

History of Rocketry and Astronautics

**Proceedings of the Fiftieth History Symposium of
the International Academy of Astronautics**

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Chapter 18

Fifty Years of IAA History Symposia (1967–2016)*

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Abstract

The International Academy of Astronautics (IAA) Symposia on the History of Rocketry and Astronautics have been held annually at the International Astronautical Congresses since 1967. During these past 50 years nearly 800 papers have been presented and subsequently published in the proceedings.

With a 20-year rule imposed for historical presentations, the first 10 symposia concentrated on pre-World War II and early 1950s activities. A surprisingly large number of papers on early, less well-known Soviet-Russian contributions to rocketry and astronautics were presented in the first symposia, despite the ongoing Space Race between the United States and the Soviet Union (USSR). Another important element in these symposia involved memoir papers offered by pre- and post-war rocket and astronautics pioneers from many countries, and the participation of many of these pioneers in person. In sum, the history of national space and rocket projects from some 40 countries were presented over the years in IAA History Symposia.

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These 50 symposia have provided a platform for scholars and professional and non-professional historians to meet and discuss the history of rocketry and astronautics, and to personally interview many space pioneers, most of whom today are deceased. Their personal recollections have since been shared with a large audience.

Over time, IAA history papers divided into recognizable periods: ancient times through the 19th century, and the 20th and 21st centuries, which separate among actions and events that took place before 1945, after 1945 to 1957, and after 1957 (which marked the beginning of the Space Age). Proceedings of the IAA History Symposia have been published in English, ultimately in the History Series of the American Astronautical Society (AAS) and its publishing arm, Univelt, Inc., under an agreement secured with the IAA.

This chapter presents an overview of the IAA History Symposia. It examines the early years of the History Committee and its first symposium, the evolution of subsequent symposia, and it recognizes those individuals who shaped these symposia and the publication of its proceedings.

I. Introduction

The International Academy of Astronautics (IAA) held The First International Symposium on the History of Astronautics in 1967, the sixth in a row of special IAA symposia that year and the only symposium to be continued annually until today's symposium. Forty-nine years separate that first IAA History Symposium in Belgrade and the 50th one held this week in Guadalajara. During the Cold War (1946–1991) the International Academy of Astronautics and its History Committee provided from 1967 on a forum where specialists from East and West could meet and exchange ideas and plans for spaceflight, and consider its legacy, largely unencumbered by the ideological tensions and political differences that separated their respective countries. The IAA and its History Committee continue to perform this function for its members today. It is instructive to reflect on this heritage, and describe the founding and evolution of the IAA History Committee and its symposia, which this chapter proposes to do.

II. The IAA History Committee, its Origins and First Years 1961–1967

After discussions that began in the late 1940s, representatives of a few non-governmental rocket and spaceflight societies from various countries gathered in Paris in 1950 to discuss the founding of an International Astronautical

Federation (IAF). The charter for the IAF was signed in London in 1951, and, beginning that year, member-societies convened annual meetings during which its representatives considered how artificial earth satellites and manned space-flight might be achieved, and they acted to proselytize these endeavors among other organizations in their respective countries. Representatives of the United States and the Soviet Union (USSR), in July 1955 at the 6th International Astronautical Congress (IAC) in Copenhagen, announced plans to launch artificial earth satellites for scientific purposes during the International Geophysical Year (1957–58). Two years later, on 4 October 1957, while delegates arrived in Barcelona for the 8th IAC, news media announced that the Soviet Union had successfully launched the world's first artificial satellite, Sputnik 1. The Space Age had arrived, and serious discussion began at this congress about forming an Academy of Astronautics, composed of individuals, as a component of the IAF.

On 2 September 1959, at the 10th International Astronautical Congress in London, the general assembly of the IAF adopted a resolution that founded an Academy of Astronautics that would be devoted to “the development of astronautics for peaceful purpose through international scientific cooperation.” After bylaws for the academy were prepared and accepted at the 11th IAC in 1960 in Stockholm, the first general meeting of the International Academy of Astronautics (IAA) convened in Washington, DC, at the 12th IAC on 3 October 1961. The IAA Board of Trustees at that meeting authorized Theodore von Kármán, Chairman of the Founding Committee and the IAA's first President, to establish within its framework a History Committee devoted to encouraging the preparation of scholarly studies in the history of rocketry and astronautics from ancient to modern times. The IAA Committee on the History of the Development of Rockets and Astronautics was the second scientific committee to be established by the IAA. (The Committee's name was later changed to History of Astronautics Committee and then IAA Committee on History.) Von Kármán selected Charles Dollfus of France, a specialist in the history of aeronautics and other related branches of technology, to chair the committee. Other early members included A. Busemann, USA; E. M. Emme, USA; C. H. Gibbs-Smith, UK; A. G. Haley, USA; F. J. Malina, USA; J. Needham, UK; R. Pešek, Czechoslovakia; I. Sänger-Bredt, West Germany; L. R. Shepherd, UK; V. N. Sokolsky, USSR; T. Tabanera, Argentina; and U. von Euler, Sweden.*

The History Committee first met in September 1963 in Paris at the 14th International Astronautical Congress. Members discussed ways of soliciting history papers and plans for the future. It reconvened for the second time on 14 Septem-

* Members of the IAA Committee on the History of the Development of Rockets and Astronautics as of 1963.

ber 1965 at the 16th IAC in Athens. There, members agreed to hold regular history symposia at each of the annual IAC's and a working group was set up headed by the committee chair Charles Dollfus to prepare for the first International Symposium on the History of Rocketry and Astronautics.* At the third meeting of the committee in 1966 in Madrid, its members decided to conduct the first IAA History Symposium during the 18th International Astronautical Congress in Belgrade under the title "Pre-1939 Memoirs of Astronautics."

III. First IAA History Symposium on 26 September 1967

At the 18th International Astronautical Congress in Belgrade, Yugoslavia, IAA History Committee Vice Chair and IAF Vice President R. Pešek introduced Frederick C. Durant III (US) and Victor N. Sokolsky (USSR) as co-chairman of the first IAA History Symposium as Charles Dollfus could not attend the congress. Some 60 participants from 11 countries attended the morning and afternoon sessions, with 13 papers presented (five from the United States, four from the Soviet Union, two from West Germany, and single contributions each from France and the United Kingdom). English was the primary language, but simultaneous translation was provided for French and Russian (Figure 18-1).

Actual Program: Pre-1939 Memoirs of Astronautics

L. Crocco (USA), "Early Research on Rockets and Propellants" (presented by P. Santini)

L. Damblanc (France), "Mes Travaux Theoriques et Experimentaux de 1929 a 1938 Qui Ont Accelere la Mise au Point des Fusees Astronautiques a Multi-Etages" (presented by L. Blosset)

O. Lutz (German Federal Republic), "A Historical Review of Developments in Propellants and Materials for Rocket Engines"

F. J. Malina (USA), "Memoir on the GALCIT Rocket Research Project 1936-1938"

H. Oberth (German Federal Republic), "My Contributions to Astronautics" (presented by W. Buedeler)

G. E. Pendray (USA), "Early Rocket Developments of the American Rocket Society" (presented by F. Durant)

Yu. A. Pobedonostzev (USSR), "On Early Experiments with Air-Jet Engines in Wind Tunnels and in Flight" (presented by I. A. Merkulov)

* Sokolsky, V. N.: "The Role of History in the Academy," *Acta Astronautica*, Vol. 15, No. 10, pp. 761-762, 1987.

A. I. Polyarny (USSR), "On Some Work Done in Rocket Techniques during the Period 1931-1938" (presented by I. A. Merkulov)

H. E. Ross (UK), "The British Interplanetary Society's 1937-1938 Astronautical Studies" (presented by L. Shepherd)

E. S. Shchetinkov (USSR), "Memoir on the Development of Winged Rockets during the Period 1930-1938" (presented by V. N. Sokolsky)

E. A. Steinhoff (USA), "Early Rocket and Spacecraft Performance, Guidance and Instrumentation Developments"

M. K. Tikhonravov (USSR), "From the History of the Making of the First Soviet Liquid Propellant Rocket" (presented by V. N. Sokolsky)

R. C. Truax (USA), "Annapolis Rocket Motor Development, 1936-1938" (presented by F. Durant).

XVIIIth International Astronautical Congress	IAA/Hist.Symp.I/1 *0 June 1967
<u>"PRE-1959 MEMOIRS OF ASTRONAUTICS"</u>	
First International Symposium on the History of Astronautics Organized by the International Academy of Astronautics with the cooperation of the International Union of the History and Philosophy of Science Belgrade, Yugoslavia - 26 September 1967	
Chairman: Ch. Dollfus (France), Chairman Committee on the History of the Development of Rockets and Astronautics	
<u>PROVISIONAL PROGRAMME</u>	
EARLY RESEARCH ON ROCKETS AND PROPELLANTS	L. Crocco (U.S.A.)
MES TRAVAUX THEORIQUES ET EXPERIMENTAUX DE 1929 A 1958 QUI ONT ACCELERE LA MISE AU POINT DES FUSEES ASTRONAUTIQUES A MULTI-ETAGES	L. Damblanc (France)
A HISTORICAL REVIEW OF DEVELOPMENTS IN PROPELLANTS AND MATERIALS FOR ROCKET ENGINES	O. Lutz (German Federal Republic)
MEMOIR ON THE GALCIT ROCKET RESEARCH PROJECT 1936-1938	F.J. Malina (U.S.A.)
MY CONTRIBUTIONS TO ASTRONAUTICS	H. Oberth (German Federal Republic)
EARLY ROCKET DEVELOPMENTS OF THE AMERICAN ROCKET SOCIETY	G.E. Penéray (U.S.A.)
ON EARLY EXPERIMENTS WITH AIR-JET ENGINES IN WIND TUNNELS AND IN FLIGHT	Yu. A. Pobedonostzev (U.S.S.R.)
ON SOME WORK DONE IN ROCKET TECHNIQUES DURING THE PERIOD 1931-1938	A.I. Polyarny (U.S.S.R.)
THE BRITISH INTERPLANETARY SOCIETY'S 1937-1938 ASTRONAUTICAL STUDIES	H.E. Ross (U.K.)
MEMOIR ON THE DEVELOPMENT OF WINGED ROCKETS DURING THE PERIOD 1930-1938	E.S. Shchetinkov (U.S.S.R.)
THE EARLY HISTORY AND CONCEPTS OF GUIDANCE, CONTROL, FLIGHT DYNAMICS, INSTRUMENTATION AND TESTING OF ROCKETS AND SPACECRAFT	E.A. Steinhoff (U.S.A.)
FROM THE HISTORY OF THE MAKING OF THE FIRST SOVIET LIQUID PROPELLANT ROCKET	M.K. Tikhonravov (U.S.S.R.)
ANNAPOLIS ROCKET MOTOR DEVELOPMENT, 1936-1938	R.C. Truax (U.S.A.)
EARLY ROCKET AND SPACECRAFT PERFORMANCE, GUIDANCE AND INSTRUMENTATION DEVELOPMENTS	

Figure 18-1: The Original IAA "Provisional Programme" for the 1st IAA History Symposium in Belgrade 1967, with the late change of title for the paper by E. Steinhoff. Credit: Å. Ingemar Skoog archives.

Expectations for this first international history symposium on rockets and astronautics were high as the provisional program (Figure 18–1) contained a number of well-known experts like Hermann Oberth, Luigi Crocco, Louis Damblanc, Edward Pendray, and Mikhail Tikhonravov from the pre-World War II era. Unfortunately (above actual program), only Otto Lutz, Frank Malina, and Ernst Steinhoff appeared in person to present their papers (Figure 18–2). The rest of the papers, although written by astronautical pioneers of greater age, were presented by colleagues, rocket experts, or scholar historians on behalf of the non-present authors.

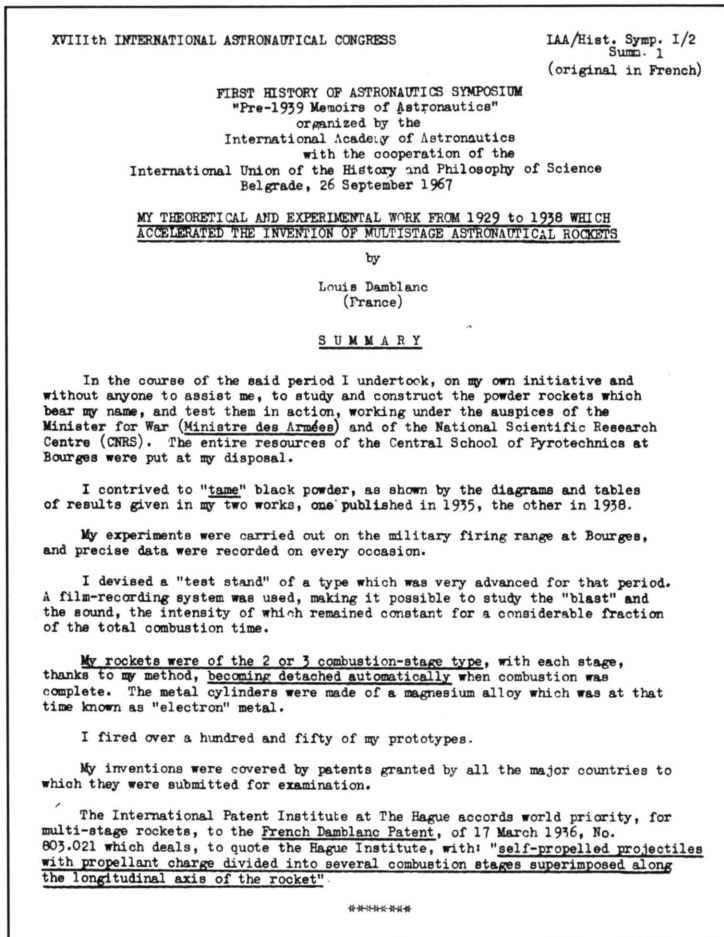


Figure 18–2: First IAA History Symposium abstract from 1967. Credit: Å. Ingemar Skoog archives.

The morning meeting was chaired by Frederick C. Durant III from the National Air and Space Museum; in the audience were a number of rocket experts from the pre-World War II era, which lead to interesting discussions, additionally boosted by the artefacts from the American Rocket Society (ARS) tests in the 1930s brought to Belgrade by Durant. On this occasion, the well-known photo of Fred Durant and J. M. Kooy was taken (Figure 18–3).



Figure 18–3: J. M. J. Kooy (The Netherlands) and Frederick C. Durant III (USA) discussing ARS rocket engines at the First IAA History Symposium, Belgrade, Yugoslavia, 26 September 1967. Credit: IAF.

IV. Evolution of the IAA History Symposia

An international history symposium has been held annually ever since in cities around the world, wherever the International Astronautical Congress has convened. These symposia were originally titled “New Contributions to the Literature on Rocket Technology and Astronautics before (year)” until the 13th symposium in 1979. Thereafter it carried the name International History of Astronautics Symposium, or, on occasion, the IAA Symposium on the History of Astronautics.

For the first symposia, the papers were solicited by the Chair of the IAA History Committee and the symposium chairperson. Generally, at the meeting of the History Committee a year in advance, suggestions and propositions for authors and/or topics were discussed and the Chair of the History Committee then sent letters to proposed authors to solicit papers. Because the 20-year rule was in force, no papers from the post-Sputnik 1 era could be obtained before 1977 and this is also reflected in the decrease of papers after some eight years as it became more and more difficult to find papers from the time before the 1950s (Figure 18-4).

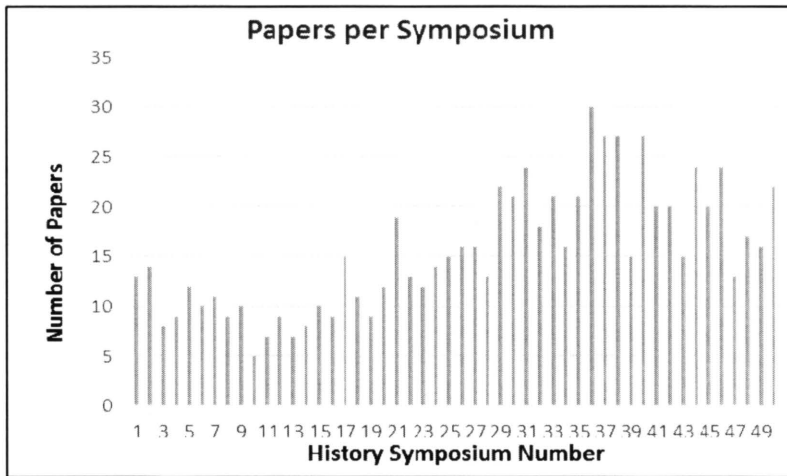


Figure 18-4: Evolution of number of papers presented at the History Symposia.

On entering the Space Age in 1957, the number of unsolicited papers started to increase and by 1995 the symposia increased from two to three sessions as more than 20 papers per symposium appeared on the program. By 2002, four sessions became necessary to handle the 30 papers presented.* Since 2012, the history symposia have consisted of three sessions and some 20 papers. Fluctuations are clearly visible, mainly caused by symposia locations far from Western Europe or the United States.

Over time, IAA history papers divided into recognizable periods: ancient times through the 19th century; the 20th and 21st centuries, broken down among action and events that took place before 1945, after 1945 to 1957, and after 1957 (which marked the beginning of the Space Age). Proceedings of the IAA History

* The number of papers given here are the actual ones presented. The number in the IAC programs was generally higher, as over the years some 20 percent were no shows.

Symposia have been published in English, the first two by the National Air and Space Museum, the next four by the National Aeronautics and Space Administration, and then all that followed in the History Series of the American Astronautical Society (AAS) and its publishing arm, Univelt Inc., under an agreement secured with the IAA. Today, only a few session chairs and authors from the very first symposia remain alive to provide a personal description of these symposia.

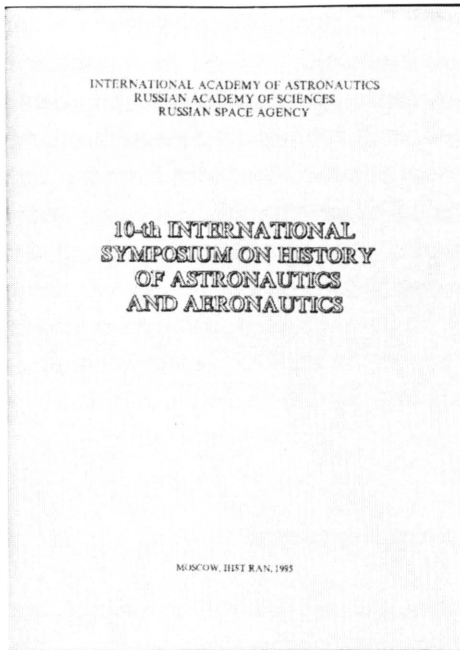
Attendees and presenters have included scholars, pioneers of rocketry and astronautics, and specialists in science and engineering associated with rocketry and spaceflight. Over the years, the history of astronautics in some 37 countries have been presented and published in 773 papers via the IAA History Symposia 1967–2016. (An overview of the 50 IAA History Symposia 1967–2016 is given in Table 18–1 at the end of this chapter.)

V. “Other” IAA History Symposia

The Soviet Academy of Sciences, Institute of History of Science and Technology, conducted a first history symposium, “Symposium on History of Astronautics and Rocketry dedicated to the 20th anniversary of the beginning of the Space Era,” on 19–23 September 1977 in Moscow. Organizers were Academician B. M. Kedrov and Professor Viktor N. Sokolsky. An invitation was sent to the members of the IAA History Committee.

This symposium was the first in a series of history symposia organized by the Academy of Sciences. One of the sessions of these symposia was dedicated to “The International Cooperation in the Field of Exploration and Uses of Space.” From the third symposium in 1986 the organizers were Academician B. V. Rauschenbach and Professor V. N. Sokolsky, and invitations always went out to the IAA History Committee members. For the eighth symposium, the name changed to the International Symposium on History of Aviation and Cosmonautics.

The Russian Academy of Sciences in the spring of 1994 offered to the IAA Scientific Program Committee the possibility to cosponsor the 10th International Symposium on History of Astronautics and Aeronautics, “Aerospace Activities: Past—Present—Future” in Moscow on 20–27 June 1995 (Figure 18–5). Thus, the International Committee on the History of Astronautics and Rocketry of International Academy of Astronautics became one of the co-organizers of this symposium. Thirteen members of the IAA History Committee were members of the Scientific Program and Organizing Committee, and a few also served as session chairs. Some 300 papers were included in the final program.



SCIENTIFIC PROGRAM AND ORGANIZING COMMITTEE	
Honorary Chairman -	B.V.Rauschenbach (Russia)
Honorary vice-Chairman -	F.Durant (USA)
	Ju.N.Koptev (Russia)
Chairman -	B.E.Chertok (Russia)
Vice-Chairmen	F.Orday (USA)
	V.N.Sokolaky (Russia)
	J.Villain (France)
General Secretary -	A.K.Medvedeva (Russia)
Member:	
	V.V.Alawerdov (Russia)
	J.Becklake (UK)
	I.V.Bestuzhev-Lada (Russia)
	Ju.V.Birjukov (Russia)
	V.S.Budnik (Ukraine)
	G.S.Bjushgens (Russia)
	G.G.Chernyi (Russia)
	O.G.Gasenko (Russia)
	A.A.Gurshstein (Russia)
	Ph.Jung (France)
	G.Kennedy (USA)
	G.S.Khosin (Russia)
	V.V.Kazjutinski (Russia)
	A.I.Konjukhov (Ukraine)
	Ju.N.Koptev (Russia)
	S.S.Koranov (Russia)
	R.Larder (France)
	R.Launius (USA)
	L.V.Leskov (Russia)
	A.A.Leonov (Russia)
	G.E.Lozino-Lozinski (Russia)
	A.I.Medvedchikov (Russia)
	Ju.A.Mozzhorin (Russia)
	A.E.Nicagossian (USA)
	E.Roth-Oberth (Germany)
	M.Sharpe (USA)
	A.I.Skoog (Sweden)
	D.A.Sobolev (Russia)
	M.Subotowicz (Poland)
	A.D.Ursul (Russia)
	V.F.Utkin (Russia)
	F.Winter (USA)
Coordinator -	I.G.Medvedev
6	

Figure 18–5: Program of the Russian 10th International Symposium on History of Astronautics and Aeronautics. Credit: Å. Ingemar Skoog archives.

The 11th and last Russian International Symposium on History of Astronautics and Aeronautics, devoted to the 40th Anniversary of Sputnik 1, was held on 4–9 June 1997 in Moscow and St. Petersburg. The advanced age of the initiators and promoters of this series of symposia and a lack of funding prevented holding these symposia in subsequent years as well as any publication of the proceedings.

VI. The IAA History Symposia, Constraints and Jubilees

From a 20-Year Rule to a 25-Year Rule

For the presentations at the first IAA History Symposium during the 18th International Astronautical Congress 1967 in Belgrade, the committee selected the “Pre-1939” period because of concerns over security restrictions. Wishing to avoid any national security issues and the classification review process that attended them, Soviet and American representatives on the History Committee in a committee meeting in October 1968 originally agreed on a “20-Year Rule” that would be imposed on all historical presentations—that is, all papers would be

restricted to events that transpired and ended earlier than 20 years before each IAA History Symposium. While this rule largely avoided security classification restrictions, it confined the first 10 symposia to pre-World War II and early activities in the 1950s. Nevertheless, despite the ongoing Space Race between the United States and the Soviet Union, a number of papers on early, less well-known Soviet-Russian contributions to rocketry and astronautics were presented at the first symposium in 1967. The History Committee in the 1980s extended the 20-year rule to a 25-year rule.* In the past 15 years, the 25-year rule has been brought up a few times, but the majority of the IAA History Committee members favor this rule. Presently the 25-year rule is handled such that the event/project/activity must have started well before 25 years ago, but the end results might be younger than the 25-year limit.

No Paper—No Podium

In the late 1960s and 1970s a “No Paper—No Podium” rule was not explicitly defined for the IACs. However, a “limited” regulation informed authors, according to IAF *Preparation and Conduct of Session*,[†] to send to the congress organizer before it convened three copies of the paper manuscript for distribution to session chairs and interpreters. Furthermore, it “recommended that authors provide 50 or more pre-prints of their papers which may be distributed by the Chairman at the beginning of the session.” When, in the early 1980s, the IAF began to print and sell the papers at the congress, it became more important to ensure that a maximum of papers was available at the congress site, and the IAF adopted a clear rule of “No Paper—No Podium.” This rule was of course also applied to the IAA History Symposia (see, e.g., IAA History Committee Minutes from Dresden, 8 October 1990).

By 1990 this rule had been extended to “No Paper—No Podium, No Podium—No Publication.”[‡] This was intended to restrict cases where authors provided preprints, but did not appear to present the paper, but still expected it to be published, as it was available as a preprint at the congress.

These rules had a very important meaning for the IAA History Symposia, since it was always the intent to publish all presented papers in the IAA History Symposia Proceedings right from the very first symposium in 1967. And with the increasing size of the symposia, it became increasingly difficult to get all papers

* See Appendix 1: An Overview of the Use of the 20-/25-Year Rule in the IAA History Committee.

[†] IAF *Preparation and Conduct of Sessions*. Instruction to Authors. IAF/XXth Cong/8, 6 June 1969.

[‡] IAF paper acceptance letters. IAF/XXXX1st Cong/2, May 1990.

for the proceedings together if not submitted ahead of the congress. In 2004, all papers were made available to the congress participants by way of a CD, and the upload could be followed on the Internet and the symposia organizers could take actions against any “No Paper” ahead of the congress.

Jubilees

Traditionally, history papers at the IACs have been part of the IAA History Symposia consisting of two to four sessions dedicated to selected topics (e.g., memoirs, technical and scientific history, organizational history, or national history). In 2006, 40 years after the first symposium, history papers and events began to take place at the IAC outside the IAA History Symposium, addressed to all congress participants.

The first such event was an IAC “High Light Lecture” by Roger Malina about his father in 2006, “Frank J. Malina: Astronautical Pioneer, 1912–1981, Dedicated to International Cooperation and the Peaceful Uses of Outer Space.”

In 2007, at the IAC in Hyderabad, the First History Plenary at an IAC took place honoring the 50th anniversary of the launch of Sputnik 1. Plans called for official participants from the Soviet Union and US space programs of 1957 to present their memoirs of the Space Race and the Sputnik 1 launch. The advanced age of the planned participants and the location of the meeting in India ultimately prevented their participation and the program had to be revised:

- Introduction with a historical perspective by Professor Peter Jankowitsch, Austria
- “Historical background on the first man-made space object” by Dr. Asif Siddiqi, USA
- “Historical Situation Seen from the Soviet Union” by Dr. Igor Sorokin, RSC Energia, Russia
- Video Message from Professor Boris Chertok, RSC Energia, Russia
- “Europe’s Position at the time of Sputnik 1” by Dr. Karlheinz Kreuzberg, ESA.

Other jubilees, like the 50th Anniversary of IAA (2010) and the 50th IAA History Symposium (2016) have been integrated as special sessions of the regular IAA History Symposia. In all cases, the lectures presented at these special events and jubilees are included in the proceedings of the symposia.

VII. Those Who Shaped IAA History Symposia

During the past fifty years, a number of prominent aerospace scholars and researchers contributed to the success of the IAA History Symposia and subsequent publication of its papers, and they deserve to be recognized (see Table 18–2 at the end of this chapter). They fall principally into three categories: Symposium Coordinators, Session Chairs, and Rapporteurs. Coordinators and Session Chairs were positions in the congress organization from the very first symposium in 1967. Coordinators are responsible for organizing the symposia and selecting the paper to be presented (and in some instances soliciting papers). The Session Chairs assist in the selection of papers and presided over the presentation of papers at the symposia. The position Rapporteur was created in 1982 when IAF/IAC introduced a new session reporting system to provide better feedback on the conduct of the congress. The Rapporteur follows the presentations during the session and helps the Chair make the necessary assessments for the session report, which contains information on paper and presentation quality and a recommendation for paper publication in *Acta Astronautica*. The names in each category appear in Table 18–2 alphabetically with national affiliation; those deceased appear in bold print and include the year of their birth and death. Biographical information for deceased individuals can be found below.

Lise Blosset (1911–1974, France)

A Master of Sciences and Doctor of Law she joined in 1962 the French Space Agency (CNES) in the Department of Information and Documentation. She started the agency journal *Recherche Spatiale* and promoted French youth rocket activities in the 1960s through the cooperation of CNES with the Association Nationale des Clubs Scientifiques. She was appointed Deputy Director for International Relations in 1969 and later Deputy Director of the Cabinet of CNES Director General. She was an IAA corresponding member and member of the IAA History Committee (Figure 18–6).

Werner Buedeler (1928–2004, Germany)

German science and technology writer with astronomy and astronautics as his main topics. Well known TV-journalist during the Apollo and Skylab flights. Publisher of the journal *Weltraumfahrt/Raketentechnik*. He authored a large number of space books, in particular *Geschichte der Raumfahrt (History of Spaceflight)*. He also served as a member of the board of the German Society for Aeronautics and Astronautics (DGLR). He served as a member of the IAA History Committee (Figure 18–7).



Figure 18–6: History Committee meeting on October 8, 1970, in Constance. Front row (left to right): R. Cargill Hall, Lise Blosset, Frank J. Malina, Irene Sanger-Bredt, George S. James. Back row (left to right): . Ingemar Skoog, Teofil M. Tabanera, Rudolf Pešek, A. Busemann, Władysław Geisler. Credit: . Ingemar Skoog archives.



Figure 18–7: IAA luncheon during 35th IAC, Amsterdam 1974. . Ingemar Skoog, George S. James, Eilene M. Galloway, Werner Buedeler. Credit: . Ingemar Skoog archives.

Charles Dollfus (1893–1981, France)

A balloon pilot and aeronautical writer, he worked to establish the Paris Air Museum (later Musée de l'air et de l'espace) at Le Bourget in 1919. Dollfus served as the first chairperson of the IAA Committee on History of the Development of Rockets and Astronautics (1961–1971). IAA member and member of the IAA History Committee.

Frederick C. Durant III (1916–2015, USA)

Frederick Durant was born and grew up in Ardmore, Pennsylvania. He received a B.S. degree in Chemical Engineering from Lehigh University in 1939, and went to work as a chemical engineer for E. I. Du Pont de Nemours & Company in New Jersey. In early 1942, Durant enlisted in the US Navy as an aviation cadet and during World War II served as a flight instructor and test pilot over the Great Lakes. After the war, he retired as a Commander in the Naval Reserve, and in 1947 began a career in rocket engineering with Bell Aircraft Corporation in Buffalo, New York. Durant was subsequently Director of Engineering at the Naval Rocket Test Station in Dover, New Jersey (1948–51). During this period, he became an ardent supporter of spaceflight and in 1950–51 supported the organization and growth of the International Astronautical Federation (IAF). Durant served as its second president (1953–55), while also becoming President of the American Rocket Society in 1953. In the years that followed, he held other aerospace positions with Arthur D. Little, Inc., and Avco-Everett Research Laboratory before being named Assistant Director of the Smithsonian Institution's National Air and Space Museum in 1965. Over the next 15 years, Durant markedly increased its collection of rocket and spacecraft artefacts and established its space art collection. He retired from the museum in 1985, although he maintained an active role in the IAF and IAA until the end of the century. He was an IAA member and member of the IAA History Committee (Figure 18–8).

Eugene M. Emme (1919–1985, USA)

Born and raised in Sioux City, Iowa, Gene Emme graduated from Morningside College in that city in 1941. During World War II, he served as a Navy aviator in the Pacific Theater and, after the war, transferred to the US Air Force Reserve while graduating from the University of Iowa in 1949 with a Ph.D. in History. Emme first served as a historian on the civilian faculty of Air University in Montgomery, Alabama (1949–58), then as a project director in operations research at the Office of Civil Defense in Battle Creek, Michigan (1958–59). Appointed first Historian of the newly formed National Aeronautics and Space Administration (NASA) in 1959, Emme established institutional support for NASA history within the agency and laid the documentary and interpretive foundations

of the new discipline of space history. Among other publications, he authored *The Impact of Air Power* (1959) and *A History of Space Flight* (1965). The founding chairman of the National Space Club History Committee, Emme also served on the history committees of the American Institute of Aeronautics and Astronautics and the American Astronautical Society. He was an IAA member and member of the IAA History Committee (Figure 18–8).



Figure 18–8: History Committee meeting on October 11, 1972, in Vienna. Front row (left to right): Lise Blosset, A. Mikhailov, E. Cambi, Å. Ingemar Skoog, Frank J. Malina, Rudolf Pešek. Back row (left to right): Frederick C. Durant III, Eugene M. Emme. Credit: Å. Ingemar Skoog archives.

Hervé Moulin (1946–2016, France)

A Master in Business Law and a Doctor in History from the Sorbonne, he cofounded the French youth rocket association (Association Nationale des Clubs Scientifiques, ANCS). He also was a founder of the Institut Français d’Histoire de l’Espace (IFHE), and published many reports on French space and rocket history, including the history of CNES, and *The Fifty Years of IAF* (2001) and *IAA History Symposium—General Index, 1967–2000* (AAS History Series, 2009). IAA member and member of the IAA History Committee (Figure 18–9).



Figure 18–9: History Symposium on October 5–7, 1999, in Amsterdam. From left to right: Frederick C. Durant III, Leslie Shepherd, Frederick I. Ordway III, Dale Fester, Hervé Moulin. Credit: Hervé Moulin archives.

Frederick I. Ordway III (1927–2014, USA)

Born in New York City and educated in Connecticut, New York, and Maine, Ordway began reading science fiction at 11 and became the youngest member of the fledgling American Rocket Society at age 13. After serving as a naval reserve officer at the end of World War II, he entered Harvard University, graduating with a B.S. degree in 1949. Shortly after graduating, Ordway attended the first International Astronautical Federation Congress in Paris in 1950, where he met and became friends with Arthur C. Clarke, the man who first described and promoted communications satellites. Back in the United States, Ordway accepted a position with Reaction Motors, Inc., a pioneering rocket engine manufacturer, in 1951, then moved to the Guided Missiles Division of Republic Aviation. In 1955, he met and became a lifelong friend of space pioneer Wernher von Braun, and decided to join the von Braun team at the Army Ballistic Missile Agency (later NASA's Marshall Space Flight Center) in Huntsville, Alabama, where he eventually served as Chief of the Space Information Systems Branch. In 1965 Arthur C. Clarke urged movie producer Stanley Kubrick to sign Ordway as a technical advisor for his film *2001: A Space Odyssey*. In that two-year assignment, he developed the concepts and basic designs for the spacecraft featured in the movie. Back in Huntsville in 1967, Ordway joined the faculty of the University of Alabama in Huntsville, and in 1972 he moved to Washington, DC,

where he would become a Special Assistant to Robert C. Seamans, Director of the newly formed Department of Energy. He remained as an official in that department well into the 1990s when he retired to Huntsville. Ordway produced 30 books on spaceflight and its history, some co-authored with Wernher von Braun, and 250 articles. Throughout his life he maintained a close relationship with the International Astronautical Federation, participating in virtually every federation congress from 1950 on. He was an IAA member and a member of the IAA History Committee (Figure 18–9).

Milton W. Rosen (1915–2014, USA)

Rosen earned a B.S. degree in Electrical Engineering from the University of Pennsylvania in 1937 and in 1940 joined the Naval Research Laboratory (NRL) in Washington, DC. At the NRL, during World War II, he worked on missile guidance systems. After the war, he became involved in liquid-propellant high altitude sounding rockets for scientific research of the upper atmosphere. In late 1947, he was named NRL director of the Viking sounding rocket project. Built for NRL by the Glenn L. Martin Company, twelve of these research rockets were launched between 1949 and 1955. When, in May 1955, President Eisenhower authorized a scientific earth satellite as part of the International Geophysical Year (IGY 1 July 1957 – 31 December 1958). NRL competed for this project and won it with the Vanguard rocket, a derivative of the Viking. Rosen was selected as Vanguard’s technical director, which eventually did launch an earth satellite in March 1958 (Figure 18–10).



Figure 18–10: Milton W. Rosen (1915–2014).
Courtesy National Air and Space Museum.

Mitchell R. Sharpe Jr. (1924–1997, USA)

Born in Knoxville, Tennessee, Sharpe graduated high school in Montgomery, Alabama, and in 1942 matriculated at Auburn University. Conscripted into the US Army shortly thereafter, during World War II he served in the infantry in France, Belgium, and Germany. Back home in 1946, Sharpe re-entered Auburn University and earned B.S. (1949) and M.S. (1954) degrees in English and Journalism. In between those dates, while holding an ROTC commission, he served in the Korean War as a 2nd Lieutenant in the field artillery. Employed as a technical writer and editor at the US Army Rocket and Guided Missile Agency in Huntsville, Alabama, Sharpe spent the next five years shuttling between assignments at the guided missile agency and nearby Army Ballistics Missile Agency (ABMA) led by Wernher von Braun. He formally joined the von Braun team in 1960 when ABMA became NASA's Marshall Space Flight Center. At the center, he came to know and work with Fred Ordway, and they collaborated on various writing projects. Sharpe retired from federal service in 1974 and became a freelance technical writer. He authored or co-authored eight books, including *The Rocket Team* and *Introduction to Space Flight*, as well as numerous articles on astronautics. Sharpe won the National Space Club's Goddard Essay Award twice, in 1969 and 1975, and received the Gold Medal of the Tsiolkovsky National Museum for the History of Astronautics in the Soviet Union. He was a fellow of the British Interplanetary Society, a member of the American Institute of Aeronautics and Astronautics, and a corresponding member of the International Academy of Astronautics and member of the IAA History Committee (Figure 18–11).

Victor N. Sokolsky (1924–2002, USSR/Russia)

A trained historian and scholar, in 1961 he became the head of the newly created History of Aviation and Cosmonautics Department of the Institute of History of Sciences and Engineering at the then Soviet Academy of Sciences, today the Academy of Sciences of the Russian Federation. He initiated the collection and publication of selected works of the most important Russian space scientists and engineers such as Tsiolkovsky, Tsander, Korolev, and others, and thus made this historical information available to a larger international audience. His own early scientific historical research work was published in 1963 in a seminal book on the *Russian Solid-Fuel Rockets*, which was translated into English in 1967. In 1963, he became the first Soviet member of the History of the Development of Rockets and Astronautics Committee of the International Academy of Astronautics (IAA), and remained a member until his death in 2002. In 1968, he was elected Corresponding Member of the IAA and in 1969 a full Member. Sokolsky was a strong supporter of the IAA History Committee's work and served first as vice-chair from 1970 until 1977 when he became co-chair of the committee,

serving in that capacity until 1993. He participated in all IAA History of Astronautics Symposia from 1967 until 1999, and presented a number of his own papers over the years as well as serving as a session chair for all symposia from 1971 until 1999. He also served as an editor of the early IAA History Symposia Proceedings translated into Russian and published by the Soviet Academy of Sciences (Figure 18–11).



Figure 18–11: History session on September 11, 1981, in Rome. From left to right: Viktor N. Sokolsky, Frederick C. Durant III, Mitchell R. Sharpe. Credit: Philippe Cosyn archives.

Shirley Thomas (1920–2005, USA)

Born in Glendale, California, Thomas earned a B.A. degree in 1960 and a Ph.D. in Communications in 1967 from the University of Sussex in England. Besides writing and producing shows in Hollywood for radio and television, she served for three decades as a professor in the Master of Professional Writing Program at the University of Southern California. Thomas authored 15 books including an eight-volume series giving profiles of the key leaders in space research, *Men of Space: Profiles of the Leaders in Space Research, Development, and Exploration* published between 1960 and 1968. She was an associate fellow and strong advocate for the national Society for Technical Communication. Thomas organized and chaired the Woman’s Space Symposia from 1962–73, when she turned to organize the Theodore von Kármán Stamp Committee, which succeeded in having a US stamp issued in his honor in 1992. She also founded the Aerospace Historical Society that has for 22 years presented the International von Kármán Wings Award to outstanding contributors to the world of aerospace. Thomas was a fellow in the British Interplanetary Society, a member of IAA, member of the IAA History Committee and member of the AAS History Committee (Figure 18–12).



Figure 18–12: History Committee meeting on October 8, 1989, in Málaga, Spain. George S. James, Randy Liebermann, Shirley Thomas. Credit: Å. Ingemar Skoog archives.

VIII. Those Who Contributed to an Evolving IAA History Committee and Symposia

Over the years, individuals involved in astronautics have contributed their efforts to the IAA History of Astronautics Committee and/or its symposia. They are identified below, arranged among astronautical pioneers and the principal historians and researchers who have participated in the History Committee and contributed to the literature. Again, names appear alphabetically. Deceased astronautical pioneers the year of birth and death are identified followed by a brief biographical statement.

Astronautical Pioneers at IAA History Symposia*

Alexandre Ananoff (1910–1992, France)

Space expert, science writer and space promotor of Russian-French decent. Ananoff was the organizer of the 1st International Astronautical Congress, September–October 1950 at Sorbonne in Paris, which initiated the creation of the International Astronautical Federation. In the same year, he published his book *L’Astronautique*. He was a pioneer in educating the general French public in astronautics through articles and lectures. In the 1960s, he turned his interests toward art to become an expert in French, 18th-century painting. In 1978, he published his last work in the field of astronautics, his biography, *Memoirs of an Astronaut*.

* Astronautical pioneers who had no interaction with the IAA and/or its History Committee will not be found among these pioneers. Appearing here are those astronautical pioneers who presented their biographies and/or papers on the development of rocketry and astronautics at an IAA History Symposium.

Jean Jacques Barre (1901–1978, France)

Graduating from the École Polytechnique, in 1924, he was attached to the French Artillery School. In 1927, he met Robert Esnault-Pelterie and a fruitful collaboration on rocket studies and development began. During World War II, he was engaged in developing unguided solid propellant anti-aircraft rockets, then turned to liquid oxygen and gasoline propelled rockets. After the war, he served at the Laboratoire de Recherches Ballistiques et Aérodynamiques (LRBA) and developed the prototype for a ballistic missile called EOLE. Tests conducted in the early 1950s at Hammaguir, in today's Algeria, proved unsuccessful.

Boris Evseyevich Chertok (1912–2011, USSR/Russia)

Born in Poland, his family moved to Moscow soon after his birth. He started working as an electro engineer in an avionics department of an aircraft manufacturer and in 1940 he received his degree from the faculty of electro engineering of the Bauman Technical University in Moscow. During the war, he worked on guidance and controls systems and his first rocket application was the ignition and control system for the Bereznik-Isayev BI-1 rocket interceptor. In April 1945, he was assigned to the special team that was investigating the German rocket technology, where he met Sergei Korolev for the first time. In 1946, he was assigned to the institute NII-88 led by Korolev, and was responsible for guidance and control systems. In 1947, he returned to the Soviet Union and worked at the launch complex Kapustin Jar on the guidance and control systems for the first intercontinental ballistic missile, the R-7. In 1956, he became Deputy Chief Designer at Korolev's design bureau OKB-1, responsible for controls systems and he developed the controls systems for the N-1 lunar rocket and the manned spacecraft Vostok, Voshkod and Sojus. He later became the Chief Designer of the Energia Rocket and Space Corporation and retired in 1992. He published in the 1990s the four-volume memoir, *Rocket Men*, which gives a unique insight into the development of the Soviet space program.

Arthur C. Clarke (1917–2008, UK)

Born to a farming family in the coastal town of Minehead in southwestern England, Clarke became intrigued with science and astronomy at an early age. He fabricated a small telescope with which to scan the stars, and avidly read science fiction magazines. After his father unexpectedly died, the family endured financial hardships that precluded any advanced education. On graduating from middle school in 1936, Clarke left for London to find work. There he took a job in a government bureau and joined the British Interplanetary Society (BIS). From 1941 until the end of World War II, he served as a radar technician for the Royal Air Force, which was among the first services to use radar for Ground Controlled

Approach to guide airplanes to land in inclement weather. In 1945, Clarke published a seminal article "Extra-Terrestrial Relays" in *Wireless World*, in which he postulated how a geostationary satellite system could transmit radio and television signals around the world. He served as chairman of the BIS from 1946 to 1947 and again from 1951 to 1953. Granted a fellowship to King's College London after the war, he graduated in 1948 with honors in math and physics. Clarke subsequently wrote a number of nonfiction books describing the technical details and societal implications of rocketry and spaceflight. Most notable among them may be *Interplanetary Flight* (1950), *The Exploration of Space* (1951), *Profiles of the Future* (1962), and *The Promise of Space* (1968). In recognition of these contributions, the International Astronomical Union recognized the geostationary orbit at 36,000 kilometers (22,000 miles) above the equator as the "Clarke Orbit." Clarke moved to Sri Lanka (Ceylon) in 1956, eventually settling in the city of Colombo. The movie director Stanley Kubrick, who had read a Clarke short story "The Sentinel," collaborated with Clarke beginning in 1964 to produce a film based on it, *2001: A Space Odyssey* (1968), considered by many to number among the greatest movies ever made. He served as a television host for several Arthur C. Clarke television series in the 1980s, and continued to write and publish through the end of the century. He was fellow of the BIS and a member of the International Academy of Astronautics and its History Committee.

Luigi Crocco (1909–1986, Italy)

Studied mechanical engineering at the University of Rome, where he earned a Doctoral degree in 1936. He turned to rocketry and theoretical aerodynamics as a student. He became a professor at the University of Rome and published a number of articles on boundary layers. In 1949, he became visiting professor at the Princeton University, Department of Aeronautical Engineering. Upon the recommendation of Theodore von Kármán, Crocco was appointed to the Robert H. Goddard Chair of Jet Propulsion at Princeton and Director of its Guggenheim Jet Propulsion Center. At Princeton, he developed theories on combustion instabilities in rocket engines, studied fluid mechanical problems in viscous flows and contributed to the understanding of transonic and supersonic aerodynamics. He became the Fulbright Professor of the Faculté des Sciences at the University of Paris in 1968, and in 1970 professor at the École Centrale des Arts et Manufactures in Paris. He was a member of a number of academies and the recipient of the AIAA Pendray Award in 1965 and the Columbus International Prize in 1973. A consultant to government agencies and industry in Europe and the United States in the field of aerodynamics and propulsions, Crocco published some one hundred scientific papers in the field of aerodynamics and propulsion. He was an IAA member.

Louis Damblanc (1889–1969, France)

Damblanc graduated from the Ecole d'ingénieurs de Grenoble and soon turned to aeronautical studies. He designed the first twin-engine helicopter in 1926. He then pursued rocket studies and worked on solid propellant rockets at the Ecole de Pyrotechnie in Bourges. During the 1930s he engaged in all kinds of rocket applications and launched some 360 rockets. Damblanc also tested the performance and characteristics of solid propellants and the results were published in his book *Les Fusées Autopropulsives à Explosifs* in 1935. He was awarded the prestigious Prix International d'Astronautique in 1935. He received patents for a multistage rocket and a test stand for solid propellant rockets.

C. Stark Draper (1901–1987, USA)

An American aeronautical engineer, educator, and science administrator at the Massachusetts Institute of Technology (MIT) who became known as the “father of inertial navigation”; founder of the MIT Instrumentation Laboratory (later renamed the Charles Stark Draper Laboratory). During World War II, Draper developed anti-aircraft weapons. With support from Sperry Gyroscope Company and MIT, Draper and his students designed and built the Mark 14 gyroscopic lead-computing gunsight. After World War II, Draper turned to the development of self-contained navigation systems for aircraft and missiles. This work led to the creation of entirely self-contained inertial guidance systems. These precise devices could compute a vehicle's exact position from its initial position and acceleration; needing no further inputs, they were invulnerable to enemy countermeasures. He was an IAA member, the second IAA President (1963–1982) and a member of the IAA History Committee.

Kurt H. Debus (1908–1983, Germany and USA)

A German engineer who worked with von Braun on the V-2 rocket during World War II. Brought to the United States under Operation Paperclip, Debus continued with the von Braun team at the Army's Redstone Arsenal (later the Army Ballistic Missile Agency, ABMA), in Huntsville, Alabama. Appointed Director of NASA's Kennedy Space Center in 1962, he oversaw the design, construction, and operation of Saturn launch facilities at Cape Canaveral.

Konstantin Petrovich Feoktistov (1926–2009, USSR/Russia)

He graduated from the Bauman Technical University in 1949 and later earned a Doctoral degree in physics. Feoktistov first joined Mikhail Tikhonravov at the NII-4 design bureau and then in 1955 transferred to Korolev's OKB-1 together with Tikhonravov. He was a member of the team that designed the Sputnik satellites and the Soviet manned spacecraft Vostok, Voshkod and Soyuz. Selected as an engineer for cosmonaut training in 1964, he was soon assigned to the

first multi-man mission Voshkod 1, launched on 12 October 1964. He thus became the first civilian to make a spaceflight. Further cosmonaut training was later interrupted for medical reasons. He subsequently became the head of the OKB-1 team that designed the Salyut and Mir space stations. In 1990, he resigned from Energia to become a professor at the Bauman Technical University.

Oleg Georgievich Gazenko (1918–2007, USSR/Russia)

After graduation from the 2nd Moscow Medical Institute, Military Department, in 1941, Gazenko served during World War II as chief of an army hospital. Attached to the Institute of Aviation Medicine, Ministry of Defence in 1947, he studied the behavior of pilots in extreme climates. In 1955 Gazenko became engaged in the Soviet space program studying weightlessness and orbital flights. He trained the dog Laika for the Sputnik 2 flight in November 1957 and then continued working for the Vostok program. He helped train the first cosmonaut Yuri Gagarin for the Vostok 1 flight in 1961. In 1969, Gazenko was appointed head of the Institute of Medical and Biological Problems, and one main subject of his research work was the impact of zero-gravity on living organisms. Later he was involved in studies of crew health during long-term spaceflights and the return to earth. After his retirement as Lieutenant-General in the Soviet Air Force in 1988, he served as an adviser to the Soviet Academy of Sciences. Gazenko was co-editor-in-chief for the five volumes joint US/Russian publication *Space Biology and Medicine* (1993). He was an IAA member.

James J. Harford (1924–2014, USA)

James Harford was born and grew up in New Jersey, and attended Yale University where he received a B.S. in mechanical engineering during World War II. Subsequently, upon completing Columbia Midshipman School in 1945, he served in Japan as a Navy engineering officer on transport vessels. On separating from the Navy, Harford spent several years as an applications officer for the Worthington Corporation, then moved to Europe for two years working as a journalist for the US Marshall Plan. On returning to the United States, he accepted an appointment as head of the American Rocket Society (ARS) staff in 1953, four years before the launch of Sputnik 1. At that time, the ARS had two employees and published one journal. Ten years later in 1963, the ARS merged with the Institute of Aeronautical Sciences to form the American Institute of Aeronautics and Astronautics (AIAA). When Harford retired as Executive Director of the AIAA in 1989, the organization had 250 on staff, published five monthly journals, and possessed a membership of 35,000 aerospace engineers and managers. In retirement, he became a Verville Fellow at the National Air and Space Museum, conceiving and co-chairing the 1992 World Space Congress in celebra-

tion of an International Space Year on the 500th anniversary of the voyage of Christopher Columbus. Harford represented the ARS and later the AIAA at annual International Astronautical Congresses from 1959 in London, to 1998 in Melbourne. He authored *Korolev*, the first English language biography of Sergei Pavlovich Korolev who dominated the Soviet space program in its early years. He was an IAA member.

Heinz-Hermann Koelle (1925–2011, Germany and USA)

A fighter pilot during World War II, Koelle earned a Master's degree in mechanical engineering from University of Stuttgart in 1954 and a Doctoral degree from the Technical University of Berlin in 1963. He was a co-founder of the first post-war space society Gesellschaft für Weltraumforschung, GfW (Society for Space Research) in Stuttgart in 1948, and, as a member of the GfW Board, he participated in the first International Astronautical Congress (IAC) in Paris in 1950. In 1952, he organized the 3rd IAC in Stuttgart. In 1952, he started his own design office Astronautisches Forschungsinstitut Stuttgart (Astronautical Research Institute Stuttgart). Upon the recommendations of Wernher von Braun, Koelle was hired by the US Army Ballistics Agency in Huntsville, Alabama, in 1955 as Head of the Preliminary Design Branch, and was in 1958 a member of the Explorer 1 launch team. Koelle became Director of Future Projects at the NASA Marshall Space Flight Center in 1960. He accepted the position as professor for Space Technology at the Technical University in Berlin in 1965, succeeding Professor Eugen Sänger, a position he held until his retirement in 1991. He acted as Dean of the Department of Transportation of the Technical University of Berlin 1989–91. During his employment at MSFC he published as Editor-in-Chief the well-known *Handbook of Astronautical Engineering* (McGraw-Hill, 1961). He was an IAA honorary member.

Stanislav Nikolayevich Konyukhov (1937–2011, USSR/Ukraine)

Graduating from the Dniepropetrovsk State University in 1959, he was employed by the Yuzhnoye DO where he worked his way up to become Head of Department in 1964, Deputy Chief Designer of strategic missiles and launchers in 1974, Head and Chief Designer of Spacecraft in 1984, First Deputy Designer in 1986, and finally General Designer and General Director of Yangel Yuzhnoye DO from 1990 until his retirement in 2010. Konyukhov initiated the creation of and international implementation of the Sea Launch and Land Launch rocket systems with the Zenith, Dnepr, and Vega launch vehicles. A Doctor of Engineering in 1987, he held the chair of system design at the Institute of Professional Development at the Soviet Ministry of Machine Building. Konyukhov was an Academician of International Academy of Astronautics (1997).

Vladimir Kopal (1928–2014, Czech Republic)

A Professor of International Law at the Faculty of Law, West Bohemian University in Pilsen, Czech Republic. He served as a delegate of his country and later as a United Nations (UN) officer who participated in many sessions of the Committee on the Peaceful Uses of Outer Space (COPUOS), starting in 1962 and continuing throughout his life. Kopal was Chairman of the COPUOS Legal Subcommittee between 1999 and 2003 and 2008–2009. During the 1980s he served as Principal Officer of the United Nations in New York and Secretary to the COPUOS Scientific and Technical Subcommittee, and from 1983 through 1988 as Chief of the UN Outer Space Affairs Division. He participated in all the UN Conferences on the Exploration and Peaceful Uses of Outer Space (1968, 1982, and 1999) and also in the UN General Assembly five-year review of the implementation of the Third UN Conference (2004) recommendations. Kopal was conciliator and arbitrator under the UN Convention on the Law of the Sea and also held different positions in nongovernmental organizations. He also served as Legal Counsel of the International Academy of Astronautics (IAA), General Counsel of the International Astronautical Federation (IAF) and Vice-President of the International Institute of Space Law (IISL). A member of several foreign and international societies dealing with space matters and international law, he also lectured on general international law, law of international organizations, space law and law of the sea at several universities in his home country and abroad. He was an IAA member.

Frank J. Malina (1912–1981, USA)

A graduate student of Theodore von Kármán's at the Guggenheim Aeronautical Laboratory at the California Institute of Technology (GALCIT), Malina, with other students and acquaintances, in 1936 formed the GALCIT Rocket Research Project. Their work resulted in solid propellant rockets for jet-assisted takeoff (JATO) of airplanes during World War II. In 1944 Army Ordnance awarded GALCIT a contract to develop long range rocket weapons, which prompted founding of Caltech's Jet Propulsion Laboratory (JPL). Frank Malina served as its first director (1944–46). During his tenure, the laboratory produced the Private and Corporal missiles. He was an IAA founding member and member of the IAA History Committee (Figure 18–6 and 18–13).

Vasili Pavlovich Mishin (1917–2001, USSR/Russia)

He studied mathematics and graduated from the Moscow Aviation Institute (MAI) in 1941. First employed by the NII-1 research institute, Mishin was appointed to the group of Soviet rocket scientist sent to Germany in 1946 to study the A-4 rocket program where he met Sergei Korolev. Upon returning to the So-

viet Union, Mishin was appointed deputy to Korolev at OKB-1 in the Experimental Design Bureau and worked on several programs such as the R-7 ICBM and the Sputnik and Vostok spacecraft. In the N-1 Soviet lunar launch vehicle project he developed the control system for its 30 engines cluster in the first stage. When Korolev died in 1966 Mishin was appointed Chief Designer and head of the OKB-1 (now RSC Energia) and he inherited the ill-fated N-1 project. After four successive launch failures in 1969–72 he was removed as head of the OKB-1 in 1974 and returned to the MAI as head of the rocket department. The so called Mishin diaries published in 2014 give a unique insight into the Soviet space program for the period 1960–74. He was an IAA member.

Rudolf Nebel (1894–1978, Germany)

Graduating from the Technical University in Munich, Nebel started working for Siemens. In 1929, he became a member of the Verein für Raumschiffahrt. Together with Hermann Oberth, Klaus Riedel and Wernher von Braun, he manufactured a liquid propellant rocket as a promotion for the film *Frau im Mond* by Fritz Lang. In 1930, he started his own rocket research enterprise and founded the rocket launch site Rakettenflugplatz Tegel in Berlin-Reinickendorf. Here Nebel undertook development of liquid propellant rockets together with Klaus Riedel. Arrested by the Nazi Government in 1934, he was prohibited from any rocket activities on life time, and was forced to sell the two patents he held together with Klaus Riedel on liquid propellant rocket engines. He then became an engineering officer and after World War II Nebel engaged in lecturing on rockets. He published his book *Rakettenflug* in 1932.

Hermann J. Oberth (1884–1979, Germany)

In 1922, while studying physics at Göttingen, Oberth proposed a Doctoral Dissertation on rocket science, which was rejected as “utopian.” He had his rejected Dissertation published privately in 1923 as *Die Rakete zu den Planetenräumen (The Rocket into Interplanetary Space)*. Oberth expanded this work in 1929 to a 429-page book titled *Wege zur Raumschiffahrt (Ways to Spaceflight)*. Oberth joined the Verein für Raumschiffahrt (VfR), the German Spaceflight Society, where he worked on rocket experiments with a teenage Wernher von Braun. Later, in 1941, he went to work for von Braun at the Peenemünde Army Research Center rocket test range. In 1953, Oberth published his book *Menschen im Weltraum (Men into Space)*, in which he described his ideas for space-based reflecting telescopes, space stations, and space suits.

G. Edward Pendray (1901–1987, USA)

After completing graduate work at Columbia University, Pendray joined the *New York Herald-Tribune*, where he served as a reporter and science editor

for seven years. During this period, in 1930, Pendray and like-minded associates began work on rocket development and technology, which led to his founding the American Interplanetary Society, later renamed the American Rocket Society (ARS). He remained active in the ARS until it merged with the Institute of Aerospace Sciences in 1963 to form the American Institute of Aeronautics and Astronautics (AIAA). In 1936, Pendray joined the Westinghouse Electric Company as assistant to the president, remaining in that position until 1945 when he cofounded Pendray and Company, a public relations firm. He served as a senior partner at that firm for many years.

William H. Pickering (1910–2004, USA)

A New Zealand-born scientist, Pickering received his Ph.D. in physics from the California Institute of Technology in 1936, with a specialty in what is now known as radio telemetry. While teaching at Caltech, he became involved in missile research at the Jet Propulsion Laboratory (JPL). Named JPL Director in 1954, he served in that capacity until 1976. During his tenure, Caltech's JPL became a component of the newly-formed National Aeronautics and Space Administration in 1959, and it pioneered spaceflight at lunar distances and beyond. Pickering oversaw numerous deep space flight projects: The Ranger lunar probes, the Surveyor lunar landers, and the Mariner spacecraft that traveled to Mars and Venus. On retirement as Director, the Voyager missions were about to launch on tours of the outer planets and Viking 1 was on its way to land on Mars. He was an IAA member (Figure 18–13).

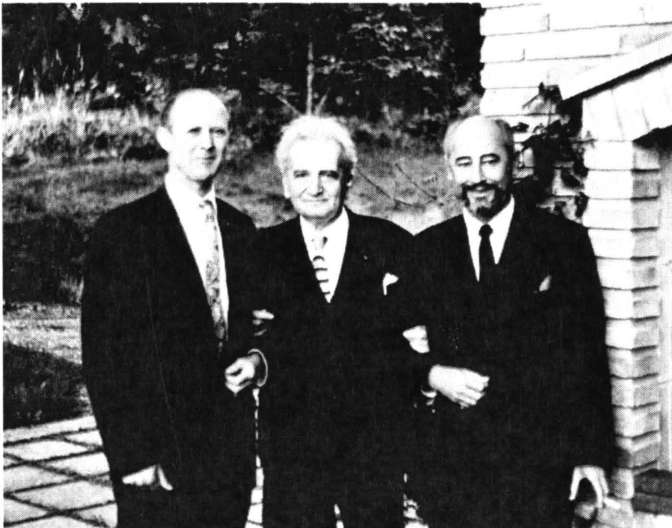


Figure 18–13: William H. Pickering, Theodore von Kármán, Frank J. Malina, circa 1961. Courtesy: JPL.

Boris Viktorovitsch Rauschenbach (1915–2001, USSR/Russia)

Academician Boris V. Rauschenbach was born in St. Petersburg to parents of German descent. He started studies at the Leningrad Institute of Civil Air Engineers in 1932 and after completing his studies moved to Moscow in 1936. There he joined the team of S. P. Korolev at RNII working on the stabilization of guided missiles, and soon became a lead engineer. In 1942, he suffered the same destiny as most Russian-Germans and was arrested and sent to a labor camp at Nizhny Tagil in the Ural Mountains. In 1948, he returned to RNII in Moscow after interventions by the new head of the institute, M. V. Keldysh. He became the head of the development of the dynamics and flight control systems of the cruise missiles Buryan and Buran. These research activities led him into the studies on guidance and navigation of spacecraft in earth orbit and interplanetary flight.

In 1956, he was tasked by S. P. Korolev at OKB-1 (later named NPO Energy) to design the guidance and navigation system for Luna 3. In 1959, Luna 3 took the first pictures of the far side of the Moon using control systems designed by Rauschenbach. In 1960, he then joined Korolev at OKB-1 as the leader and designer of guidance, navigation, and attitude control systems for manned and unmanned spacecraft. Projects to follow using his control systems were the Mars, Venera, Zond, Zenith, and Molniya spacecraft, and later the docking systems for the Soviet space stations. He was also a teacher, and in 1959, he was named a professor at the Moscow Physical Technical Institute, and in 1978 he became the Dean of the Mechanics Department of the Institute. He became a member of the IAA and a member of the IAA History Committee from 1990 until his death in 2001. He wrote regular papers for the IAA History Symposia from 1968 on covering biographies of Soviet space leaders (i.e., Keldysh and Korolev) and the development of astrodynamics in the early space era of the Soviet Union.

Irene R. A. E. Sänger-Bredt (1911–1983, Germany)

After receiving a Doctoral degree, Sänger-Bredt worked at the Rocket Research Institute in Trauen as assistant to Eugen Sänger. She was assigned to thermodynamics and gas kinetics analysis for liquid propellant rocket. She moved with Eugen Sänger to the German Research Center for Gliders in Ainring, Germany in 1942, where she was managing the flight testing of ramjets. She worked with Eugen Sänger on the Silbervogel (silver bird) liquid propellant rocket powered sub-orbital bomber project. After World War II, she worked for the Arsenal de l'Aéronautique in Paris-Châtillon and as an adviser to Matra. She returned to Germany in 1954, after her marriage to Eugen Sänger, to become Assistant Director of Sänger's newly founded Research Institute for Jet Propulsion in Stuttgart. During the 1960s, she served as an adviser to various space compa-

nies in Germany. Sanger-Bredt was the only female founding member of the International Academy of Astronautics in 1960. She was an IAA member and a member of the IAA History Committee (Figure 18–6).

Leslie Robert Shepherd (1918–2012, UK)

Born in South Wales, Shepherd earned the B.Sc. in Physics from University College in London in 1940 and served during the war as a research assistant at the Royal Society Mond Laboratory in Cambridge, where he remained for post-graduate studies after World War II and was awarded a Ph.D. in 1948 for “Magnetic Spectrometer Studies on Radioactive Isotopes.” In October 1948, he joined the Atomic Energy Department of the Ministry of Supply (later to become the UK Atomic Energy Authority). He worked for the UK AEA on various reactor projects, was head of Research and Development for the Dragon Reactor Project and remained with UK AEA until his retirement in 1983. Shepherd became a member of the British Interplanetary Society (BIS) in 1935 and later a member of its Council and the Society’s Technical Director in 1946. In 1949, together with Val Cleaver, he produced one of the first detailed papers on the application of nuclear energy to the problem of interplanetary flight. In 1950, he numbered among the five BIS Council members involved in founding the International Astronautical Federation, organizing the second annual Congress in London in 1951. Shepherd served as President of the IAF from 1956–57, and later again in 1962 on the death of the incumbent President, Joseph Peres. He was also Chairman (later President) of the BIS between 1953 and 1960 and again in 1966–67. A founding member of the International Academy of Astronautics in 1959–60, he was an IAA member and member of the IAA History Committee.

Ernst A. Steinhoff (1908–1987, Germany and USA)

Steinhoff earned a Ph.D. at the Darmstadt University of Technology in 1940 with a dissertation on aviation instruments. He joined von Braun’s rocket team at the Peenemunde Army Research Center in 1940 and served there throughout World War II. Steinhoff numbered among the German rocket team brought to the United States in Operation Paperclip. He continued working with von Braun at the Army’s Redstone Arsenal (later renamed the Army Ballistic Missile Agency, ABMA) in Huntsville, Alabama, where he had a hand in developing the Redstone and Jupiter intermediate range ballistic missiles. After ABMA was assigned to a newly-formed NASA as the Marshall Space Flight Center (MSFC) in 1960, Steinhoff participated in the development of the Saturn rockets that lifted men to the Moon. He was an IAA member.

Ernst Stuhlinger (1913–2008, Germany and USA)

At age 23, Stuhlinger earned his Doctorate in physics at the German University of Tubingen in 1936. In 1941, he was drafted as a private in the German Army and sent to the Russian front where he numbered among the few to survive the Battle of Stalingrad. On reaching German territory in 1943, Stuhlinger was ordered to the rocket development and test center in Peenemünde where he joined Wernher von Braun's team. For the remainder of the war, he engaged in developing missile guidance systems. Brought to the United States in Operation Paper Clip, for the next decade Stuhlinger worked on Army missiles, but also on efforts to create a space capability. He eventually served as Director of the Advanced Research Projects Division of the Army Ballistic Missile Agency (ABMA). Involved in the launch of Explorer 1, America's first successful earth satellite on 31 January 1958, Stuhlinger went on to serve as Director of the Marshall Space Flight Center (MSFC) Space Science Laboratory from its formation in 1960 until 1968, and then as MSFC's Associate Director for science from 1968 to 1975. He was an IAA member.

Mikhail Kladievich Tikhonravov (1900–1974, USSR)

A graduate of the Zhukovsky Air Force Academy, Tikhonravov joined the GIRD (Group for the Study of Reactive Motion) in 1931 and was involved in the development of the GIRD-9 rocket, the first liquid oxygen and gasoline rocket first launched in 1933. He continued working liquid propellant rockets that would reach higher altitudes after the transformation of GIRD into the Reaction-Engine Scientific Research Institute, RNII, in 1933. After World War II, he was appointed Deputy Chief of NII-4, where he continued to study and design rockets for high altitudes. In 1956, Sergei Korolev had Tikhonravov and his team transferred to OKB-1. The Tikhonravov team designed Sputnik 3, Luna 1, Luna 3 and early Venus and Mars probes. He was an IAA corresponding member.

James Van Allen (1914–2006, USA)

An American scientist at the University of Iowa, Van Allen headed the Department of Physics and Astronomy where he was instrumental in establishing the field of magnetospheric research in space. The Van Allen radiation belts were named after him following their discovery by his Geiger-Muller tube instruments onboard the 1958 satellites Explorers 1 and 3, and Pioneer 3, during the International Geophysical Year. Van Allen promoted the inclusion of scientific research instruments on spacecraft. One of his numerous lifetime awards is the 1962 Daniel and Florence Guggenheim International Astronautical Award presented by the International Academy of Astronautics for significant contributions to astro-

.nautics. Van Allen retired from teaching in 1985. He was an IAA founding member.

Étienne Vassy (1905–1969, France)

A Doctor of Sciences in 1937 from the University of Paris, Vassy studied the physics of the upper atmosphere and in 1957 he was appointed chair of Atmospheric Physics at the University of Paris. Vassy also served as head of the Upper Atmospheric Section of the Centre d'Etudes des Projectiles Autopropulsés at the Dircetion des Etudes et Fabrication d'Armements. Together with Laboratoire de recherches balistiques et aérodynamiques (LRBA), he undertook sounding rocket experiments in the upper atmosphere using the Véronique rocket starting in 1954 from Hammaguir in the French Sahara and later from Kourou in French Guyana. He published three volumes of *Cours de Physique de l'Atmosphère* in 1956–66. He was one of the founders of the International Astronautical Federation, President of the Upper Atmospheric Commission of the International Union of Geodesy and Geophysics, and President of the AGARD Ionospheric Research Commission. He was an IAA member.

Harald J. A. T. G. von Beckh (1917–1990, Austria, Argentina, and USA)

A Doctor of Medicine in Vienna, in 1940 he started working at the Academy of Aviation Medicine in Berlin. He was a pilot and flight surgeon during World War II. After the war he moved to Argentina to continue his research work on the influence of short-term zero-gravity during flight. In 1955, he published his book *Physiology of Flight* (in Spanish) describing the physiological and psychological effects of acceleration, velocity, gravity, and weightlessness during supersonic and spaceflights. Von Beckh was named Director of Space Medicine Department of the Argentine Interplanetary Association 1957. A year earlier, in 1956, he was appointed Chief Scientist of the Aeromedical Research Laboratory at Holloman AFB and moved to the United States. He later became Director of Medical Research at the Naval Air Development Center in Warminster, Pennsylvania. In addition to gravity and acceleration issues, he also investigated problems of rapid decompression, recompression and the rescue of space crews. He frequently used the IAC and its symposia to report on his findings, and served as the Chair of the IAF Bioastronautics Committee. He was an IAA corresponding member.

Theodore von Kármán (1881–1963, Hungary and USA)

A Hungarian mathematician and physicist who, in 1930, became Director of the Guggenheim Aeronautical Laboratory at the California Institute of Technology (GALCIT). When some of his students became interested in rocketry, von Kármán allowed them to form the GALCIT Rocket Research Project in 1936,

which subsequently built and tested various solid and liquid propellant rockets. This led to the founding of the Jet Propulsion Laboratory (JPL) during World War II, and of the Aerojet Corporation that produced solid propellant rockets for Jet-Assisted Take-Off (JATO) of heavily laden bombers. Von Kármán served as a scientific consultant to the US Army Air Forces and later the US Air Force. An IAA founder and member, and the first IAA President (Figure 18–13).

Fritz Zwicky (1898–1974, Switzerland and USA)

A Swiss mathematician and physicist who received his degree from ETH Zurich and immigrated to the United States in 1925 where he would work at the Mount Wilson and Palomar Observatories while attached to the California Institute of Technology. In 1934, he and a colleague, Walter Baade, coined the term “supernova” and posited that they marked a transition of normal stars into neutron stars. This opinion subsequently contributed to a determination of the size and age of the universe. Associated with the Jet Propulsion Laboratory during World War II, he developed early jet engines, including the Underwater Jet and the Inverted Hydro Pulse. Zwicky also produced the first artificial meteors. He placed an explosive charge in the nose cone of an Aerobee rocket and detonated it at high altitude to propel high velocity metal pellets up through the atmosphere. The successful test, conducted on 16 October 1957 a few days after the launch of Sputnik 1, fired pellets tracked by the Mount Palomar Observatory and at least one, it is believed, became the first object to escape the Earth’s gravitation and enter solar orbit. He was an IAA member.

Principal Historians and Researchers at IAA History Symposia

Historians

- John E. Becklake (UK)
- Steven J. Dick (USA)
- Kerrie Dougherty (Australia)
- Frederick C. Durant III † (USA)
- Eugene M. Emme † (USA)
- R. Cargill Hall (USA)
- George P. Kennedy (USA)
- Roger D. Launius (USA)
- Michael J. Neufeld (USA)
- Mitchell R. Sharpe Jr. † (USA)
- Viktor N. Sokolsky † (USSR/Russia)
- Rick W. Sturdevant (USA)
- Frank H. Winter (USA)

Researchers

Julius H. Braun (USA)
José M. Dorado (Spain)
Richard L. Dowling (USA)
Andrew S. Erickson (USA)
Marsha Freeman (USA)
Władysław Geisler † (Poland)
John Harlow (UK)
Tal Inbar (Israel)
George S. James (USA)
Philippe Jung (France)
Christian Lardier (France)
Pablo De Leon (USA)
Randy Lieberman (USA)
Otfrid G. Liepack (Germany)
Charles A. Lundquist (USA)
Yasunori Matogawa (Japan)
Hervé Moulin † (France)
Frederick I. Ordway III † (USA)
Theo Pirard (Belgium)
Vladimir F. Prisniakov † (Ukraine)
Karlheinz Rohrwild (Germany)
Christophe Rothmund (France)
Radu D. Rugescu (Romania)
Oleg A. Sokolov (Russia)
Å. Ingemar Skoog (Sweden)
Mieczysław Subotowicz † (Poland)
Vladimir S. Sudakov (Ukraine)
Shirley Thomas † (USA)
Jaques Villain (France)

IX. Publications

The preparation of lectures for the IAA History Symposia has over 50 years followed the general evolution of print and electronic media. It started with typewriters and slides in 1967 and has now reached the full state of information technology: paper proposals, abstracts, preprints, and presentations are all PC-prepared and uploaded via the Internet to an IAC server for direct access at the congress site.

Abstracts

In 1967, presenters prepared an abstract for the symposium chair and, once the paper was accepted, completed a “clean” copy (title, author, and text) of the abstract that had to be sent to the symposium local organization. For the first six years, IAA History Symposia did use the abstract copy for the chair to make necessary translations into English, French, and Russian, and distributed a stapled stack of abstracts for each IAA language at the congress (Figure 18–14). Concurrently, the congress’ local organizer prepared a Book of Abstracts (Figure 18–15) that contained most, but frequently not all of them.

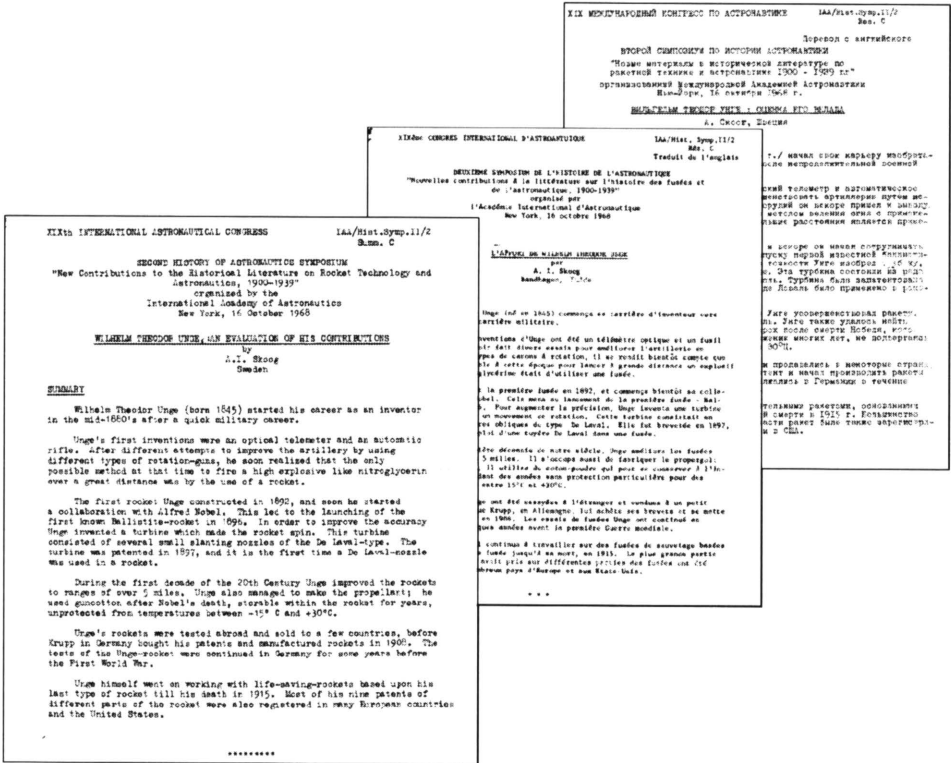


Figure 18–14: Sample abstract in all three IAA languages.
Credit: Å. Ingemar Skoog archives.

In 1973, separate IAA abstract copies were terminated and history abstracts were published only in the Book of Abstracts. In 2001 abstracts were first distributed to congress participants on a CD (Figure 18–16), and finally, in 2004, abstracts became available only on the IAC Internet Web site, when the preprints were made available on CD/DVD to all congress participants as part of the congress fee.

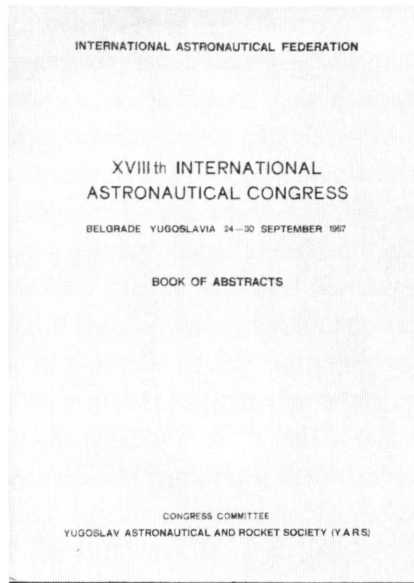


Figure 18–15: 1967 Book of Abstracts.
Credit: Å. Ingemar Skoog archives.

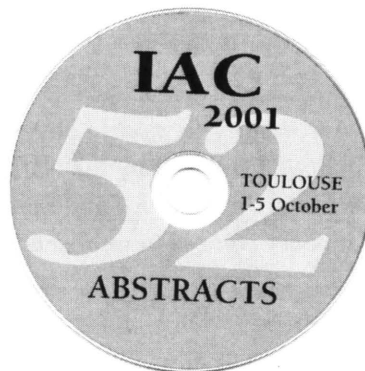


Figure 18–16: The abstracts on CD in 2001.
Credit: IAF.

Papers and Preprints

The documentation of a presentation at an IAA History Symposium is the paper manuscript, and a pre-print of the manuscript is used for publication in the proceedings. History paper preprints followed the evolution of the IAC overall preprint history.

Originally, the IAF/IAAC published all papers presented in its regular sessions in annual proceedings, while special symposia (e.g., History Symposia or Lunar International Laboratory Symposia) were published in separate proceed-

ings. By 1967, IAC regular proceedings* had reached four volumes in size with some 1800 pages, and in 1968 the proceedings† contained more than 2,000 pages in four volumes. Needless to say, selling these volume sets became a severe problem. Therefore, the IAF changed its publication system at the 1969 IAC in Mar del Plata, Argentina, publishing only selected papers in a special book,‡ while all presented papers had to be available as preprints at the congress site.

The regulations for the IAA History Symposia were the same and began with a simple request to provide three (later four) copies of the manuscript to the symposium chair ahead of the meeting (but no preprints). For the 1970 symposium in Constance, Germany, for the first time “Authors are requested to provide pre-prints of their papers. 150 copies are desired, more if possible.”§

Preprint layouts remained up to the author until 1974, when a first attempt was made to standardize the cover page. Beginning in 1978, authors had to submit a clean copy of the paper for central printing. The papers were originally printed and sold by the IAF, but in 1982 the American Institute of Aeronautics and Astronautics (AIAA) took responsibility for publishing the preprints (with an exception in 1985 when Pergamon Press produced them) and this arrangement continued until 2004, when all papers were prepared on a congress CD and released as part of the registration fee (Figures 18–17 and 18–18).

Proceedings

Proceedings of the IAA History Symposia have been published in English in the United States; the first two symposia by the National Air and Space Museum, the next four by the National Aeronautics and Space Administration (Figure 18–19). The first three symposia were also published in Russian by the Soviet Academy of Sciences (Figure 18–20),** but regrettably, after the demise of the Soviet Union in 1991, equivalent Russian language volumes were at first delayed because of financial restrictions imposed on the publication of scientific literature at the Russian Academy of Sciences in Moscow, and then finally cancelled.

After the publication of the first six IAA History Symposia, finding a publisher for subsequent symposia proved to be difficult. Several publishers were

* *Proceedings of the XVIIIth International Astronautical Congress*, Belgrade 1967. Pergamon Press, Oxford, 1968.

† *Proceedings of the XIXth International Astronautical Congress*. New York, 1968. Pergamon Press, Oxford, 1970.

‡ *Selected Papers from the XXth International Astronautical Congress*, Mar del Plata, 1969, Pergamon Press and PWN-Polish Scientific Publishers, Warsaw, 1972.

§ Instructions for Authors and Session Chairs. IAF letter August 1970.

** *Iz Istorii Astronavtiki i Raketnoj Texniki*, Publishing House Nauka, Moscow 1970. *Iz Istorii Astronavtiki i Raketnoj Texniki*, Volume 2-3, Academy of Sciences SSSR, Moscow, 1979.

contacted without success. In 1980 at the History Committee meeting in Tokyo, “The Committee recommended preparation for publication in English of Symposia Nos. 7-15 in the form of microfilms.”* This action would not be taken because the American Astronautical Society (AAS) appeared as a possible publisher. In 1985, the International Academy of Astronautics signed a contract with Univelt, Inc., the publisher of AAS proceedings, which ensured publication of subsequent history symposia proceedings under the guidance of Horace Jacobs, assisted by Robert Jacobs, and they republished the first six IAA History Symposia, all in an “IAA History Series,” which became a subset of the AAS History Series (Figure 18–19). Over time, IAA history papers were divided into recognizable periods: ancient times through the 19th century; the 20th and 21st centuries, broken down among actions and events that took place before 1945, after 1945 to 1957, and after 1957 (which marked the beginning of the Space Age).



Figure 18–17: Sample IAA History Symposia pre-prints, 1974–2003. Credit: Å. Ingemar Skoog archives.

* Minutes of seventh meeting, Tokyo, 24 September, 1980. IAA/Hist.Ctee/23. 20 October 1980.



Figure 18–18: The first IAC final papers CD, Vancouver, 2004. Credit: IAF.

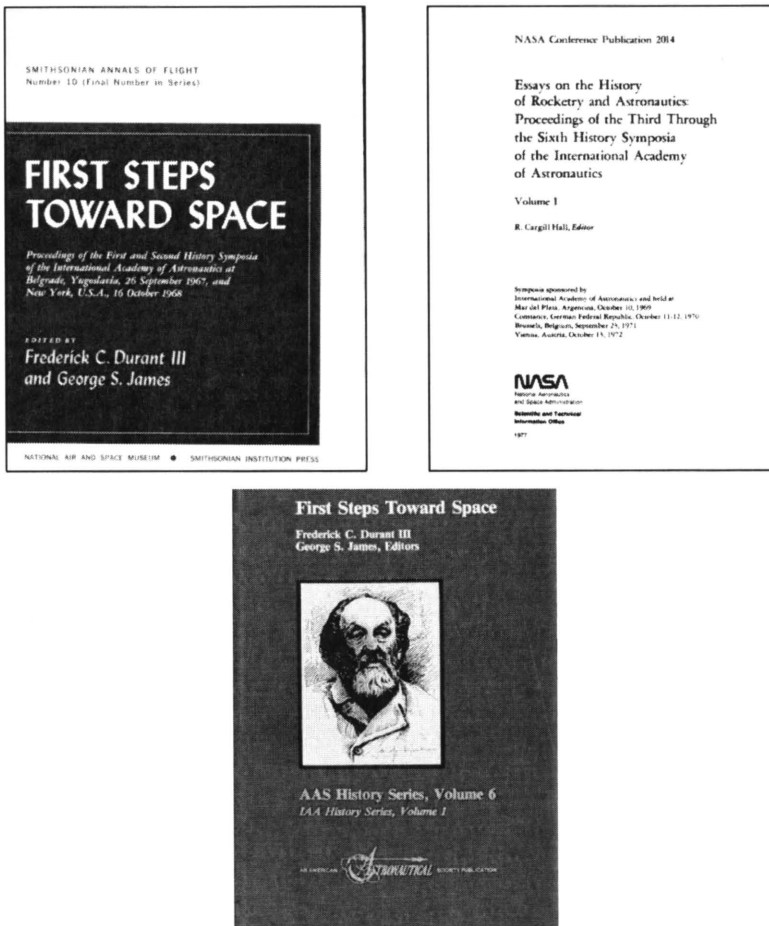


Figure 18–19: The first volumes of the English language IAA History Symposia Proceedings. Credit: R. Cargill Hall and Å. Ingemar Skoog archives.

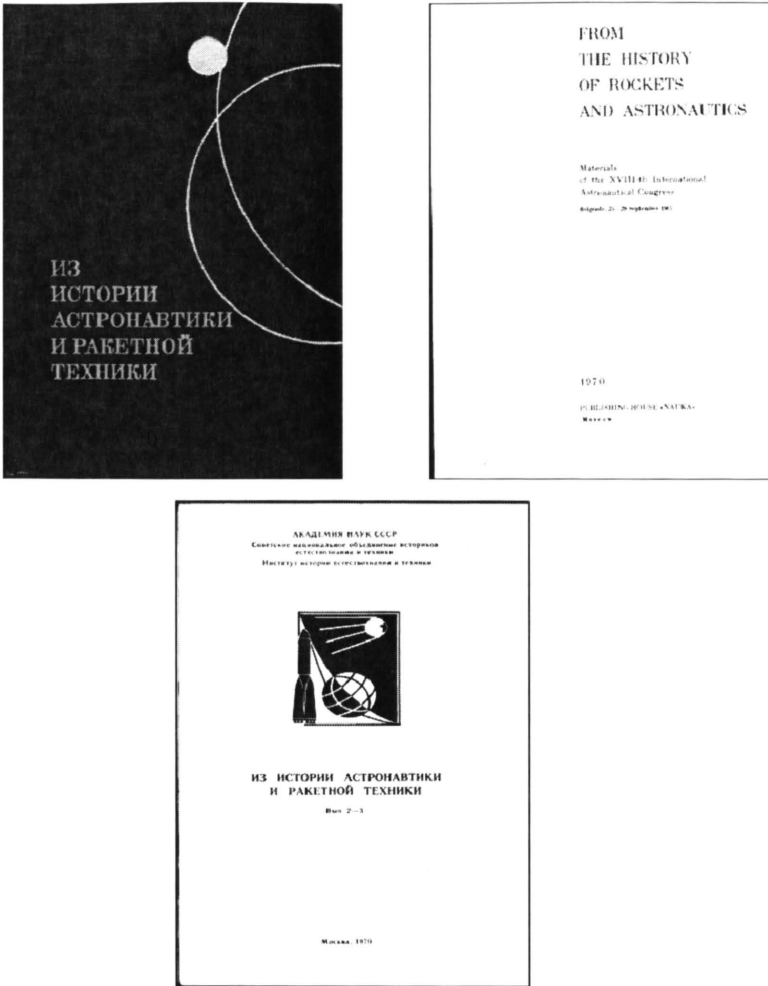


Figure 18–20: The Russian language edition of the three first IAA History Symposia Proceedings. Credit: Å. Ingemar Skoog archives.

Currently, 48 IAA History Symposia have been published in 34 volumes in English, together with a History Symposia Index Book 1967–2000. These 34 volumes contain 738 papers on some 14,000 pages. This set of volumes is a unique collection of papers in the history of astronautics and rocketry submitted by contributors from around the world.*

Each proceedings volume has been prepared by a volunteer Volume Editor (see Table 18–1 at the end of this chapter) and, after the republication of the first

* The 2015 *Proceedings* with 16 papers were released for sale 31 August 2017, as volume 35. The 2016 *Proceedings* with 19 papers will be released for sale end of 2017 as volume 36.

six symposia (AAS IAA History Series Vol. 1 and 2), with a Series Editor appointed to coordinate the activities between the Volume Editors, authors, and the publisher, and to ensure uniformity of layout. In time, an Editorial Board was formed consisting of Series Editor, Volume Editor, Copy Editor, Publisher, and an IAA History Committee Proceedings Coordinator. The dedicated Series Editors:

R. Cargill Hall (1986–1997; volumes 3–10)

Donald C. Elder III (1997–2009; volumes 11–30)

Rick W. Sturdevant (2009– : volume 31–)

In addition to publication of all presented history papers in the proceedings, some papers have been nominated by the session chairs for publication in regular issues of *Acta Astronautica*, and from time to time in special congress volumes. In 2009, a special volume (IAA History Series 31) *History of Rocketry and Astronautics, International Academy of Astronautics History Symposia at the International Astronautical Congresses, Abstracts and Index 1967–2000*, edited by Hervé Moulin, was published as a tool for researchers in the history of astronautics.

Internet

Introduction of the Internet and an IAC Web site in 2001 simplified paper proposals, abstracts, and pre-prints, and today all final programs, abstracts, pre-prints, and presentations are available on the Web well before the congress. This provides a full source of information to congress participants, but also supports the preparation work for the symposia coordinators, session chairs and rapporteurs. But it is only a supporting tool, in addition to the proceedings, because non-congress participants do not have direct access to this information.

X. Presentations

The methods of preparation of presentation material have changed dramatically over 50 years, perhaps even more than the paper and publication evolution. Today, the quality of a presentation is an essential part of the successful communication of study results. Today's presentation media can portray far more information in a single viewgraph compared with the 35 mm slides of the 1960s and 70s.

Slides

From the 1960s until late 1970s the main method for history presentations turned on 35 mm slides in 50 by 50 mm frames. As the slides were color or black-and-white positive image photographs of text and illustrations, the quality was not always optimal. A distinct difference existed between presentations by private researchers and professional scholars with a company or agency sponsor. Even a difference in the quality of slides (if used at all) between west and east was noticeable. The quality depended on the typewriters and drawings used (unless actual authentic photos), which limited the possibilities unless one had a professional graphic department to back you up.

Viewgraphs

The introduction of viewgraphs for overhead projection in the late 1970s boosted the quality of presentations quite a bit, but still the originals were machine typed and good graphics had to be made by drawings in a graphic department. And the changing of viewgraphs during presentations was always time consuming.

Digital Inputs and Power Point

A major change came in the early 1990s with the introduction of Windows PowerPoint and the ability to print viewgraphs directly from a personal computer. This greatly improved quality, because each author could prepare well designed presentations, while the amount of information transported to the audience increased markedly. Once the IAF/IAC in 2004 used the Internet to upload presentations from home to the IAC Web site the material became available on a computer in the meeting room (or can be carried on a USB stick). These improvements reduced most of the difference in quality between professional historians and private researchers.

Video Interviews

The Internet and the multimedia possibilities open new forms of history presentations by personal interviews and to connect persons who could not be at the congress site. This has been tested at IAA History Symposia several times now. In 2007, at the IAC in Hyderabad, the First History Plenary honoring the 50th anniversary of the launch of Sputnik 1 featured a video message from Professor Boris Chertok, RSC Energia, Russia, one of the designers of this spacecraft.

Recorded interviews with space pioneers have been included in the regular program as a lecture twice:

- 2010 on “Origins of the International Academy of Astronautics—Personal Memories of Les Shepherd.”
- 2014 on “A Portrait of Professor Iván Almár—His Experiences and His Opinion on the Role of Astronautics in Hungary.”

These interviews are included in the proceedings on DVDs (Figure 18–21).

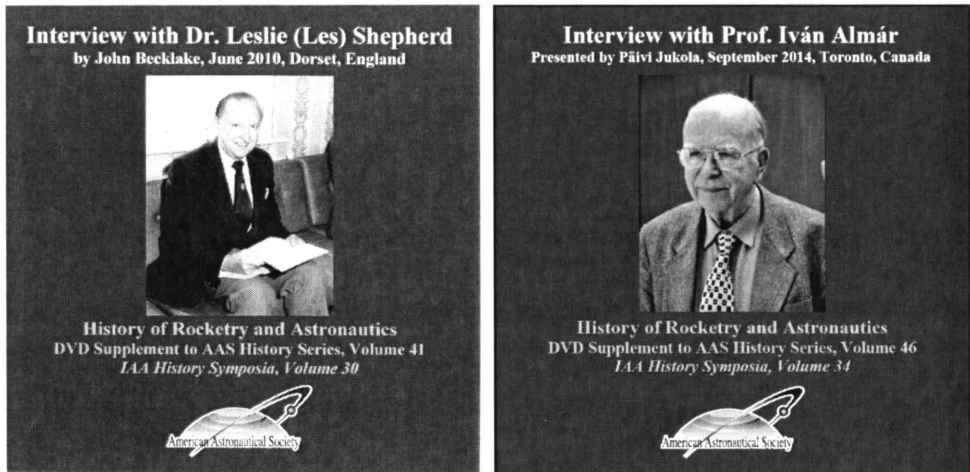


Figure 18–21: The 2010 and 2014 video interviews as DVDs. Credit: Univelt, Inc.

XI. Conclusion

The convening of 50 consecutive IAA History Symposia with 773 papers presented, and 738 papers already published in 34 volumes and an index book (with two more to come), is a significant achievement made possible by a group of dedicated individuals in the IAA History Committee. Symposia attendees and presenters from around the world have included scholars, researchers, pioneers of rocketry and astronautics, and specialists in science and engineering associated with rocketry and space flight. Over the years the history of rocketry and astronautics in some 37 countries from ancient China until the early 1990s has been researched, written, and presented. Twenty-five percent of the papers have been biographies or memoir papers, many prepared and presented by the pioneers themselves. These papers, reviewed by session chairs and rapporteurs, and discussed at the History Symposia sessions, were and are also peer-reviewed by the Volume Editor before publication. The published papers are indexed for topics, time period and authors to assist the research of those interested in the history of

astronautics. We believe video interviews of pioneers can be expected to play a larger role in future as the IAA History Symposia move forward in tandem with progress in information technology.

Acknowledgments

The 50 IAA History Symposia could not have taken place without the dedicated engagement of the Coordinators, Session Chairs, and Rapporteurs, plus the Series and Volume Editors, and the English language publisher of the proceedings, all listed above. Many of them have engaged in this work for 30 or 40, and in a few cases, up to 50 years. Without their efforts we, the authors, could not have prepared this chapter.

Table 18-1: IAA History Symposia 1967-2016

	Date	Place	Number of Sessions	Coordinators/ Organisers	Chairs (Session No)	Number of Papers (2)	Volume Editor	Volume No. AAS/IAA. Cover	Published by Univel
1st	September 26, 1967	Belgrade, Yugoslavia	2	Ch. Dolfuss	F. C. Durant (1)	13			
2nd	October 16, 1968	New York, USA	2	F. C. Durant	G. Jitovsky L. Blosset	14	F. C. Durant G. S. James	06_01 K. E. Tsiolkovsky	1986
3rd	October 10, 1969	Mar del Plata, Argentina	1	E. M. Emme	E. M. Emme	8			
4th	October 9, 1970	Constance, Germany	1	E. M. Emme	E. M. Emme	9			
5th	September 23, 1971	Brussels, Belgium	1	E. M. Emme	V. N. Sokolsky R. C. Hall	12			
6th	October 13, 1972	Vienna, Austria	2	E. M. Emme	E. M. Emme V. N. Sokolsky	10	R. C. Hall	07_02 R. H. Goddard	1986
7th	October 11 & 12, 1973	Baku, USSR	2	E. M. Emme	E. M. Emme V. N. Sokolsky	11			
8th	October 4 & 5, 1974	Amsterdam, The Netherlands	2	E. M. Emme	R. C. Hall V. N. Sokolsky	9	K. R. Lattu	08_03 H. Oberth	1989
9th	September 24 & 26, 1975	Lisbon, Portugal	2	E. M. Emme	M. V. Rosen V. N. Sokolsky	10			
10th	October 15, 1976	Anaheim, USA	1	E. M. Emme	R. C. Hall V. N. Sokolsky	5			
11th	September 28, 1977	Prague, Czechoslovakia	1	V. N. Sokolsky	E. M. Emme V. N. Sokolsky	7	F. I. Ordway	09_04 R. Esnault-Pelterie	1989
12th	October 6, 1978	Dubrovnik, Yugoslavia	1	E. M. Emme	G. S. James V. N. Sokolsky	9			
13th	September 21, 1979	Munich, Germany	1	E. M. Emme	E. M. Emme V. N. Sokolsky	7			
14th	September 28, 1980	Tokyo, Japan	1	E. M. Emme	E. M. Emme V. N. Sokolsky	8	A. I. Skoog	10_05 S. P. Korolev	1990
15th	September 11, 1981	Rome, Italy	1	E. M. Emme	F. C. Durant V. N. Sokolsky	10			
16th	September 27, 1982	Paris, France	1	E. M. Emme	F. C. Durant V. N. Sokolsky	9	R. D. Launius	11_06 W. von Braun	1994
17th	October 12 & 13, 1983	Budapest, Hungary	2	W. Buedeler	F. C. Durant (1 & 2) V. N. Sokolsky (1 & 2)	15	J. L. Sloop	12_07 Th. Von Karman	1991
18th	October 9 & 11, 1984	Lausanne, Switzerland	2	F. I. Ordway	F. C. Durant (1 & 2) V. N. Sokolsky (1 & 2)	11			
19th	October 9, 1985	Stockholm, Sweden	1	F. I. Ordway	F. C. Durant V. N. Sokolsky	9	T. D. Crouch A. M. Spencer	14_08 H. Noordung	1993
20th	October 9, 1986	Innsbruck, Austria	2	J. E. Becklake F. I. Ordway	F. C. Durant (1 & 2) V. N. Sokolsky (1) F. I. Ordway (2)	12			
21st	October 13 & 16, 1987	Brighton, UK	2	J. E. Becklake F. I. Ordway	F. I. Ordway (1) V. N. Sokolsky (1) J. E. Becklake (2) F. C. Durant (2)	19	L. H. Cornett	15_09 V. P. Glushko	1993
22nd	October 11 & 14, 1988	Bangalore, India	2	J. E. Becklake G. P. Kennedy	G. P. Kennedy (1) V. N. Sokolsky (1 & 2) J. E. Becklake (2)	13			
23rd	October 12 & 13, 1989	Malaga, Spain	2	J. E. Becklake G. P. Kennedy	F. C. Durant (1 & 2) V. N. Sokolsky (1 & 2)	12	J. E. Becklake	17_10 W. H. Pickering, J. A. Van Allen, W. von Braun, Explorer 1	1995
24th	October 10 & 11, 1990	Dresden, Germany	2	J. E. Becklake	F. I. Ordway(1) A. I. Skoog (1) G. P. Kennedy (2) V. N. Sokolsky (2)	14	J. D. Hunley	19_11 Y. A. Gagarin	1997
25th	October 7 & 8, 1991	Montreal, Canada	2	J. E. Becklake G. P. Kennedy	Ph. Jung (1) F. I. Ordway (1 & 2) V. N. Sokolsky (2)	15	J. D. Hunley	20_12 E. Steinhoff	1997
26th	September 1 & 2, 1992	Washington, USA	2	J. E. Becklake G. P. Kennedy	V. N. Sokolsky (1) A. I. Skoog (1) F. I. Ordway (2) J. Villain (2)	16	Ph. Jung	21_13 G. von Pirquet	1997
27th	October 21 & 22, 1993	Graz, Austria	2	J. E. Becklake K. Rohrwild	A. I. Skoog (1) V. N. Sokolsky (1) F. I. Ordway (2) Ph. Jung (2)	16	Ph. Jung	22_14 M. Vallier	1998

	Date	Place	Number of Sessions	Coordinators/ Organisers	Chairs (Session No) (1)	Number of Papers (2)	Volume Editor	Volume No. AAS/IAA. Cover	Published by Univelt
28th	October 11 & 14, 1994	Jerusalem, Israel	2	Ph. Jung J. E. Becklake	F. I. Ordway (1) V.N. Sokolsky (1) J. E. Becklake (2) J. Villain (2)	13			
29th	October 3 & 6, 1995	Oslo, Norway	3	J. H. Braun Ph. Jung	Ch. Rothmund (1) Y. Matogawa (1) V. N. Sokolsky (2) H. Moulin (2) J. Harlow (3) F. I. Ordway (3)	22	D. C. Eklér Ch. Rothmund	23_15 D. K. Skayton	2001
30th	October 8, 10 & 11, 1996	Beijing, China	3	Ph. Jung F. I. Ordway	O. Liepack (1) V. N. Sokolsky (1) Y. Matogawa (2) J. Harlow (2) J. Braun (3) K. Rohrwald (3)	21	H. Moulin D. C. Eklér	25_16 E. Sanger	2003
31st	October 7, 8 & 9, 1997	Turin, Italy	3	Ph. Jung F. I. Ordway	V. N. Sokolsky (1) O. Liepack (1) K. Rohrwald (2) J. H. Braun (2) J. Harlow (3) Y. Matogawa (3)	24	D. C. Eklér G. S. James	26_17 W. Thiel and V2	2005
32nd	September 29 & 30, October 1, 1998	Melbourne, Australia	3	Ph. Jung F. I. Ordway	Sh. Chen (1) K. G. McCracken (1) H. Moulin (2) J. H. Braun (2) V. N. Sokolsky (3) O. Liepack (3)	18	K. Dougherty D. C. Eklér	27_18 A. Shepard, E. Rees, M. Dinn, J. Homewood	2007
33rd	October 5, 6 & 7, 1999	Amsterdam, The Netherlands	3	Ph. Jung F. I. Ordway	K. Rohrwald (1) H. M. Rehorst (1) J. H. Braun (2) Y. Matogawa (2) V. N. Sokolsky (3) Ch. Rothmund (3)	21	F. H. Winter	28_19 J. Werne	2007
34th	October 3, 4 & 5, 2000	Rio de Janeiro, Brazil	3	Ph. Jung F. I. Ordway	O. Liepack (1) Y. Matogawa (1) G. S. James (2 & 3)	16	O. Liepack	30_20 B. Rauschenbach	2009
35th	October 1, 3 & 4, 2001	Toulouse, France	3	G. S. James Ph. Jung	Y. Matogawa (1) F. I. Ordway (1) J. Harlow (2) H. Moulin (2) J. Baran (3) O. Liepack (3)	21	Ch. Rothmund	32_21 K. H. Debus	2010
36th	October 16 - 18, 2002	Houston, USA	4 + Poster	G. S. James Ph. Jung	Y. Matogawa (1) F. I. Ordway (1) J. Harlow (2) H. Moulin (2) M. Freeman (3) Ch. Rothmund (3) O. Liepack (4) Ch. Rothmund (4)	30	M. L. Ciancone	33_22 D. Laser	2010
37th	September 29-30, October 2-3, 2003	Bremen, Germany	4 + Poster	G. S. James Ph. Jung	Y. Matogawa (1) F. I. Ordway (1) J. Harlow (2) H. Moulin (2) M. Freeman (3) Ch. Rothmund (3) O. Liepack (4) S. McKenna-Lawlor (4)	27	O. Liepack	34_23 W. von Braun and H. H. Koelle	2011
38th	October 4 - 7, 2004	Vancouver, Canada	4 + Poster	G. S. James Ph. Jung	H. Moulin (1) F. I. Ordway (1) M. Freeman (2) A. I. Skoog (2) Ph. Cosyn (2) K. Dougherty (3) Ch. Rothmund (3) R. Launis (4) R. Lieberman (4)	27	A. I. Skoog	35_24 J. H. Chapman	2011
39th	October 18, 19 & 20, 2005	Fukuoka, Japan	3	Ch. Rothmund Y. Matogawa G.S. James	H. Moulin (1) F. I. Ordway (1) K. Dougherty (2) Ph. Jung (2) O. Liepack (3)	15	E. D. Springer	36_25 H. Itokawa	2011

	Date	Place	Number of Sessions	Coordinators/ Organisers	Chairs (Session No) (1)	Number of Papers (2)	Volume Editor	Volume No. AAS/IAA. Cover	Published by Univerk
40th	October 3, 4 & 5, 2006	Valencia, Spain	4 + Poster	M. Freemann G. S. James Ch. Rothmund A. I. Skoog	H. Moulin (1) F. I. Ordway (1) M. Freeman (2) A. I. Skoog (2) K. Dougherty (3) Ph. Jung (3) J. M. Dorado (4) O. Liepack (4)	27	M. Freeman	37_26 Frank Malina	2012
41st	September 27 & 28, 2007	Hyderabad, India	3	S. Dick Ch. Rothmund A. I. Skoog T. Springer	Ph. Jung (1) V. Glushkov (1) M. Freeman (2) H. Moulin (2) O. Liepack (3) R. Lochan (3)	20	A. M. Springer	38_27 Sputnik 1.	2012
42ndA	September 29 & 30, October 2, 2008	Glasgow, UK	4	S. Dick J. Harlow A. I. Skoog	D. Millard (1) Ph. Jung (1) M. Freeman (2) H. Moulin (2) S. Dick (3) K. Dougherty (3) J. Harlow (4) O. Liepack (4)	20	J. Harlow	39_28 L. Broglio and L. B. Johnson	2013
43rd	October 13 & 15, 2009	Daejeon, Korea	3	Ch. Rothmund A. I. Skoog Y. Matogawa	H. Moulin (1) M. Freeman (1) Y. Matogawa (2) Ph. Cosyn (2) O. Liepack (3) J. Seon (3) H. Gong (3)	15	Ch. Rothmund	40_29 G. E. Lozino-Lozinsky	2013
44th	September 29 & 30, October 1, 2010	Prague, Czech Republic	4	Ch. Rothmund A. I. Skoog Y. Matogawa K. Dougherty	A. I. Skoog (1) K. Dougherty (1) M. Freeman (2) H. Moulin (2) S. McKenna-Lawlor (3) Ph. Jung (3) J. E. Becklake (4) L. Perek (4)	24	K. Dougherty	41_30 L. Shepherd and V. Tereskova	2014
45th	October 4 & 6, 2011	Cape Town, South Africa	4	Ch. Rothmund A. I. Skoog Ph. Jung Ph. Cosyn	Y. Matogawa (1) K. Dougherty (1) M. Freeman (2) H. Moulin (2) Ph. Jung (3) S. McKenna-Lawlor (3) O. Liepack (4)	20	O. Liepack	42_31 Walter Häusermann	2014
46th	October 1 & 4, 2012	Naples, Italy	3	Ch. Rothmund Ph. Jung A. I. Skoog N. Reinke	M. Freeman (1) H. Moulin (1) Ch. Rothmund (2) O. Liepack (3A & B)	24	N. Reinke	43_32 A. Aranoff	2015
47th	September 23 & 26, 2013	Beijing, China	3	Ch. Rothmund Ph. Jung A. I. Skoog	M. Freeman (1) H. Moulin (1) K. Dougherty (2) Ch. Rothmund (2 & 3)	13	A. S. Erickson	45_33 Qian Xuesen	2015
48th	September 29 & October 2, 2014	Toronto, Canada	3	A. I. Skoog Ph. Jung Ch. Rothmund M. Freeman	M. Freeman (1) S. McKenna-Lawlor (1) K. Dougherty (2) H. Moulin (2) O. Liepack (3) G. Languedoc (3)	17	M. Freeman	46_34 F. C. Durant, F. I. Ordway, T. Tabanera	2016
49th	October 12 & 15, 2015	Jerusalem, Israel	3	A. I. Skoog Ph. Jung Ch. Rothmund T. Inbar	M. Freeman (1) N. Reinke (1) K. Dougherty (2) Ch. Rothmund (2) O. Liepack (3) T. Inbar (3)	16	T. Inbar	47_35 A.A. Leonov	2017
50th	September 26 & 29, 2016	Guadalajara, Mexico	3	A. I. Skoog Ph. Jung Ch. Rothmund	M. Freeman (1) N. Reinke (1) K. Dougherty (2) Ch. Rothmund (2) O. Liepack (3A) P. De Leon (3A) A. I. Skoog (3B) H. Moulin (3B)	19	P. De Leon	48_36 K.W. Gatland, L. I. Sedov	2017
Index Book No 1							H. Moulin	31_21 J. M. Kooy and F. C. Durant	2009
Notes:					(1) Acc. to programme, (2) Presented				rev 09/2017

Table 18–2: IAA History Symposia Coordinators, Session Chairs and Rapporteurs.

Symposium Coordinators

John E. Becklake* † (UK)
Julius H. Braun* † (1924–2016, USA)
Werner Buedeler † (1928–2004, Germany)
 Philippe Cosyn* † (Belgium)
 Steven J. Dick* (USA)
 Kerrie Dougherty* † (Australia)
Charles Dollfus* (1893–1978, France)
Frederick C. Durant* (1916–2015, USA)
Eugene M. Emme* † (1919–1985, USA)
 Marsha Freeman* † (USA)
 John Harlow* † (UK)
 Tal Inbar* (Israel)
 George S. James* † (USA)
 Philippe Jung* † (France)
 George P. Kennedy* † (USA)
 Yasunori Matogawa* † (Japan)
Frederick I. Ordway* † (1927–2014, USA)
 Niklas Reinke* † (Germany)
 Karlheinz Rohrwild* † (Germany)
 Christophe Rothmund* † (France)
 A. Ingemar Skoog* † (Sweden)
Victor N. Sokolsky* (1924–2002, USSR/Russia)
 Anthony M. Springer † (USA)

Session Chairs

Lise Blosset (1911–1974, France)
 Shanguang Chen (China)
 José M. Dorado (Spain)
 H. Garrett (USA)
 Valery V. Gluschkov (USSR)
 H. Gong (South Korea)
 R. Cargill Hall (USA)
 G. Jitavovsky (USSR)

Geoffrey Languedoc (Canada)
 Roger D. Launius (USA)
 Pablo De Leon (USA)
 Randy Lieberman † (USA)
 Otfried Liepack † (Germany)
 Rajeev Lochan (India)
 Kenneth McCracken (Australia)
 Susan McKenna-Lawlor † (Ireland)
 Douglas Millard † (UK)
Hervé Moulin † (1946–2016, France)
 Lubos Perek (Czech Republic)
 Radu Rugescu (Romania)
 H. M. Rehorst (Belgium)
Milton V. Rosen (1915–2014, USA)
 J. Seon (South Korea)
Jaques Villain † (1947–2016, France)

Rapporteurs

Shilu Chen (China)
 Richard Dowling (USA)
 Andrew Erickson (USA)
 George Edelby (Syria)
 R. D. Gould (UK)
 William Cuthbert Jones (USA)
 Päivi Jukola (Finland)
 Kristian R. Lattu (USA)
Charles A. Lundqvist (1928–2016, USA)
 Theo Pirard (Belgium)
 Valentina Ponomaneva (Russia)
 Arturo Russo (Italy)
Mitchell R. Sharpe (1924–1997, USA)
 Emily Springer (USA)
 M. Tarasenko (Russia)
Shirley Thomas (1920–2005, USA)
 Frank H. Winter (USA)

* Symposium Coordinator who also served as Session Chair

† Symposium Coordinator or Session Chair who also served as Rapporteur

Names in bold are deceased.

Appendix 1: An Overview of the Use of the 20-/25-Year Rule in the IAA History Committee

At the third meeting of the History Committee in 1966 in Madrid, members decided to conduct a first IAA History Symposium during the 18th International Astronautical Congress 1967 in Belgrade under the title “Pre-1939 Memoirs of Astronautics.” Committee members at that time consisted primarily of historians, interested researchers, and a few pioneers, and no rules for the periods to be covered existed. They selected the “Pre-1939” period most likely because of concerns over security restrictions.

The second IAA History Symposium was held at the 19th International Astronautical Congress, October 16, 1968 in New York under the title “New Contributions to the Historical Literature on Rocket Technology and Astronautics, 1900–1939.” (IAA/Hist.Cte/9. 20 December 1968).

At the fifth IAA History Committee meeting on October 18, 1968 a “Discussion of a ‘20-Year’ rule was held to identify the most recent point in the history of astronautics to be dealt with in symposia organized by the Committee. Members agreed that material at least 20 years old would generally be unencumbered by military security consideration.” (IAA/Hist.Ctee/9. 20 December 1968).

For the third history symposium in 1969, “Primary consideration in a ‘call for papers’ would be given to those papers covering the period 1900–1949; however, papers covering the period prior to 1900 would also be considered.” Thus, the third symposium on October 10, 1969 in Mar del Plata carried the title “New Contributions to the Literature on Rocket Technology and Astronautics before 1949.”

Because the IAA Committee on the History of Rocketry and Astronautics had adopted the 20-year rule as the latest date for papers to be presented in historical perspective, each succeeding symposium accepted contributions covering a period up to one year later than the previous one.

Consequently, the Fourth Symposium in Constance, 1970 was titled “New Contributions to the Literature on Rocket Technology and Astronautics before 1950, and Survey Papers on the 19th Century Rocketry.”

At the 7th IAA Committee on the History of Rocketry and Astronautics meeting on October 8, 1970 in Constance, committee members again confirmed in the minutes the 20-year rule for the fifth history symposium in 1971. (IAA/Hist.Ctee/ 13. 27 October 1970).

At the 8th IAA Committee on the History of Rocketry and Astronautics meeting on September 25, 1971, in Brussels the 20-year rule was discussed again (IAA/Hist.Ctee/14. 1 November 1971):

“Dr. Malina stated that the present interpretation of the 20-year rule was excessively restrictive and he believed it should be modified. The rule might be changed to read: ‘New contributions to the historical literature on rocket technology and astronautics initiated 20 years before the date of the symposium.’ Prof. Pavlova said that she believed Dr. Sokolsky would not object to this change. Dr. Malina said he would incorporate the new interpretation in the draft guidelines he would prepare.”

This was subsequently incorporated in the guidelines for papers (IAA/History.Ctee/12. 20 October 1971).

At the 10th IAA Committee on the History of Rocketry and Astronautics meeting on October 12, 1973 in Baku, members briefly discussed a proposal to change the 20-year rule to ten years, but further discussion was postponed until the next meeting in 1974. No mention of this discussion appears in the 1974 official minutes (but in private notes: “To be discussed next year.”). The subject also was not discussed in 1975, and official minutes for this committee meeting were not issued. In the following years nothing is to be found in the minutes of the IAA History Committee meetings. (IAA/Hist.Ctee/16. 16 November 1973).

In a document “International Academy of Astronautics. Long Range Plan. History of Astronautics Committee” dated April 1, 1992 by F. I. Ordway and V. N. Sokolsky a 25-year rule is documented: “Traditionally the ‘25-year rule’ has governed the selection of presented papers; but this practise is under active consideration.” In the official minutes of the History Committee meeting in August 1992 nothing is mentioned on the 25-year (or a 20-year) rule.

The next time the 25-year rule is documented is in the minutes of the IAA Committee on History of Astronautics meeting in Beijing on October 5, 1996 (IAA C96019.):

“The Committee was reminded of the 25year rule restricting subjects to events occurring at least 25 years ago, although this could be overridden in exceptional circumstances.”

How the transfer from a 20-year to a 25-year rule really occurred is not documented in official minutes from the IAA History Committee. One might speculate that this occurred in the mid or late 1980s as Fred Ordway was in the period 1983–1987 preparing the special issue of *Acta Astronautica* dedicated to the 25th Anniversary of the IAA in 1985 (AA vol 15 no 10, October 1987). And then this “25 years” was carried over into the inputs for the IAA Long Range Plan in 1992, and so became the new guideline.

During the past 15 years the 25-year rule has been brought up a few times, but the majority of the IAA History Committee members favor this rule. Presently the 25-year rule is handled such that the reported event/project/activity must

have started well before 25 years ago, but the end and follow-on known results might be younger than the 25-year limit.