautical Laboratory at the California Institute of Technology (GALCIT) Rocket Research Project
- 1936 Oct 31 first rocket motor test
- 1937 GALCIT Rocket Research Project, report No. 1 (with W. Bollay, J. Parsons, A. M. O. Smith, H. S. Tsien)
- 1938 Malina's "Report on Jet Propulsion for the National Academy of Science Committee on Air Corps Research"
- 1939 marries Lilian Darcourt
- 1939 receives French Prix d'Astronautique REP Hirsch (after Robert Esnault-Peltrie and André-Louis Hirsch)
- 1939 Apr 18 Theodore von Kármán proposes a Jet Propulsion Experimental Station in the Arroyo Seco
- 1939 July 1 Special Committee of the National Academy of Sciences for Air Corps research initiates jet propulsion research program (GALCIT Project No. 1) under von Kármán's direction
- 1940 doctor's degree in aeronautics, Caltech
- 1940-1942 research fellow, Caltech
- 1941 tests solid-propellant jet engines successfully on a light, low-wing monoplane, known as the Ercoupe
- 1942 joins five colleagues in forming the Aerojet Engineering Corporation
- 1942 assistant professor of aeronautics, Caltech
- 1943 Nov 20 Von Kármán, Tsien, and Malina propose a long-range rocket missile research program. Their report is identified as JPL-1, the first usage of the name Jet Propulsion Laboratory.

1944 July 1 guided missile work, supported by Army Ordnance
 Department, begins
 1944 Nov 1 formally reorganizes and renames the GALCIT Project,
 No. 1, Jet Propulsion Laboratory
 1944 Dec 16 Von Kármán turns leadership of the Laboratory over to the
 JPL Executive Board.
 1945 acting director, JPL
 1945 Sept successful flight of WAC Corporal sounding rocket
 1945-1947 appointment to Sub-Committee on Propulsion Systems,
 National Advisory Committee for Aeronautics (NACA)
 1946 co-authors with M. Summerfield "The Problem of Escape from
 the Earth by Rocket"
 1946 takes leave of absence from Caltech
 1947 joins United Nations Educational, Scientific and Cultural
 Organization (UNESCO), Division of Scientific Research,
 Paris
 1947 divorces Lilian Darcourt
 1948 receives C. M. Hickman Award from the American Rocket
 Society
 1949 marries Marjorie Duckworth
 1950 Roger F. Malina born
 1951 head of UNESCO's Division of Scientific Research,
 Paris
 1952 Alan J. Malina born
 1953 leaves UNESCO to be full-time artist
 1955 exhibition of Malina's kinetic paintings at the Galerie
 Colette Allendy, Paris
 1960 founding member, International Academy of Astronautics
 (IAA)
 1961-1965 co-editor of Acta Astronautica
 1962 receives Order of Merit, French Society for Encouragement
 of Research and Invention
 1963 president, IAA
 1963 fellow, American Rocket Society
 1963 fellow, American Astronomical Society
 1966 installs kinetic mural "The Cosmos" in Pergamon Press
 Building, Oxford

- 1967 presents first memoir, "The GALCIT Rocket Research Project 1936-1938" at IAA symposium at Belgrade
- 1968 founds Leonardo
- 1969 presents second memoir, "U.S. Army Air Corps Jet Propulsion Research Project, GALCIT Project No. 1, 1939-1946: A Memoir" at IAA symposium at Mar del Plata
- 1971 presents third memoir, "America's First Long-Range Missile and Space Exploration Program: The ORDCIT Project of the Jet Propulsion Laboratory, 1943-1946" at IAA symposium at Brussels
- 1972 distinguished alumnus, Texas A&M
- 1973 one-man show, Teheran Trade Fair, Iran
- 1981 Nov 9 dies in Paris

History of the Collection and Acknowledgments

Frank J. Malina, aerospace engineer and rocketry pioneer, co-founded the Guggenheim Aeronautical Laboratory at the California Institute of Technology [GALCIT] Rocket Research Project and the Jet Propulsion Laboratory [JPL], and served as Director of the Laboratory for two years, 1944-1946. When he died in 1981, Malina left more than 25,000 items in his home relating to his scientific career, including personal letters, reports, notes, manuscript material, and reprints relating to his scientific career. In addition, Malina left records that shed light on his career as an artist and founding editor of the art journal Leonardo.

The Institute's project to arrange, describe, and microfiche the Frank Malina papers traces its roots to discussions in 1981 with Bruce C. Murray, who was then director of the Jet Propulsion Laboratory, Roger Malina, Frank's son, and Caltech Archivist Judith R. Goodstein. In fall 1982, following a preliminary appraisal of the collection in his home in Boulogne sur Seine, a suburb of Paris, France, the first installment of the Malina aeronautical papers, 153 pounds of records, arrived in Pasadena; the second installment, airfreighted from Paris in summer 1983, added an additional 275 pounds. By December 1984, the contents of 42 manuscript boxes, representing an estimated 40,000 original records, had been reproduced on 491 microfiche cards.

While visiting Mrs. Marjorie Malina in Paris in summer 1984, Daniel J. Boorstin, the Librarian of Congress, unexpectedly found additional papers in a gardener's shed on the property. Primarily correspondence, much of the new material complemented the existing collection. From the twelve cartons received, the archives staff culled four boxes of extraneous and marginal materials, (primarily letters from distant relatives, many of them in Czech), and organized and filmed the balance. The supplemental records added eight manuscript boxes and 128 microfiche cards to the Malina collection.

As planned, Mrs. Marjorie Duckworth Malina gave the original collection to the Library of Congress in 1984. Literary rights to the unpublished writings of Frank J. Malina in these papers in the Library of Congress and in the microfiche edition have been dedicated to the public. However, users of the collection are advised that Mrs. Malina has retained exclusive rights to such writings for her lifetime.

This booklet and the microfiche edition of the Frank J. Malina Papers were made possible through a grant from the JPL Director's Discretionary Fund. To make these papers available to researchers, one copy of the microfiche edition is housed in the Caltech archives; the master set is stored at JPL. The microfiche edition of the Malina Papers is also available for purchase as a complete set.

Applications to consult the archives' copy, orders for the purchase of the microfiche, and requests for copies of the Guide should be addressed to: Institute Archives, Caltech, Pasadena, California 91125.

The editors thank Marjorie, Roger, and Alan Malina for their gracious hospitality, and assistance in locating, sorting, and identifying family papers in Paris and in Pasadena; Bruce Murray for his enthusiasm and encouragement in planning the work; Loma Sprude for typing the Guide; Leela Wood and Marcia Goodstein for their help in preparing the papers for filming and checking the microfiche; and Margie Fea, Pat Fleming, J. M. Fischer, Marysha Cleary and R. T. Chandler at JPL for their technical assistance in bringing the microfiche edition of the Malina collection to a successful completion. Special thanks are due to Glenn Brudvig for his administrative support.

Notes on Use of the Collection

The microfiche edition of the Frank J. Malina collection spans the years 1912 to 1981, but the core of the collection consists of notes on rocket propulsion, early technical papers, manuscripts, and reports dealing with jet propulsion and rocket projectiles, Aerojet correspondence and documents, files from his Caltech graduate student days, and correspondence with individuals and organizations.

Malina played a central role in the development of rocketry in the United States from the mid-1930s through the mid-1940s, and in the development of rocket research in the North Atlantic Treaty Organization [NATO] countries later on. He also played a pivotal role in the founding of the International Academy of Astronautics and worked closely with that organization, as well as the International Astronautical Federation, for many years. A history buff, Malina collected a wide range of primary source materials relating to the original GALCIT Rocket Research Project and the early history of JPL.

In 1953, Malina started a new career. As an artist, his interest lay in the relationship between art, science, and technology. He began by using non-traditional media, such as electric cables, to define lines. As his style evolved, Malina joined others in exploring a new art form called kinetic art--a form unusual in its emphasis on color, light, and movement. The titles he gave his pieces sometimes revealed Malina's scientific training, as in "Passing Planets" and "Preparation for Launching Rocket." Other times, the titles reflected more simply the world around him, for example, "Three Boats," and "Painting of Three Women." He often displayed his work, and sold pieces to friends and to various institutions. Malina's works can be found in the permanent collections of the Musee d'Art National (Paris), the National Gallery (Prague), the Smithsonian Institution (Washington, D.C.) and UNESCO (Paris).

The Frank J. Malina collection is divided into 17 sections as follows:

<u>Section</u>		<u>Fiche Number</u>
I	Personal Correspondence	1.1 - 3.44
II	Jet Propulsion Laboratory	4.1 - 13.23
	GALCIT and ORDCIT	4.1 - 4.8
	General Correspondence	5.1 - 6.36
	Miscellaneous	7.1 - 8.4
	Reports	9.1 - 11.6
	Research Files	12.1 - 13.23
III	California Institute of Technology	14.1 - 15.3
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The Malina papers are available to researchers in two formats. The original collection fills 50 manuscript boxes and is available for use by researchers in the Library of Congress. The microfiche edition consists of the contents of 845 folders, representing virtually all the documents in boxes 1 through 50, reproduced on 624 microfiche cards. A small amount of material, including incoming correspondence from Malina's mother, 1947-1977, his cousin, Jerry William Marek, 1934-1937,

and letters written in Czech, 1949-1977, was not filmed. This material, which is not listed in the Guide, is available to scholars at the Library of Congress.

The papers have been filmed in the order in which the collection itself is arranged. Each microfiche card has the same identification number and title as the original folder number. The folder index provides a complete listing of the contents of the Malina collection. It is arranged in filing order and gives the identification number, title, and inclusive dates for each folder in the collection. It also provides an organizational description of the collection.

Malina had an elaborate filing system. Many of his correspondents were both personal friends and colleagues, and he often filed their letters according to their content. Section I begins after Malina's move to Paris, and covers the years 1946-1981. (His letters to Warner Bracher were added to the collection by Mr. Bracher, in May 1983.) Since Malina's own arrangement of his files was followed in the organization of the collection, cross-checking for material on given individuals or subjects must be done in different sections. For example, material on Andrew G. Haley, Malina's attorney and space law expert in his own right, is to be found in the Aerojet and Art files (Sections V and XII), as well as in Sections I and XVII of the collection.

A major part of the collection consists of material related to the Jet Propulsion Laboratory. Included in Section II are JPL documents and reports, as well as letters, notes, and memoranda. Malina used these materials in writing a series of articles on the history of JPL, three of which took the form of memoirs presented at International Academy of Astronautics symposia between 1967 and 1971. The memoirs themselves are in the manuscript files (Section VII).

Sections IV and XIII of the collection are a good starting point for investigating Malina's major involvement in international astronautical activities during the 1960s and 1970s, especially the International Astronautical Academy. Malina was a founding member and an early president of the organization. His correspondence with Theodore von Kármán (1959-1960) in Section VI contains valuable material on the founding of the Academy. Von Kármán and Malina had many common interests and experiences, beginning with the GALCIT Rocket Research Project, and continuing through the founding of JPL, the organization of Aerojet Engineering Corporation (Section V), the International Academy of Astronautics, and participation in the same astronautical and aeronautical organizations. The material in Section VI offers ample evidence of the enduring relationship that existed between the two men.

The early manuscripts in Section VII are scientific; the later ones are historical. With the later papers Malina retained copies of the several drafts each paper went through; the editors saved and filmed a representative selection. An unusual item in this section is a collection of excerpts from letters written by Malina in Pasadena to his parents in Texas. A faithful correspondent, Malina's letters are a valuable source for the study of rocket research between 1936 and 1947

at the California Institute of Technology. Treating them as a primary source of information on that era, Malina considered publishing the excerpts. He used and cited them in his own writings, as did others. The complete text of Malina's letters are to be found in the biographical and personal section, along with other family correspondence.

Beginning with Section XI, the focus of the collection shifts to Malina's involvement in the art world. These nontechnical records consist primarily of correspondence with authors and editors regarding Leonardo, the interdisciplinary art journal he started in 1967. The journal's chronological files begin with the period just preceeding its founding (1965-1967), and end shortly after Malina's death, when it temporarily appeared that the journal would be discontinued. The editorial correspondence of the journal, which follows, is arranged by individual. Section XII contains publications, correspondence, and printed matter relating to his art work. A selective index to the contents of the general correspondence and meetings files, which correspond to folders 39.5 through 40.12 and 41.2 through 41.4, is to be found at the beginning of each folder.

The material on the remaining 128 microfiche cards is a valuable supplement to the rest of the collection. About one-third of this material covers Malina's activities involving aeronautical organizations. The remainder, personal correspondence, covers the years 1938 to 1980 and should be used in conjunction with Sections I and X of the collection. Section XVII includes material from such figures as Martin Summerfield, Jacob Bronowski, Peter Lambda, Tom George, Giorgio Careri, Leo Picard, and Sydney Goldstein. A selective name index appears at the beginning of each folder in this section.

Suggestions for further reading

There is an obituary by Sandy Koffler in Leonardo, 15 (1982), i-iii. A tribute by G. S. James and F. H. Winter appears in Acta Astronautica, 10 (1983), 231-249. For Malina's role in the beginnings of JPL, see Clayton R. Koppes, JPL and the American Space Program (New Haven, 1982). Malina's talk in 1978 on the occasion of the 50th anniversary of GALCIT appears in Guggenheim Aeronautical Laboratory at the California Institute of Technology: The First Fifty Years, F. E. C. Culick, ed. (San Francisco, 1983). Other manuscript collections in the Caltech archives which contain material relevant to Malina's life are: the Theodore von Karman papers; the records of the Jet Propulsion Laboratory; and the transcript of an oral interview conducted by Mary Terrall, Oral history project, 1980.

All the illustrations, except where noted, are from the Caltech Archives.

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3.34 Wadia, D. R. D. and Pilly 1950-1952, 1971, 1972
3.35 Weinbaum, Lina and Sydney 1946-1952, 1961,
1972-1974

3.36 Whipple, Fred and Babbi 1969, 1971-1976
3.37 White, Ethna 1972, 1975-1976
3.38 White, Gifford 1947, 1951-1952
3.39 Wilson, Richard 1971
3.40 W Miscellaneous

Weitz, G. and C. 1952, 1975
Wendt, G. and A. 1971
Wert, C. n.d.
Williams, D. C. 1974
Williams, L. 1973
Wohly, A. 1948, 1952
Wood, K. 1973

3.41 Yap, Chu-Phay 1947
3.42 Young, Marjorie 1952

3.43 Zuckerman, Nomi 1975
3.44 Zwicky, Fritz 1951, 1974



Rocket engine test stand at the Arroyo Seco in Pasadena, 1936. The California Institute of Technology's Jet Propulsion Laboratory started out as a small group of Caltech graduate students and local amateurs interested in high-altitude sounding rockets. Loosely organized in 1936 by the school's Guggenheim Aeronautical Laboratory, it was named, after it, the GALCIT Rocket Research Project. Experimenters at site include, from left, Rudolph Schott; Apollo M. O. Smith; Frank J. Malina, who later became JPL's first director; Edward S. Forman; and John W. Parsons. (Courtesy JPL)

Folder NumberTitle

SECTION II: JET PROPULSION LABORATORY

Box 4

- Commemoration of First GALCIT Rocket Test (1936)
1968
- 4.1 Comments by Malina
4.2 Correspondence 1968-1969
4.3 Printed Matter
Conference Minutes
- 4.4-4.6 ORDCIT Project 4.4 June 1944-June 1945;
4.5 July 1945-December 1945; 4.6 January 1946-
June 1946
- 4.7-4.8 Project MX121 4.7 1944; 4.8 1945

Box 5

- Correspondence
- 5.1 Ageev, V. P. 1981
5.2 Agger, Donald G. 1980
5.3 American Society of Mechanical Engineers 1957
5.4 Arnold, Weld 1959, 1962
5.5 Astronautics 1962
5.6 Bangs, Allan Philip 1975-1977
5.7 Bangs, Scholer 1947, 1965-1969, 1977-1978
5.8 Boorstin, Daniel 1979, 1981
5.9 Buedeler, Werner 1962, 1967
5.10 Burke, J. D. 1977
5.11 B Miscellaneous
Bainbridge, W. S. 1977
Barrère, M. 1981
Bollay, W. 1967
Bradbury, R. 1980
Burnham, J. 1981
- 5.12 Campbell, Paul A. 1975-1976
5.13 Carroll, P. Thomas 1970-1973, 1975
5.14 Charmichael, Leonard 1958
5.15 Clarke, Arthur C. 1965-1967, 1981
5.16 Culick, F. E. C. 1980
5.17 Durant, Fred 1965-1968, 1975, 1980-1981
5.18 D Miscellaneous
Davis, W. 1963
Dorman, B. 1981
Draper, S. and M. 1971, 1976
- 5.19 Edson, Lee 1981
5.20 Emme, Eugene M. 1962-1967, 1972-1976, 1979,
1981
- 5.21 Estes Industries, Inc. 1970, 1971
5.22 E Miscellaneous
Elliot, J. 1966
Emerson, G. 1964

Section II Box 5 (continued)

Correspondence (continued)

- 5.23 Fahrney, D. S. 1958
5.24 Forman, Edward and Jeanne 1967, 1973-1974
5.25 Fuqua, Don. U.S. House of Representatives 1975
5.26 F Miscellaneous
Fabian, T. 1980
Fejer, A. 1981
5.27 Galloway, Eilene 1979-1981
5.28 Goddard, Robert and Esther 1937, 1963, 1965, 1967
5.29 Grey, Jerry 1976, 1979
5.30 G Miscellaneous
Geckler, R. D. 1981
Geer, W. D. 1946
General Astronautics Research Corporation 1965
Goodstein, J. 1976, 1978
5.31 Haley, Andrew G. 1958-1959
Hall, R. Cargill
5.32 1967-1972
5.33 1973-1977
5.34 1978-1979
5.35 Harford, James J. 1981
5.36 Hoff, Nicholas J. 1974
5.37 H Miscellaneous
Hallion, R. 1974
Hart, D. A. 1981
Hempill, T. M. 1938
Hooper, E. B. 1972
5.38 Institution of Mechanical Engineers 1951
5.39 James, George 1964, 1979-1981
5.40 Jaumotte, André 1981
5.41 von Kármán, Theodore 1957, 1958, 1960
5.42 Károlyi, Catherine 1980
5.43 Kevles, Daniel J. 1978-1979
5.44 Koppes, Clayton 1976, 1979-1980
5.45 Krause, E. 1981

Box 6

- 6.1 Lehman, Milton 1956-1957
6.2 Liepmann, Hans 1979
6.3 Lipper, Joseph J. n.d.
6.4 L Miscellaneous
Leisz, G. W. 1981
Lewis, A. 1960
Long, C. D. and J. 1981
Louis-Hirsch, A. 1958
Lovell, J. A. 1974

<u>Folder Number</u>	<u>Title</u>
<u>Section II Box 6 (continued)</u>	
	Correspondence (continued)
6.5	Michaelis, Anthony 1979
6.6	Millikan, Clark B. 1954, 1966
6.7	<u>Model Rocketry</u> 1970-1971
6.8	Murray, Bruce C. 1975-1976, 1979, 1981
6.9	M Miscellaneous
	Maxwell, R. 1981
	MacCreedy, P. 1979
	McKenzie, R. 1966
	Melikan, V. 1966
	Molton, P. 1981
	Murthy, H. G. S. 1970
6.10	Needham, Joseph 1950, 1980
6.11	N Miscellaneous
	Newell, H. E. 1967
	Newlan, I. E. 1980
6.12	Pacner, Karel 1968, 1973, 1974, 1979
6.13	Pendray, G. Edward 1961, 1963
6.14	Pickering, William H. 1958-1981
6.15	Pierce, E. M. and Peggy 1965, 1969, 1973, 1981
6.16	P Miscellaneous
	Penner, S. 1954
	Pešek, R. 1960
	Pirard, T. 1977
	Pompa, M. F. 1981
6.17	Rannie, Duncan 1965, 1970, 1978-1981, n.d.
6.18	Reese, John 1959
6.19	R Miscellaneous
	Rajsky, V. 1977
	Rosen, M. W. 1975
6.20	Sears, William R. 1978-1979, 1981
6.21	Seifert, Howard S. 1949, 1967
6.22	Smith, A. M. O. 1980, n.d.
6.23	<u>Spaceflight</u> 1957, 1973-1981
6.24	Stever, H. Guyford 1981
6.25	Summerfield, Martin 1954, 1960, 1965-1966, 1978, 1979, 1981
6.26	S Miscellaneous
	Schultz, C. R. 1980
	Sedov, L. I. 1977
	Serrurier, M. 1981
	Sokolsky, V. N. 1981
	Stark, J. W. 1978
6.27	Thackwell, H. L. 1960
6.28	Toufar, Pavel 1965-1967
6.29	Tsien, H. S. 1954, 1968, 1970
6.30	Tumarkin, Raymond 1967
6.31	T Miscellaneous
	Terhune, C. H. 1980
	Terrall, M. 1980
	Traux, R. C. 1967

Section II Box 6 (continued)

Correspondence (continued)

- 6.32 Vibber, Lee W. 1973
- 6.33 Walkowicz, T. F. 1978-1980
- 6.34 Winter, Frank H. 1978-1980
- 6.35 W Miscellaneous
 - Wattendorf, F. 1981
 - White, E. 1980
 - Wilson, J. H. 1973
 - Wright, M. 1977
 - Wrigley, W. 1974
- 6.36 Zisch, William E. 1961, 1964, 1966

Box 7

- 7.1 Guided Missiles and Upper Atmosphere Symposium 1946
- 7.2 History of the ORDCIT Project 1946
- 7.3 Interview with Frank Malina 1974
- 7.4 Jet Propulsion 1946

Box 8

- 8.1-8.3 Monthly Summaries 8.1 1942-1944; 8.2 1945; 8.3 1946
- 8.4 Notes on Tour of Inspection to the United Kingdom
and France 1944

Box 9

- 9.1 Reports, General (by Malina)
 - Dec 21, 1938 "Report on Jet Propulsion for the
National Academy of Science Committee on Air
Corps Research"
- 9.2 Feb 17, 1944 "A Review of Developments in
Liquid Propellant Jet (Rocket) Propulsion at
the ACJP Project and the Aerojet Engineering
Corporation"
- 9.3 Feb 20, 1946 "Jet Propulsion--Its Effects upon
Engineering Education"
- 9.4 Reports, Technical
 - Apr 10, 1937 "GALCIT Rocket Research Project"
(with BOLLAY, Parsons, Smith, Tsien)
- 9.5 Aug 24, 1938 "The Rocket Motor and Its
Applications as an Auxiliary to the Power
Plants of Conventional Aircraft"
- 9.6 Oct 5, 1939 "Application of Rocket Propulsion
to a Radio Controlled Flying Torpedo"
- 9.7 1939-1940 Final Report (with John W. Parsons,
Edward S. Forman)
- 9.8 Dec 1, 1940 "Characteristics of the Ideal Solid
Propellant Rocket Motor" (with von Kármán)

<u>Folder Number</u>	<u>Title</u>
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Section II Bpx 9 (continued)

	Reports, Technical (continued)
9.9	Feb 26, 1941 "Description of the Experiment Station of the Air Corps Jet Propulsion Research Project" (anonymous)
9.10	Sept 2, 1941 "Results of Flight Tests of the Erco Coupe Airplane with Auxiliary Jet Propulsion Supplied by Solid Propellant Jet Units" (with John W. Parsons)
9.11	Jun 30, 1942 "Take-off and Flight Performance of an A-20A Airplane as Affected by Auxiliary Propulsion Supplied by Liquid Propellant Jet Units"
9.12	Feb 20, 1943 "The Design, Construction and Operation of a Towing Channel for Under-Water Jet Propulsion Research" (anonymous)

Box 10

10.1	May 28, 1943 "Facilities and Equipment of the Air Corps Jet Propulsion Research Project" (anonymous)
10.2	Nov 20, 1943 "The Possibilities of Long-Range Rocket Projections" (von Kármán); "A Review and Preliminary Analysis of Long-Range Rocket Projections" (with H. S. Tsien)
10.3	Mar 18, 1944 "Comparative Study of Jet Propulsion Systems as Applied to Missiles and Transonic Aircraft" (by von Kármán, with contributors: Malina, M. Summerfield, H. S. Tsien)
10.4	Aug 20, 1944 "Research Program for the Second Type of Long-Range Jet Propelled Missile" (anonymous)
10.5	Jan 16, 1945 "Considerations of the Feasibility of Developing a 100,000 Foot Altitude Rocket (the 'WAC Corporal')" (with H. J. Stewart)
10.6	Jun 25, 1945 "The Jet Propulsion Laboratory, GALCIT"
10.7	Aug 26, 1945 "A Preliminary Investigation of the Rubber-Base Solid Propellant ORDCIT 21" (C. E. Bartley)
10.8	Aug 28, 1945 "The Liquid Propellant Rocket Motor-Present Status and Direction of Development" (with H. S. Seifert)
10.9	Sept 18, 1945 "Properties and Performance of Various Liquid Rocket Propellants" (with F. J. Kaplan)

Section II Box 11

Reports, Technical (continued)

- 11.1 Nov 1, 1945 "Preliminary Design of a Shore-to-Ship Guided Missile" (J. B. Kendrick)
- 11.2 Jan 24, 1946 "Development and Flight Performance of a High Altitude Sounding Rocket the 'WAC Corporal'"
- 11.3 Jul 26, 1946 "Considerations on the Descent of a Parachute from High Altitude" (with P. L. Chambre)
- 11.4 Aug 16, 1946 "Preliminary Considerations Regarding the Proposed V-2 WAC Missile" (H. J. Stewart)
- 11.5 Dec 15, 1947 "Design, Development and Field Tests of the WAC B Sounding Rocket" (P. J. Meeks, F. G. Dennison, Jr., R. F. Rose)
- 11.6 Apr 22, 1949 "Ballistic Form Factor and Flight Performance of WAC B" [missing page 6] (H. J. Stewart and H. T. Nagamatsu)

Box 12

Research Files

- 12.1 1938 "Rocketry in California: Plans and Progress of the GALCIT Rocket Research Group" Frank J. Malina (see 18.1)
- 12.2 1939 "Experiments with Powder Motors for Rocket Propulsion by Successive Impulses" John W. Parsons and Edward S. Forman
- 12.3 1940 "GALCIT: A History of the First Ten Years"
- 12.4 1940, 1941 "Program for Jet Propulsion Research at the California Institute of Technology" 1940-1941, 1941-1942
- 12.5 1944 Memo re ORDCIT Project no. 1 and "Preliminary Organization of Jet Propulsion Laboratory, GALCIT," F. J. Malina for T. von Kármán
- 12.6 1944 Newsletter, The GALCIT EAR Vol 1 issues 1-4, 6
- 12.7 1945 "The Future Development of the Aeronautic Department and Guggenheim Laboratory at the California Institute of Technology" C. B. Millikan
- 12.8 1945, 1946 Jet Propulsion Laboratory GALCIT Directory
- 12.9 1945 "Memorandum on the Future of Jet Propulsion Research at the California Institute of Technology" F. J. Malina
- 1946 Aerojet Engineering Corporation bibliography of reports

Folder Number	Title
<u>Section II Box 12 (continued)</u>	
	Research Files (continued)
12.10	1946 Jet Propulsion Laboratory bibliography of reports, 1944-1946
12.11	1946 Jet Propulsion Laboratory-GALCIT recommended increases in salaries and wages
12.12	1946 "Research and Development at the Jet Propulsion Laboratory, GALCIT" Roger Stanton
12.13	1946 "Thrust," Fortune, Sept
12.14	1947 "The Physics of Rockets;" "Physics of Rockets: Liquid-Propellant Rockets;" "Physics of Rockets: Dynamics of Long Range Rockets" H. S. Seifert, M. Mills, M. Summerfield
12.15	1947 "The Present Status of the Guided Missile" H. J. Stewart (JPL publication #11)
12.16	1949 "Is the Nuclear Powered Rocket Feasible?" H. S. Seifert
12.17	1949 "Rockets" Willy Ley
12.18	1950 Historical Notes on Assisted Take-Off, Rocket Development at Caltech F. J. Malina
12.19	1950 Notes by Malina on "Assisted Take-Off of Aircraft" C. M. Bolster
12.20	(?) 1950 Press Release, California Institute of Technology
12.21	ca 1950 "Early Rocket Work at the California Institute of Technology" T. von Kármán
12.22	ca 1950 Review by T. von Kármán of "Assisted Take-Off of Aircraft" C. M. Bolster
12.23	1954 "Aeronautics at Caltech" <u>Engineering and Science</u> , Oct
12.24	1954 "GALCIT: The First Twenty-Five Years"
12.25	1955 "Twenty-Five Years of Rocket Development" H. S. Seifert
12.26	1957 "Problems of Launching an Earth Satellite" parts I and II, M. Summerfield
12.27	1959 Two letters to John Reese from F. J. Malina (April 10 and 20)
12.28	ca 1959 "Capabilities of Multistaged Chemical Rocket Systems" J. E. Froelich
12.29	1961 American Rocket Society Space Flight Report to the Nation: "Development of ATO and Engines for Manned Rocket Aircraft" C. W. Schnare "Development of Rocket Engines for Upper Air Research Vehicles and Stages of Space Research Vehicles" S. Eldridge "Pre-World War II Rocket Development" G. E. Pendray

April 30, 1941

Dear Doctor:

I left Wright Field Saturday after discussing the various aspects of our problems. Major Kemmer and Col. Bogart are anxious to cooperate in making the flight tests with a light plane. The most suitable plane appears to be the Weick designed Ecoupe, which has a tricycle landing gear and twin tails. The best location for attaching the powder unit can be decided upon receiving drawings of the plane from Capt. Boushey.

In Washington I have talked with Comdr. Bolster and find that the Navy has not as yet given Tuxas any money for a project, although something may come through. Tuxas is a little too enthusiastic for the Navy. I also understand that orders have been Ok'd for Fisher to take over the jet propulsion desk.

Bolster took me to Dr. Durand, who asked if we could speed up our project if we had more money. Will find out what the committee

Page of a letter from Frank Malina to Theodore von Kármán, 30 April 1941, describing plans to use rockets to boost the takeoff and performance of aircraft. The rocket engines themselves were developed, tested, and in the hands of the Navy for use in the Pacific in 1943.

Articles of Partnership

1.

1. The ~~Auto~~ Superpower Research Associates consists of the following partners:

H. v. Karman
F. J. Malina
E. S. Forman
J. W. Parsons
M. Summerfield

who have formed this partnership for the purpose of patenting, licensing, developing, manufacturing, selling, consulting, etc. in connection with devices applying the principles of jet and/or rocket propulsion.

2. Organization of partnership:

^(one of the partners as)
The partners shall elect ~~an~~ ^{agreements to the majority of the partners} ~~the~~ chairman for a period of ~~three years~~ ^{who shall} execute the decision of the partners arrived at on the basis of a majority vote of the partners.

No individual partner shall make commitments, decisions, or transact any business or transaction relating to or binding upon the partnership or any other individual partner.

Aerojet's beginnings, 1941. Page from a draft, by Frank Malina, of the company he and several other members of the GALCIT rocket project formed in 1942. Unlike several other original incorporators, Malina did not sell his shares to General Tire in 1952, and subsequently became a very wealthy man.

Section II Box 12 (continued)

Research Files (continued)

- | | | |
|-------|------|--|
| 12.30 | 1963 | Letter to Eugene M. Emme from Richard R. Wilford |
| 12.31 | 1963 | "A Short Chronology of Rocket Research at the Jet Propulsion Laboratory, California Institute of Technology, During the Period 1936-1946" F. J. Malina, for E. M. Emme |
| 12.32 | 1964 | "The Jet Propulsion Laboratory"
William H. Pickering |
| 12.33 | 1965 | "Guggenheim Foundation: Extent of early participation (1934-1944)" |
| 12.34 | 1965 | "Jet Propulsion Laboratory 1965 Annual Report" |
| 12.35 | 1966 | "Jet Propulsion Laboratory 1966 Annual Report" |

Box 13

- | | | |
|-------|---------|---|
| 13.1 | 1966 | "The 210-Foot-Diameter Deep Space Network Antenna" NASA/JPL |
| 13.2 | ca 1966 | "History of JPL" Office of Public Information, JPL/CIT |
| 13.3 | 1967 | "Jet Propulsion Laboratory 1967 Annual Report" |
| 13.4 | 1967 | Jet Propulsion Laboratory, Chronology of Significant Events 1936-1967 |
| | 1967 | "The GALCIT Rocket Research Project, 1936-1938" F. J. Malina (see 18.8) |
| 13.5 | 1967 | "Selective Chronology: GALCIT/JPL Developments, 1926-1950"
R. Cargill Hall |
| 13.6 | 1968 | International Conference on the Trends in Teaching and Training of Engineers
remarks by René Maheu |
| 13.7 | 1968 | "Jet Propulsion Laboratory"
remarks by C. S. Draper |
| 13.8 | 1968 | "Return to Venus" J. H. Wilson |
| 13.9 | 1969 | Farewell speech to JPL, Lee DuBridge |
| 13.10 | 1970 | "Earth Satellites, A First Look by the United States Navy in the 1940s"
R. Cargill Hall |
| 13.11 | 1970 | "Fire Arrows Grow Up: Development of Solid Propellant Rockets From 1935 to 1950"
P. Thomas Carroll |
| 13.12 | 1971 | Bibliography, JPL/ORDCIT Project |
| 13.13 | 1971 | "Horse For Sergeant: The Rise of Case-Bonded Internal-Burning Solid Propellant Rocket Motors" P. Thomas Carroll |

<u>Folder Number</u>	<u>Title</u>
<u>Section II Box 13 (continued)</u>	
	Research Files (continued)
13.14	1971 Letter to F. J. Malina from R. Cargill Hall, with enclosures: Reference Cards <u>The Mare's Nest</u> (pgs. 45-48, 53-55, 60-61) Letter from T. von Kármán Aug 2, 1943 Memorandum 1944 Letter to Col. G. W. Prichel from W. F. Durand 1943 Memo from AERL to NACA "Preliminary Analysis: Fuel-Oxidant Combinations for Use in Rocket Motors" JPL Reference Cards
13.15	1973 Letter to F. J. Malina from J. N. James, with enclosure; National Aeronautics and Space Act 1962
13.16	1974 "Historical Origins of the Sergeant Missile Powerplant" P. Thomas Carroll
13.17	1976 "A Study of Relations Between the Jet Propulsion Laboratory and the Campus of the California Institute of Technology" part I
13.18	1976 "Theodore von Kármán, 11 May 1881-7 May 1963" R. C. Hall
13.19	1976 "Fritz Zwicky, 14 February 1898-8 February 1974" R. C. Hall
13.20	ca 1977 "Lunar Impact: A History of Project Ranger," preliminary draft, R. C. Hall
13.21	1978 The Theodore von Kármán Professorship
13.22	1980 "A History of the Jet Propulsion Laboratory," chapters 1-3, by Clayton Koppes, annotated by F. J. Malina
13.23	1981 Theodore von Kármán Centennial, invitation to CIT and papers presented at Aachen

SECTION III: CALIFORNIA INSTITUTE OF TECHNOLOGY

Box 14

	GALCIT 50th Anniversary 1978
14.1	Correspondence 1978
14.2	Lecture notes and transcription of "The Beginning of Rocketry and JPL at Caltech" by Frank Malina
14.3	Printed Matter

Section III Box 14 (continued)

- 14.4 Letters re rocket research 1934-1946
Manuscripts
- 14.5 "Facts and Fancies of Rockets" Sigma Xi talk
1938 (incomplete)
- 14.6 "General Review of the Sounding Rocket"
Aeronautics Seminar 1938
"Lessons in Aeronautics" with T. von Kármán
Correspondence 1937-1938
- 14.7 Manuscript 1938
- 14.8 Philosophy 100 term paper
- 14.9 "Recent Developments in the Dynamics of Wind
Erosion" 1941
- 14.10 Drawings
- 14.11 Manuscript
- 14.12 "The Rocket Motor and its Application as an
Auxiliary to the Power Plants of Conventional
Aircraft" GALCIT Report #2, 1938
- 14.13 Notebook, Rocket Propulsion
Notes
- 14.14 Art
- 14.15 Bateman Lectures, "Compressible Fluids" 1938
- 14.16 Ph.D. exam review
- 14.17 Research, with Jack Parsons
- 14.18 Rockets, calculations Oct 1936-Jan 1937
- 14.19 Speed
- 14.20 Wind erosion

Box 15

- 15.1 Ph.D. Thesis 1940
Report, Theoretical and Experimental Investigations
of Axial Flow Compressions, CIT 1949 (not filmed)
Reviews and Notes by Malina
- 15.2 "Review of Aerodynamics Lift at Supersonic
Velocities" A. Busemann
- 15.3 "Three Applications of the Fundamental Hydro-
dynamical Equations and of Prandtl's Mixing
Length," from works by A. M. Kuethe and
H. Schlichting

SECTION IV: PROFESSIONAL ORGANIZATIONS AND MEETINGS

Box 16

- American Institute of Aeronautics and Astronautics
(AIAA) History Committee
- 16.1 General Correspondence 1963-1965
- 16.2 Printed Matter

<u>Folder Number</u>	<u>Title</u>
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<u>Section IV Box 16 (continued)</u>	
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	International Academy of Astronautics
	General Correspondence
16.3	1974-1976
16.4	1977-1978
	History of Astronautics Symposia
16.5	Summaries of Papers 1967, 1969, 1972;
	Table of Contents for Published
	Proceedings 1969-1972

SECTION V: AEROJET GENERAL CORPORATION
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<u>Box 16 (continued)</u>

16.6	Commemoration of 20th Anniversary 1962
	General Correspondence
16.7	1952-1954
16.8	1955
16.9	1956-1957
16.10	1958-1961
16.11	1972
	Organizational Records
16.12	1941, pre-incorporation
16.13	1942-1946
16.14	Patents 1943-1956

SECTION VI: THEODORE VON KÁRMÁN

<u>Box 17</u>

17.1-17.2	Biographical Sketches and Obituaries (2 folders)
	Correspondence
17.3	Autobiography 1959-1968
	Collected Works
17.4	1956
17.5	1973-1974
	General
17.6	1951-1959
17.7	January-June 1960
17.8	July-December 1960
17.9	1961-1963
17.10	Obituaries 1963-1966
17.11	Party for Frank and Marjorie Malina
	October 27, 1961
17.12	re von Kármán's death, May-November 1963
17.13	Josephine de Kármán Trust
17.14	Manuscript, <u>Aero-Digest</u> guest editorial 1955

SECTION VII: MANUSCRIPTS

Box 18

- 18.1 1933-1947
1933 "The Diesel Engine"
1936 "Characteristics of Braked, Locked, and
Free-Wheeling Two- and Three-Bladed
Propellers" (with W. W. Jenney)
1938 "Flight Analysis of the Sounding Rocket"
(with A. M. O. Smith)
1938 "Flight Analysis of a Sounding Rocket with
Special Reference to Propulsion by
Successive Impulses" (with H. S. Tsien)
1938 "Rocketry in California: Plans and
Progress of the GALCIT Rocket Research Group"
1940 "Characteristics of the Ideal Solid
Propellant Rocket Motor" (with T. von Kármán)
1940 "Characteristics of the Rocket Motor Unit
Based on the Theory of Perfect Gases"
1941 "Recent Developments in the Dynamics of Wind
Erosion"
1943 "Summary of 'The Possibilities of Long-Range
Rocket Projectiles'" (with T. von Kármán and
H. S. Tsien)
1944 "Summary of 'Comparative Study of Jet
Propulsion Systems as Applied to Missiles and
Transonic Aircraft'" (with T. von Kármán,
M. Summerfield, and H. S. Tsien)
1946 "Is the Sky the Limit?"
1946 "Jet Propulsion--Its Effect Upon Engineering
Education"
1947 "The Problem of Escape From the Earth by
Rocket" (with M. Summerfield)
18.2 1950 "Rockets With No Men Inside"
18.3 1959 "Short History of Rocket Propulsion Up to
1945"
18.4 ca 1959 "Excerpts from Letters Written Home by
F. J. Malina on Rocket Research at the
California Institute of Technology between
1936 and 1947"
18.5 1961 "Ten Years, 1951-1961" American Rocket
Society Journal
18.6 1963 "The Jet Propulsion Laboratory--Its Origins
and First Decade"
18.7 1964 "Lunar International Laboratory"
18.8 1967 "The GALCIT Rocket Research Project,
1936-1938"
18.9 1969 The Lunar International Laboratory (LIL)
Project, British Interplanetary Society talk
18.10 1969 "The LIL Project"

<u>Folder Number</u>	<u>Title</u>
<u>Section VII Box 18</u> (continued)	
18.11	1969 "The U.S. Army Air Corps Jet Propulsion Research Project, GALCIT Project No. 1 1939-1946: A Memoir"
18.12	1971 "America's First Long Range Missile and Space Exploration Program, The ORDCIT Project of the Jet Propulsion Laboratory, 1943-1946"
18.13	1971 "Theodore von Kármán"
18.14	1972 "On the Future of International Non-Governmental Cooperation in Astronautics"
18.15	1974 "Cosmos in Art and Art in the Cosmos"
18.16	1980 "On the Founding of the International Academy of Astronautics"
18.17	1981 Theodore von Kármán Centennial Remarks

SECTION VIII: PUBLICATION CORRESPONDENCE

Box 19

19.1	Airplane Stories for Children, General Correspondence 1940
19.2-19.4	"America's First Long Range Missile and Space Exploration Program: The ORDCIT Project of the Jet Propulsion Laboratory, 1943-1946" General Correspondence <u>19.2</u> 1970-1971; <u>19.3</u> 1972; <u>19.4</u> 1973-1974
19.5	"Excerpts From Letters Home, 1936-1947" General Correspondence 1959
19.6	List of Publications 1933-1979
19.7	Memoirs, General Correspondence 1976-1981
	"Short History of Rocket Propulsion to 1945"
19.8-19.9	General Correspondence <u>19.8</u> 1950; <u>19.9</u> 1951-1958
19.10	Princeton University Press, Printed Matter 1950-1959
19.11-19.12	Research Notes, References (2 folders)
19.13-19.15	"The GALCIT Rocket Research Project, 1936-1939" General Correspondence <u>19.13</u> 1966-June 1967; <u>19.14</u> July 1967-1969; <u>19.15</u> 1970-1975
19.16-19.17	"The Jet Propulsion Laboratory--Its Origins and First Decade" General Correspondence <u>19.16</u> 1963-1964; <u>19.17</u> 1965-1966
19.18	"Theodore von Kármán" General Correspondence 1971-1973
19.19	"The U.S. Army Air Corps Jet Propulsion Research Laboratory Project, GALCIT Project No. 1, 1939-1946: A Memoir" General Correspondence 1969-1972

SECTION IX: TECHNICAL FILES REGARDING HISTORY OF AERONAUTICS

Box 20

20.1	1912	"Considerations on the Results of Indefinite Decrease in Weight of Engines" R. Esnault-Pelterie
20.2	1928	L'Astronomie (only covers filmed)
20.3	ca 1940	"Rockets"
20.4	1946	"Earth Launched Meteors" F. Zwicky
20.5	1947	"Atomic Energy in Cosmic and Human Life" G. Gamow
20.6	1947	"Artificial Meteors" F. Zwicky "The First Night Firing of a V-2 Rocket in the United States" F. Zwicky "Research with Rockets" F. Zwicky
20.7	1948	"The Elementary Mathematics of the Rocket" R. C. Knight
20.8	ca 1948	"Can We Fly to the Moon?" J. Himpan and R. Reichel
20.9	1949	"Fundamental Problems in Rocket Research" M. Summerfield
20.10	1951	"Fundamental Dynamics of Reaction Powered Space Vehicles" L. N. Thompson
20.11	1951	New Yorker profile of Werner von Braun
20.12	1955	"The History of Pilotless Aircraft and Guided Missiles" D. S. Fahrney
20.13	1956	AGARD Seminar, Munich: History of German Guided Missile Development
20.14	1957	"Theory of Flight of the Sounding Rocket" V. C. Liu
20.15	ca 1957	Miscellaneous notes
20.16	1958	"The Origin of the Astronautics Committee" with photograph, A. Louis-Hirsch
20.17	1959	"Step-Rockets" J. Schmidt Mayer
20.18	1959	"The Application of Solid Propellants to Space Flight Vehicles" H. L. Thackwell, Jr.
20.19	1960	"Danger Signs in American Higher Education" M. Summerfield
20.20	1961	American Rocket Society: Space Flight Report to the Nation, New York
20.21	1961	Proceedings of "La Journée Robert Esnault-Pelterie"
20.22	1964	"Some Special Problems of Power Plants" O. Lutz
20.23	1964	"Idées Prioritaires en Astronautique" A. Sternfeld
20.24	1964	"Rocket Development" R. C. Taux
20.25	1965	"Notice Nécrologique de Hugh Latimer Dryden" M. Roy
20.26	1967	"Apollo Applications Briefing" NASA
20.27	1978	"Les Memoires d'un Astronaute" A. Ananoff

<u>Folder Number</u>	<u>Title</u>
<u>Section IX Box 20 (continued)</u>	
20.28	1980 "Science, Technology and Public Policy: The Case of X-Ray Astronomy, 1959-1972" R. F. Hirsh
20.29	undated Excerpts, F. Zwicky (?)

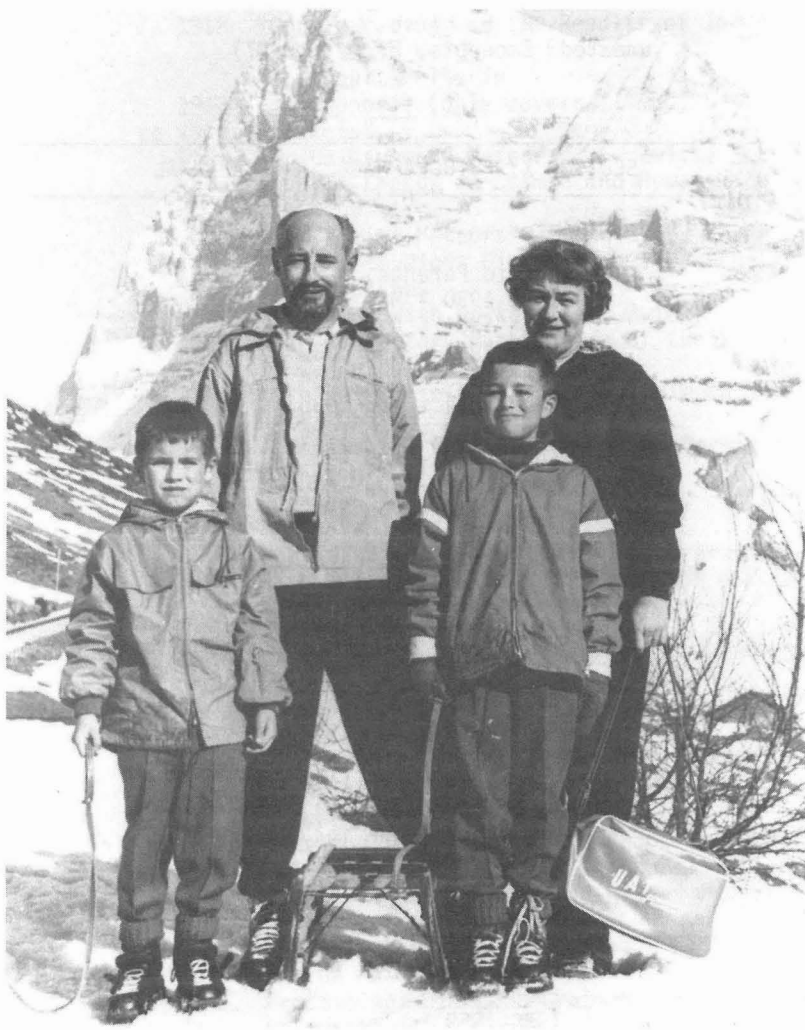
SECTION X: BIOGRAPHICAL AND PERSONAL

Box 21

	Letters to Parents
21.1	Sept 1930 - May 1931
21.2	Sept 1931 - Aug 1932
21.3	Sept 1932 - Aug 1933
21.4	Sept 1933 - Aug 1934
21.5	Sept 1934 - Aug 1935
21.6	Sept 1935 - Aug 1936
21.7	Sept 1936 - Aug 1937
21.8	Sept 1937 - Aug 1938
21.9	Sept 1938 - Aug 1939
21.10	Sept 1939 - Aug 1940
21.11	Sept 1940 - Aug 1941

Box 22

22.1	Sept 1941 - Aug 1942
22.2	Sept 1942 - Aug 1943
22.3	Sept 1943 - Aug 1944
22.4	Sept 1944 - Aug 1945
22.5	Sept 1945 - Aug 1946
22.6	Sept 1946 - Aug 1947
22.7	Sept 1947 - Dec 1947
	Letters to Parents, excerpts
22.8	1948-1949
22.9	1950-1951
22.10	1952-1953
22.11	1954-1955
22.12	1956-1957
22.13	1958-1959
22.14	1960-1961
22.15	1962-1963
22.16	1964-1966
22.17	Letters from Parents May 1946-November 1947
22.18	Letters from sister, Carolyn, undated 1946-1947, 1968
22.19	Notes from trip to East Coast 1947
22.20	Unidentified correspondence 1946-1976, n.d.



The Malina family on the ski slopes, 1961.
Left to right: Alan, Frank, Roger, Marjorie.

SECTION XI: LEONARDO

Box 23

Chronological Correspondence

23.1	1965 - 1966
23.2	Mar - Jun 1967
23.3	Jul - Aug 1967
23.4	Sept - Nov 1967
23.5	Dec 1967 - Jan 1968
23.6	Feb - Mar 1968
23.7	Apr - May 1968
23.8	June 1968
23.9	July 1968
23.10	Aug 1968
23.11	Sept 1968
23.12	Oct 1968
23.13	Nov 1968
23.14	Dec 1968

Box 24

24.1	Jan 1969
24.2	Feb 1969
24.3	Mar 1969
24.4	Apr 1969
24.5	May 1969
24.6	June 1969
24.7	July 1969
24.8	Aug 1969
24.9	Sept 1969
24.10	Oct 1969
24.11	Nov 1969
24.12	Dec 1969
24.13	Jan 1970
24.14	Feb 1970
24.15	Mar 1970
24.16	Apr 1970
24.17	May 1970
24.18	June 1970

Box 25

25.1	Jul - Aug 1970
25.2	Sept 1970
25.3	Oct 1970
25.4	Nov 1970
25.5	Dec 1970
25.6	Jan 1971
25.7	Feb 1971
25.8	Mar - Apr 1971

<u>Folder Number</u>	<u>Title</u>
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Section XI Box 25 (continued)

	Chronological Correspondence (continued)
25.9	May 1971
25.10	June 1971
25.11	Jul - Aug 1971
25.12	Sept 1971
25.13	Oct 1971
25.14	Nov 1971
25.15	Dec 1971
25.16	Jan 1972
25.17	Feb 1972
25.18	Mar 1972

Box 26

26.1	Apr 1972
26.2	May 1972
26.3	June 1972
26.4	July 1972
26.5	Aug 1972
26.6	Sept 1972
26.7	Oct 1972
26.8	Nov 1972
26.9	Dec 1972
26.10	Jan 1973
26.11	Feb 1973
26.12	Mar 1973
26.13	Apr 1973
26.14	May 1973
26.15	June 1973

Box 27

27.1	July 1973
27.2	Aug 1973
27.3	Sept 1973
27.4	Oct 1973
27.5	Nov 1973
27.6	Dec 1973
27.7	Jan 1974
27.8	Feb 1974
27.9	Mar 1974
27.10	Apr 1974
27.11	May 1974
27.12	June 1974

Box 28

28.1	July 1974
28.2	Aug 1974

Section XI Box 28 (continued)

Chronological Correspondence (continued)

28.3	Sept 1974
28.4	Oct 1974
28.5	Nov 1974
28.6	Dec 1974
28.7	Jan 1975
28.8	Feb 1975
28.9	Mar 1975
28.10	Apr 1975
28.11	May 1975
28.12	June 1975

Box 29

29.1	July 1975
29.2	Aug 1975
29.3	Sept 1975
29.4	Oct 1975
29.5	Nov 1975
29.6	Dec 1975
29.7	Jan 1976
29.8	Feb 1976
29.9	Mar 1976
29.10	Apr 1976
29.11	May 1976
29.12	June 1976
29.13	July 1976
29.14	Aug 1976
29.15	Sept 1976

Box 30

30.1	Oct 1976
30.2	Nov 1976
30.3	Dec 1976
30.4	Jan 1977
30.5	Feb 1977
30.6	Mar 1977
30.7	Apr 1977
30.8	May 1977
30.9	June 1977
30.10	July 1977
30.11	Aug 1977
30.12	Sept 1977
30.13	Oct 1977
30.14	Nov 1977
30.15	Dec 1977
30.16	Jan 1978
30.17	Feb 1978

<u>Folder Number</u>	<u>Title</u>
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Section XI Box 31

Chronological Correspondence (continued)

31.1	Mar 1978
31.2	Apr 1978
31.3	May 1978
31.4	June 1978
31.5	July 1978
31.6	Aug 1978
31.7	Sept 1978
31.8	Oct 1978
31.9	Nov 1978
31.10	Dec 1978
31.11	Jan 1979
31.12	Feb 1979
31.13	Mar 1979
31.14	Apr 1979
31.15	May 1979
31.16	June 1979
31.17	July 1979
31.18	Aug 1979
31.19	Sept 1979
31.20	Oct 1979
31.21	Nov 1979
31.22	Dec 1979

Box 32

32.1	Jan 1980
32.2	Feb 1980
32.3	Mar 1980
32.4	Apr 1980
32.5	May 1980
32.6	June 1980
32.7	July 1980
32.8	Aug 1980
32.9	Sept 1980
32.10	Oct 1980
32.11	Nov 1980
32.12	Dec 1980
32.13	Jan 1981
32.14	Feb 1981
32.15	Mar 1981

Box 33

33.1	Apr 1981
33.2	May 1981
33.3	June 1981
33.4	July 1981
33.5	Aug 1981

Section XI Box 33 (continued)

Chronological Correspondence (continued)

33.6 Sept 1981
33.7 Oct 1981
33.8 Nov 1981

Box 34

Editorial Correspondence

34.1 Agoston, George 1970-1981
34.2-34.8 Alcopley, L. 34.2 1966-1967; 34.3 Jan-Mar 1968,
34.4 Apr-Dec 1968; 34.5 1969; 34.6 1970;
34.7 1971; 34.8 1972-1973
34.9 Arnheim, Rudolf 1976-1982
34.10 Ascott, Roy 1971-1981
34.11 Auger, Pierre 1980-1981
34.12 Berge, Claude 1967-1974

Box 35

35.1 Bonačić, Vladimir 1971-1977, 1982
35.2 Bronowski, Jacob 1966-1974
35.3 Brook, Donald 1971-1974, 1976-1981
35.4-35.5 Calos, Nino 35.4 1966; 35.5 1967-1973, 1976,
1978, 1981
35.6 Chauveau, Nadine 1967-1970
35.7-35.9 Duncan, Elmer H. 35.7 1974-1975;
35.8 1976-1979; 35.9 1980-1981
35.10 Elliott, Alan 1967
35.11 Fobes, John E. 1978-1981
35.12 Franke, Herbert W. 1971-1981
35.13 Friedman, Yona 1967-1978
35.14-35.18 Gadney, Reg 35.14 1964-1966; 35.15 1967-1968;
35.16 1969-1970; 35.17 1971, 1972, 1974;
35.18 1976-1980
35.19 Gibson, James J. 1967-1979
35.20 Glusberg, Jorge 1971, 1976-1979, 1981-1982
35.21 Goeritz, Mathias 1967-1974, 1977, 1979
35.22 Gombrich, Ernst 1967, 1976, 1979, 1981
35.23 Gray, Vic 1967-1980
35.24 Gregory, Richard L. 1967, 1970-1975

Box 36

36.1 Hersey, Irwin 1967-1969
36.2-36.8 Hill, Anthony 36.2 Jan 1966-Jun 1967;
36.3 Jul-Dec 1967; 36.4 Jan-Jun 1968;
36.5 Jul-Dec 1968; 36.6 1969-1970;
36.7 1971-1975; 36.8 1976-1982

<u>Folder Number</u>	<u>Title</u>
<u>Section XI Box 37</u>	
	Editorial Correspondence (continued)
37.1-37.8	Holloway, John 37.1 1968-1969; 37.2 1970; 37.3 1971; 37.4 1972; 37.5 1973; 37.6 1974- 1975; 37.7 1976-1978; 37.8 1979-1982
37.9	Imazumi, Atsuo 1967, 1973
37.10-37.13	Jones, Peter Lloyd 37.10 1968-1969; 37.11 1970; 37.12 1971-1972; 37.13 1974-1979
37.14	Kepes, Gyorgy 1967-1972, 1974-1976, 1978
37.15	Koffler, Pauline B. 1967-1968, 1972, 1980
37.16	Kotalík, Jiří 1966-1968, 1975
37.17	Kowalski, Piotr 1967-1971
37.18	Land, Richard I. 1972-1980
37.19	Le Lionnais, François 1967, 1968, 1970, 1971, 1978
37.20-37.21	Mandelbrojt, Jacques 37.20 1969-1970; 37.21 1971-1981
37.22	Massee, Holly 1968-1975
37.23-37.25	Mattox, Charles 37.23 1968-1969; 37.24 1970- 1971; 37.25 1972-1975, 1976, 1978
37.26	Métraux, Guy 1967-1970
37.27	Munro, Thomas 1967, 1970-1972, 1974
<u>Box 38</u>	
38.1	Needham, Joseph 1967-1972, 1976
38.2	Oster, Gerald 1967-1969
38.3-38.5	Preusser, Robert O. 38.3 1973-1974; 38.4 1975; 38.5 1976-1982
38.6	Reza, Fazlollah 1971-1972, 1977, 1978
38.7	Roll, Eric 1968-1973, 1977, 1981
38.8-38.10	Rothschild, Judith 38.8 1969-1970; 38.9 1971- 1974; 38.10 1975-1977, 1979-1980
38.11	de la Salle, Xavier 1968-1973
38.12	Sandberg, Willem 1967-1968, 1977-1978
38.13	Searle, Ronald 1967, 1969-1970, 1975
38.14-38.15	Shields, Allan 38.14 1972-1973; 38.15 1974- 1976, 1978
38.16	Smith, Cyril S. 1974-1981
38.17	Smith, David R. 1975-1977
38.18	Snow, C. P. (Lord) 1967-1980
38.19-38.20	Sokolov, Kirill 38.19 1975-1978; 38.20 1979- 1982
38.21	Sourian, Etienne 1968-1979
38.22	Subramanyan, K. G. 1972, 1974-1978
38.23	Székely, Pierre 1980, 1982
38.24	Waddington, C. H. 1967-1972, 1974, 1975
38.25	Whyte, Lancelot Law 1967, 1968, 1970-1972
38.26	Zach, Jan 1976-1981

Section XI, Box 38 (continued)

- 38.27 Editorial Correspondence (continued)
A - Z Miscellaneous
Bhownagary, F. 1968-1969
Bury, P. 1967-1975
Careri, G. 1980
Cassou, J. 1967-1968, 1970
Fuller B. 1967, 1971, 1976
Golkin, G. 1981-1982
Grillo, Y. A. 1979-1980
Grohmann, W. 1967-1968
Ichinose, T. T. 1974, 1975, 1978, 1980
Kapur, M. 1981, 1982
Klineberg, O. 1971, 1973, 1981
Maxwell, R. 1975, 1979
Pluhar, J. 1967, 1968
Stanislawski, R. 1970, 1979
Stein, J. 1971-1978
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Topper, D. R. 1981
38.28 General Correspondence
1971-1975, 1979
38.29 1980

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Box 39

- 39.1-39.3 Articles re Malina's artwork 39.1 1953-1961;
39.2 1963-1966; 39.3 1967-1973
39.4 Exhibit Announcements
39.5-39.11 General Correspondence 39.5 1954, 1956-1958;
39.6 1959-1961; 39.7 1962-1963; 39.8 1964;
39.9 1965; 39.10 Jan-Jun 1966; 39.11 Jul-Dec 1966

Box 40

- 40.1-40.12 40.1 1967; 40.2 1968; 40.3 1969; 40.4 1970;
40.5 1971; 40.6 1972; 40.7 1973; 40.8 1974;
40.9 1975; 40.10 1976; 40.11 1977; 40.12 1978

Box 41

- 41.1 International Society of Scientists-Artists
1965-1968
41.2-41.4 Meetings; including correspondence, invitations,
lecture notes 41.2 1961-1969; 41.3 1970-1976;
41.4 1977-1981
41.5 News clippings
41.6 Patents
41.7-41.10 Projects; correspondence 41.7 1955, 1960-1964;
41.8 1965; 41.9 1967-1969; 41.10 1970-1981

<u>Folder Number</u>	<u>Title</u>
<u>Section XII Box 42</u>	
	Publications
42.1	n.d. "Visual Phenomena of Aerodynamics" Correspondence 1955-1956
42.2	1965 "Kinetic Painting" Correspondence 1965
42.3	1965 "Some Reflections on the Differences Between Science and Art" Correspondence 1964-1968
42.4	1968 "Aims and Scope of <u>Leonardo</u> "
42.5	1968 "Différences entre La Science et L'Art: Quelques Réflexions"
42.6	1968 "Kinetic Painting: The Lumidyne System"
42.7	1970 "On the Visual Fine Arts in the Space Age"
42.8	1971 "On Kinetic and Op Art for the Theater" Correspondence 1971
42.9	1972 "A Conversation on Concrete Music and Kinetic Art" with Pierre Schaeffer
42.10	1973 Arts vs. Science, a review in <u>Leonardo</u> ,
42.11	1974 re Kinetic Art: Theory and Practice Correspondence 1969-1970
42.12	1974 "Reflections of an Artist-Engineer on the Art-Science Interface" Correspondence 1973-1974
42.13	1975 "Electric Light as a Medium in the Visual Fine Arts: A Memoir" Correspondence 1973-1974
42.14	1978 Letter to the editor re "Nonverbal Thought in Technology" in <u>Leonardo</u> Correspondence 1978
42.15	Miscellaneous 1967 "De L'Art Cinétique" 1967 "Statement by Kinetic Artists" 1969 "Corner Paintings" 1971 "Comments on Visual Fine Arts Produced by Digital Computers" 1976 Response to letter to the editor by James A. Goldman in <u>Impact of Science on Society</u> 1978 " <u>Leonardo: The First Decade</u> " 1978 Review of <u>Optical Designs in Motion with Moiré Overlays</u> 1979 Preface for <u>Jan Zach Sculpture; catalogue re Visual Art, Mathematics and Computers:</u> <u>Selections from the Journal 'Leonardo'</u>
42.16	Summary of Activities
42.17	Talks 1971 Institute of Texan Cultures, San Antonio 1973 Teheran International Trade Fair

SECTION XIII: INTERNATIONAL ACADEMY OF ASTRONAUTICS

Box 43

- 43.1 Advisory Committee 1967-1971
43.2-43.4 C. S. Draper correspondence 43.2 1963-1969;
43.3 1971-1972; 43.4 1973-1977
43.5-43.14 General correspondence 43.5 1960-1962; 43.6 1963;
43.7 1964; 43.8 1965; 43.9 1966-1967; 43.10 1968;
43.11 1969; 43.12 1970-1971; 43.13 1972-1975;
43.14 1977
43.15-43.18 History Committee 43.15 1963-1968; 43.16 1969-1971;
43.17 1972-1974; 43.18 1975-1976
43.19 Miscellaneous correspondence 1962-1976

SECTION XIV: LUNAR INTERNATIONAL LABORATORY COMMITTEE

Box 44

- 44.1 1st LIL Discussion Panel (Warsaw) September 1964
General correspondence 1963-1965
44.2 2nd LIL Discussion Panel (New York) October 1969
General correspondence 1968-1970
44.3-44.10 General correspondence 44.3 1960-1964; 44.4 1965;
44.5 1966; 44.6 1967-1968; 44.7 1969; 44.8 1970-
1971; 44.9 1972-1973; 44.10 1974-1979

Box 45

- 45.1 1st LIL Symposium (Athens) September 1965
General correspondence 1964-1965
45.2-45.4 Participants 1965 [3 folders]
45.5 Proceedings, publication correspondence
(Springer Verlag) 1965-1966
45.6 2nd LIL Symposium (Madrid) October 1966
Proceedings, publication correspondence
(Pergamon Press, Ltd.) 1966-1968
45.7-45.8 3rd LIL Symposium (Belgrade) September 1967
General correspondence 45.7 1966-Apr 1967;
45.8 May 1967-1969
45.9 4th LIL Symposium (New York) October 1968
General correspondence 1967-1970
45.10 Proceedings, publication correspondence
(Pergamon Press, Ltd.) 1968-1970
45.11 5th LIL Symposium (Vienna) October 1972
General correspondence 1971-1973
45.12 Proceedings, publication correspondence
(Pergamon Press, Acta Astronautica, and
others) 1971-1974

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DRAFT STATUTES
OF THE
INTERNATIONAL ACADEMY OF ASTRONAUTICS

*to Dr. Kármán
from F. Malina*
*John F. Malina
Soc. Sec. No. 111*

Article 1. There shall be an International Academy of Astronautics of the International Astronautical Federation. The Academy shall consist of individuals who have distinguished themselves in ~~aspects of the basic natural sciences, the engineering sciences, the medical sciences and the social sciences.~~

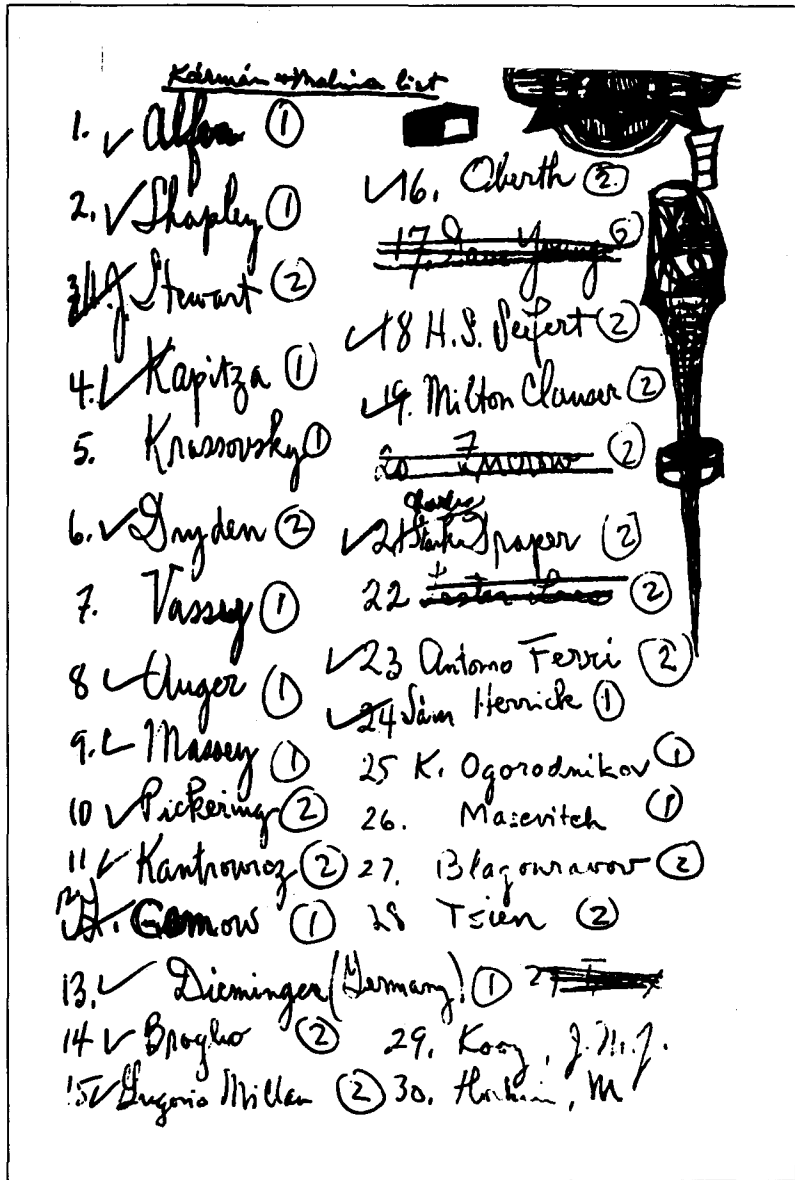
Article 1a. The powers and functions of the Academy of Astronautics shall be as follows:

- a. To adopt, add to or amend the Statutes for the regulation of the internal affairs of the Academy. Provided, that the Academy shall not enact Statutes which are inconsistent with the provisions of the Constitution of the I.A.F. pertaining to the Academy.
- b. To provide advice to the President of the I.A.F. when requested.
- c. To hold scientific meetings and to make scientific studies and reports.
- d. To award medals and prizes.
- e. To publish ^{the} Acta Astronautica.

Article 2. The Academy shall have the following four sections with the number of members as specified:

- I. Basic natural sciences - 50 members and 100 corresponding members

Preliminary statutes of the International Academy of Astronautics, prepared by Malina in 1959, and sent to Theodore von Kármán for comment.



List of names Malina and von Kármán drew up on a scrap of paper, several months before the International Academy of Astronautics was established in 1960. The final list of initial members included twenty-three scientists from twelve countries representing the basic, engineering, and life sciences.

Title

General correspondence 46.1 1959; 46.2 1960;
46.3 1961; 46.4 1962; 46.5 1963; 46.6 1964;
46.7 1965; 46.8 1966; 46.9 1967-1974

Correspondence and manuscript

Miscellaneous 48.11 1935-1941; 48.12 1942-1946

49.1 1947-1950; 49.2 1953-1959; 49.3 1960;
49.4 1961; 49.5 1962; 49.6 1963; 49.7 1964;
49.8 1965; 49.9 1966

Section XVII Box 50

Miscellaneous (continued)

50.1-50.8

50.1 1967; 50.2 1968; 50.3 1969; 50.4 1970;

50.5 1975, 1977; 50.6 1978; 50.7 1979; 50.8 1980

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June, 1986

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40. Arthur Amos Noyes
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42. Howard P. Robertson
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46. William R. Smythe
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49. Alfred H. Sturtevant
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53. Jerome Vinograd
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55. Jean Weigle
56. Cornelis A. G. Wiersma
57. Harry O. Wood
58. Don M. Yost
59. Laszlo Zechmeister



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