

History of Rocketry and Astronautics

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

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Chapter 19

Fifty Years of History of Astronautics Symposium*

Philippe Jung[†]

Abstract

Luminary Fred Durant, IAF President, passed away a few months before the venue of the 50th edition of one of the most impressive aerospace history endeavors, the History of Astronautics Symposia, held by the International Academy of Astronautics (IAA) since 1967, in the frame of the International Astronautical Congress (IAC).

The ball was set rolling by giant Theodore von Kármán back in 1961, when he created a Committee on the History of the Development of Rockets and Astronautics, belonging to the IAA, that he also had founded barely one year before. His vision led to the establishment in 1967 of a History of Astronautics Symposium, which today has delivered an astounding 775 papers, covering the rockets and space endeavors of no less than 57 countries in the world.

From a single session, it went up to 4 sessions in 2002, during which a pleiad of giant pioneers have told their story, like Ananoff, Bredt, Chertok, Crocco, Damblanc, Draper, Feoktistov, Gavin, Gzenko, Koelle, Konyukhov, Malina, Merkulov, Mishin, Nebel, Oberth, Pickering, Pobedonostev, Ponomareva,

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Rauschenbach, Schmiedl, Shepherd, Singer, Stuhlinger, Tikhonravov, Truax, Van Allen, Vassy, Young, Zwicky...not counting noted international historians.

A feat unique in IAF and IAA, all these symposia have their proceedings published, a remarkable 33 volumes so far published, which are the best history of rocket and space activities ever produced, an unequalled source for all space historians. The first volume was edited by Fred Durant and George James. A very useful detailed index 1967-2000 also has been published.

In the wake of a first paper by Fred Durant, Fred Ordway and Viktor Sokolsky in IAC 1996, the full story of the Symposium organized by the History Committee, will be told for the first time in this paper, including its impact on space history, together with statistics.

Acronyms

AAS *American Astronautical Society*

ACHA *Advisory Committee on History Activities*

ARS *American Rocket Society*

BIS *British Interplanetary Society*

CIA *Central Intelligence Agency*

CNES *Centre National d'Etudes Spatiales*

COSPAR *Committee On SPace Research*

DFL *Deutsche Forschungsanstalt für Luftfahrt*

EVA *Extra Vehicular Activities*

GALCIT *Guggenheim Aeronautical Laboratory, California Institute of Technology*

GDL *Gas Dynamics Laboratory*

GIRD *Group for Investigation of Reactive Movement (Gruppa Isutchenya Reaktivnogo Dvishenya)*

GPO *Government Printing Office*

GREFF *Groupe de Recherches sur les Engins et Fusées Français*

IAA *International Academy of Astronautics*

IAC *International Astronautical Congress*

IAF *International Astronautical Federation*

IDR/UPM *Instituto Ignacio da Riva/Universidad Politecnica de Madrid*

IGY *International Geophysical Year*

IISL *International Institute of Space Law*

ISAS *Institute of Space and Astronautical Science*

ISS *International Space Station*

JATO *Jet Assisted Take Off*

LRBA *Laboratoire de Recherches Balistiques et Aérodynamiques*

LRV *Lunar Roving Vehicle*

MATRA *Mécanique Aviation TRAction*

NASA *National Aeronautics and Space Administration*
 NASDA *NAtional Space Development Agency*
 NASM *National Air & Space Museum*
 NOTS *Naval Ordnance Test Station*
 NRO *National Reconnaissance Office*
 OART *Office of Advanced Research and Technology*
 ONERA *Office National d'Etudes et de Recherches Aéronautiques*
 REP *Robert Esnault-Pelterie*
 RMI *Reaction Motors Inc*
 RNII *Reaktivny Naouchno Isledovatelsky Institut (Jet Propulsion Research Institute)*
 RRI *Rocket Research Institute*
 SAM *Surface to Air Missile*
 SEP *Société Européenne de Propulsion*
 SEPR *Société pour l'Etude de la Propulsion par Réaction*
 SEREB *Société pour l'Etude et la Réalisation d'Engins Balistiques*
 SETI *Search for Extra Terrestrial Intelligence*
 SNCASE *Société Nationale de Constructions Aéronautiques du Sud Est*
 SNECMA *Société Nationale d'Etude et de Construction de Moteurs d'Aviation*
 SSTL *Surrey Satellite Technology Ltd*
 USAF *United States Air Force*
 VE *Véhicule d'Essais*
 WRE *Weapons Research Establishment*
 WW II *World War II*
 3AF *Association Aéronautique et Astronautique de France*

I. Introduction

On the occasion of the very first meeting of the newly created *International Academy of Astronautics* (IAA) on 3 October 1961 in Washington, his founder, Theodore von Kármán, was authorized to establish a *Committee on the History of the Development of Rockets and Astronautics*. It would undertake research over a broad international spectrum and timeline.¹ This was on the understanding that history only would be addressed within the IAA, the philosophy being to prevent duplication between the *International Astronautical Federation* (IAF) and the IAA.

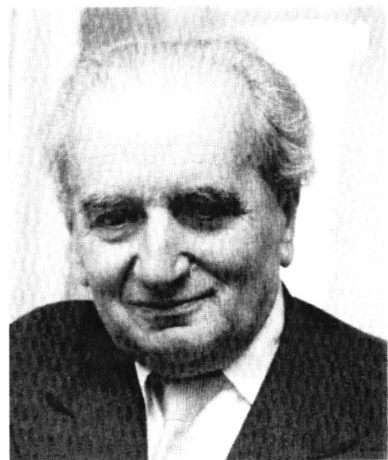


Figure 19–1: Theodore von Kármán. (*IAF – The First 50 Years*).

Under the chairmanship of Charles Dollfus, its 13 members first met on 27 September 1963 in UNESCO in Paris: A. Buseman, Eugene Emme, A. G. Haley and Frank Malina (USA), C. H. Gibbs-Smith, J. Needham and Leslie Shepherd (UK), Viktor Sokolsky (USSR), Irene Sanger-Bredt (Germany), U. S. von Euler (Sweden), R. Pešek (Czechoslovakia), Teofilo Tabanera (Argentina). The second meeting on 14 September 1965 in Athens led to a proposal on 30 April 1966 to hold history symposia during the congresses. This was quickly approved by the IAA, which appointed a study group led by Fred Durant III, with C. Dollfus, E. M. Emme and V. N. Sokolsky. They proposed to Stark Draper, Valentin Glushko, F. J. Malina and I. Sanger-Bredt holding an annual symposium, which was unanimously endorsed, by letters from 9 June to 28 September 1966.

II. The First Symposium on the History of Rocketry and Astronautics (1967)

The first Symposium took place in **Belgrade on 26 September 1967**, with two sessions, coordinated by C. Dollfus, and chaired by E. M. Emme. F. C. Durant III and V. N. Sokolsky were introduced by IAA Vice-President R. Pešek. Some 60 persons from 11 countries listened to 14 papers from 6 countries (USA



5, USSR 4, Germany 2, France, Italy and UK one). They dealt with memoirs, pioneers and organizations. Many actually were presented by a constellation of pioneers: Luigi Crocco, Louis Damblanc, F. Malina, Hermann Oberth, Edward Pendray, Yuri Pobedonostev, A. I. Polyarny, H. E. Ross, Ernst Steinhoff, Mikhail Tikhonravov, Robert Truax. Papers also presented Russian rocket planes and DFL engines.²

Figure 19–2: J. M. J. Kooy and F. Durant in 1967. (*IAF – The First 50 Years*).

New York on 16 October 1968 confirmed the success, when the 2nd Symposium saw 14 papers presented, with Y. Pobedonostev and again several pioneers: F. Durant, Rolf Engel, Vladimir Kopal (on Mandl), Y. Pobedonostev, I. Sanger-Bredt, and a certain Boris Rauschenbach—who many years later was revealed as one of the top managers in the Soviet space program! Papers also were presented on Robert Goddard, Robert Esnault-Pelterie (REP), Russian pioneers,

Leningrad Gas Dynamics Laboratory (GDL), Swedish Wilhelm Unge, Italian theory in the 30's, Giulio Costanzi, early Czech rockets, centrifuge mice experiments and astrodynamics origins.

III. Reduced Scope (1969)

Eugene Emme became a new coordinator in 1969, keeping the momentum, albeit with only one session during the following years:

Mar del Plata on 10 October 1969, with pioneers F. Malina and M. Tikhonravov, when Fred Ordway presented his first paper, on Pedro Paulet, a Peruvian who may have ground tested the first liquid propellant rocket in Paris in 1895. A Vaillant rocket of the Swedish Rocket Corps in a paper by Ingemar Skoog has now been analyzed as the first rocket propelled delta winged vehicle back in 1821! Early Romanian rockets were described for the first time, and papers presented on Tsiolkovsky and Meshchersky, RNII (Jet Propulsion Research Institute) and on hitherto unknown Sergei Nezhdavosky.



Figure 19-3: F. Malina, G. James and S. Draper in 1969.
(*IAF – The First 50 Years*).

Constance on 9 October 1970, with pioneers G. James (on Aerojet liquid hydrogen engines), Joseph Kaplan, Rudolf Nebel, I. Sanger-Bredt (on the *Silver Bird*), Friedrich Schmiedl and papers on early US Navy satellite projects, early Spanish rockets, Guido von Pirquet and early non-military rockets.

IV. Initial Publication (1970)

A first step towards disseminating the papers took place in 1970 when always active historically Soviet Union published the 1967 papers in Moscow, al-

beit in Russian. Two further volumes for 1968 and 1969 were published much later in 1979.

In 1971, with the help of V. Sokolsky and Cargill Hall (*USAF Historical Research Center*), the number of papers climbed back to 12, but still within a single session:

Brussels on 23 September 1971, with pioneers Stark Draper, Leonid Dushkin, F. Malina, Y. Pobedonostev, Fritz Zwicky. A new historian appeared, Frank Winter, to be for a very long time the most prolific author of the Symposium. Early Austrian and Polish rockets were described for the first time. Papers also were presented on 19th and early 20th century rockets, early Spanish activities, early spacecraft control, Tsiolkovsky space station.

With 12 papers, the 1971 session thus was very dense, leading to a return to two sessions the following years:

Vienna on 13 October 1972, with pioneers L. Dushkin, Robert Gilruth, Igor Merkulov, William Pickering, Milton Rosen, E. Steinhoff. Papers were presented on Friedrich Tsander and early Hungarian (for the first time), Polish and Swiss activities, early propellant analyses.

Baku on 11 and 12 October 1973, for the first time on two days, with pioneers Kurt Debus, F. Durant, Heinz-Hermann Koelle, Y. Pobedonostev, B. Rauschenbach, M. Tikhonravov and papers on R. Goddard, Lewis Center, camera rockets (Part I), *Sputnik 1*, RNII, Russian sounding rockets and control of their rockets and satellites, early inertial guidance.

Amsterdam on 4 and 5 October 1974 with pioneers George Hoover (US Navy), I. Merkulov and papers on Sergeant origins including the polysulfide-propelled *Thunderbird* rocket and the first long duration solid propellant motor (RV-A-10), American rocket aircraft, Rogallo wing, M. Tikhonravov, Russian ramjets, French *Véronique* by Jean Corbeau, Polish rockets, early Hungarian activities.

Lisbon on 24 and 26 September 1975 with pioneer Arlette Vassy and papers on American scientific V 2's and early aeronomy experiments, grenade experiments, early Luna probes, Russian sounding rockets, early European rockets including the Vaillant one, *Skylark*, early spaceplanes.

V. Proceedings (1974)

A significant step took place at the time, when the decision was taken to start publishing these papers in their original English language, initially with the 1967 and 1968 Symposia, as already edited in August 1973 by F. C. Durant and G. S. James, with the help of F. Winter from the *National Air and Space Museum*

(NASM). They were published in 1974 by the Museum, as No. 10 in the *Smithsonian Annals of Flight*. At the time an intern student, I still remember being stunned finding this book in the *Washington Government Printing Office* (GPO), for a paltry 4 \$, replete with information seen nowhere else on early American rockets, Soviet rockets and ramjets, R. Esnault-Pelterie and L. Damblanc, E. Sänger, Czech rockets!

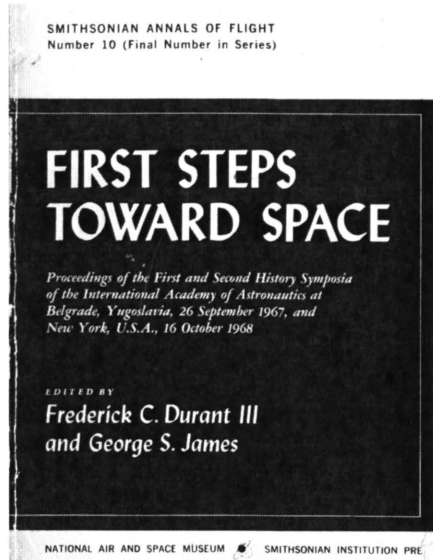


Figure 19-4: 1967/68 Symposia cover. (*IAF – The First 50 Years*).

As volume No. 10 was the last of the *Annals*, NASA took over in 1977, publishing the 1969 to 1972 Symposia as *Conference Publication no. 2014*. They include fascinating new details on *Guggenheim Aeronautical Laboratory, California Institute of Technology* (GALCIT) activities, early US Navy satellite projects, Aerojet hydrogen motors, Polish and Russian rockets. The 20 year rule is then mentioned, defining when a subject is old enough to be considered historical; it later was increased to 25 years.

An arrangement was then made much later during the 1985 Congress between Luigi Napolitano of the IAA, F. Durant and F. Ordway, thereby allowing publication of our papers by the *American Astronautical Society* (AAS), with *Annals No. 10* republished as Volume 6 (IAA Vol. 1) in 1985 and *Publication No. 2014* as Volume 7 (IAA Vol. 2, in two Parts) in 1986, the publisher being Univelt, Incorporated (Horace and Robert Jacobs) and the series editor R. C. Hall. Volume 8 (IAA Vol. 3), covering the 1973 and 1974 Symposia, thus became the first one published directly under this agreement in 1989, with Kristan Lattu* the editor, an excellent arrangement which still stands today.

VI. A Long Lull (1976–1982)

The Symposium however entered a long period back to only one session, AAS Volumes 9 to 11 (IAA Vol. 4 to 6, edited by F. I. Ordway, Å. I. Skoog,

* She unfortunately died on 13 March 2003.

Roger Launius respectively) thus covering the Symposia of 1975 to 1977, 1978 to 1980 and 1981 to 1982 respectively (with publication delayed to 1989, 1990 and 1994):

Anaheim on 15 October 1976, with the lowest ever number of papers, five, but all interesting, on American 0-g research, Harry Bull, GDL motors, Operation *Backfire*, Swiss rockets.

Prague on 28 September 1977, with pioneers I. Merkulov, B. Rauschenbach and papers on Kepler, early liquid hydrogen propulsion, Russian sounding rockets, Korolev, Russian GDL, GIRD (Group for Investigation of Reactive Movement) and Aviakhim, Hungarian ramjets, mathematical modeling.

Dubrovnik on 6 October 1978 with pioneers Rolf Engel, I. Merkulov and papers on the oldest fire arrow, *Reaction Motors Inc.* (RMI), *Purdue University*, Johannes Winkler, early Russian rockets, V. V. Rasumov, Hungary lunar radar, astrodynamics.

Munich on 21 September 1979, with pioneer Alexandre Ananoff and papers on early rockets in the world, Shuttle antecedents, early Russian scientific satellites, Walter Hohmann, IAF, rocket equation, rocket engine cooling.

Tokyo on 28 September 1980, with papers on early Chinese rockets, Wallops Island, early American liquid motors, *Pacific Rocket Society*, liquid hydrogen motors, Romanian motors, Kepler laws.

Rome on 11 September 1981, with pioneers James Van Allen, Pierre Contensou (on REP), B. Rauschenbach and papers on the German A's series, American EVA's, Nikolai Rynin, Nikolai Kibalchich, Ary Sternfeld, Russian biological flights, Polish space science, engine erosion.

Paris on 27 September 1982 with papers on RMI (Part I), inertial navigation, Caltech von Kármán group, science fiction films, K. Tsiolkovsky, Russian training in rocketry, REP, Elie Carafoli.

VII. Back to Two Sessions (1983)

1983 marked the entry into a cruising mode, back to two sessions, now over two days (except in Innsbruck), with the exception of the Stockholm single session.

It also was the year our committee became the *History of Astronautics Committee*.

Publishing evolved as well, with Volume 12 (IAA Vol. 7) for the first time covering a single Symposium, and issued already in 1991, i.e. before Volume 11, edited by John Sloop, thus beginning to catch up:

Budapest on 12 and 13 October 1983, with pioneers Burt Edelson, B. Rauschenbach (on RNII), L. Shepherd, R. Truax and papers on early Korean rockets, WWII US Navy rockets, *Naval Ordnance Test Station* (NOTS), RMI/Thiokol (Part II), *Rover* nuclear motors, US ground stations, Space Camp, GIRD and GDL, *British Interplanetary Society* (BIS), Ciurcu rocket boat, Polish Olgierd Wołczek, Hungarian astronomical societies, early comsats, Leonhard Euler.

A welcome addition also was the publication of the author biographies—unfortunately this was the only instance, although we again proposed it in 2005.



Figure 19–5: History Symposium in 1984 (left to right; not identified, V. Sokolsky, L. Ronquillo, F. Ordway, H. Moulin, J. Griffiths, J. Becklake). (*IAF – The First 50 Years*).

In the wake of the single Swedish session, two symposia again were combined per volume, beginning with Volume 14 (IAA Vol. 8), edited in 1993 by Tom Crouch and Alex Spencer:

Lausanne on 9 and 11 October 1984, with papers on early Chinese rockets, Tsiolkovsky, Russian launch pads, Anatole Blagonravov, 19th century French rockets, WWII British rockets and astronomical societies, Romanian rocketry, early rocketry.

Stockholm on 9 October 1985 with Homer Boushey on Jet Assisted Take Off (JATO) tests and papers on early American stations and heat shields, Alexei Isaiev, early Russian rescue device, reaching for Mars, weather satellites, early life saving rockets, Polish Astronautical Society.

Volume 15 (IAA Vol. 9) also was edited in 1993 by Lloyd Cornett:

Innsbruck on 9 October 1986 with pioneers W. Pickering, B. Raushenbach (on *Vostok*) and papers on camera rockets (Part II), Goddard, pre-space

Mars observations, *Collier's Magazine*, NASA engineers, Tsiolkovsky, Gagarin, Georgi Babakin, solid propellant.

Brighton on 13 and 16 October 1987 with pioneer B. Rauschenbach, astronaut Charles Walker and papers on Isaac Newton, Laos and Thailand rockets, pre-space spacecraft, Congreve, American V 2's, *Horizon* lunar outpost, Los Alamos, *Man High*, American ground stations, *Apollo* Moon landings, identification of the only picture of Armstrong walk, K. Tsiolkovsky, Y. Pobedonostev, *Venera* and *Mars* trajectories, *International Geophysical Year* (IGY), T. von Kármán, mathematical modeling. It also was the beginning of a continuous series of previously unknown French rockets of the 50's, with the unique *Société Nationale de Constructions Aéronautiques du Sud Est* (SNCASE) SE 1910 rocket sled and its world speed record.

The second session nearly was derailed by a huge storm during the night, with many destructions.

Volume 17 (IAA Vol. 10) was edited in 1995 by John Becklake:

Bangalore on 11 and 14 October 1988 with cosmonaut Konstantin Feoktistov and papers on Congreve, historic sites preservation, the *American Rocket Society* (ARS), Holloman, *Man High*, X-20 *Dyna Soar*, *Apollo* Moon science, M. Tikhonravov, Vladimir Vetchinkin, record breaking ramjet SE 4400 with the highest ever air-breathing motor, *Black Knight*, *Ariel 1*, Indian science fiction.

Málaga on 12 and 13 October 1989 with pioneer B. Rauschenbach (on *Luna 3*) and papers on interviewing pioneers, RMI *Black Betsy* (Part I), Wernher von Braun, *Mercury* primates, *Mercury-Redstone*, *Atlas-Centaur*, American manned planetary missions of the 60's, French liquid propulsion, SE 4100 the first modern French rocket, German Rocket Society, British experiments 50/60's.

This congress saw of the first appearance of Gleb Lozino-Lozinski,* mobbed by a crowd looking into his photo album with various unknown BOR's!

From now on, the proceedings would become annual, with a single exception in 1994/95, with Donald Elder the new AAS series editor. Volumes 19 and 20 (IAA Vol. 11 and 12) were both edited by J. D. Hunley in 1997:

Dresden on 10 and 11 October 1990, with pioneers Vassily Mishin (on Korolev), Konrad Dannenberg, Joseph Gavin (on the *Lunar Module*) and papers on *Empire*, American *Hermes* program, *Black Betsy* (Part II), gravity assist origins, *Titan* rockets, German specialists in the Soviet Union, Russian R-3 project, Jean-Jacques Barré, SE 4300 surface-to-air missile (SAM), Alfred Maul, early Romanian endeavors.

* He died on 28 November 2001.

An interesting new activity for the History Committee was the organization of a visit to historic Peenemünde.

Montreal on 7 and 8 October 1991, with pioneers V. Mishin, Dale Myers (on *Navaho*), B. Rauschenbach (on *Vostok*), Fred Singer (on *Farside*) and papers on gravity assist, *Jupiter* engine, American segmented solid propulsion, *Vela* satellites, early Russian probes, French rocketry 1739-1872, *Coralie* rocket, *Black Arrow*, H. Oberth, Peenemünders staying in Germany, Romanian Paul Popovatz.

Volumes 21 (IAA Vol. 13) and 22 (IAA Vol. 14) were both edited in 1997 and 1998 by P. Jung, when his work, cover and preface included, was unexpectedly and unacceptably totally modified without any previous warning or explanation:

Washington on 1 and 2 September 1992 with pioneers V. Mishin (on N-1), B. Rauschenbach (on *Burya*), Fred Singer (*Mouse*) and papers on T. von Kármán students, Eisenhower space policy, X-20, Lockheed lunar bases, *Centaur*, *Shuttle* origins, Paul Heylandt rocket cars, Peenemünde legacy in France, early French *Pierres Précieuses* (Precious Stones) rockets, beginnings of liquid hydrogen in France and Germany, Japanese space activities, Australia space beginnings.

Graz on 21 and 22 October 1993 with pioneers G. James (on Aerojet and on the *Rocket Research Institute* – RRI), V. Mishin (on past and future rockets), B. Rauschenbach (on satellite control), K. Dannenberg, and papers on H. Oberth UFA rocket, Klaus Riedel, German engineers in Britain, *Centre National d'Etudes Spatiales* (CNES), SE 4200 the first operational ramjet, *Viking* engine, British *Alpha-Beta*-RTV 1 engines, Japanese rockets and satellites, lunar rovers, space stations, space navigation.

It was a unique occasion for a small group of us to meet pioneer F. Schmiedl.

VIII. A Third Session (1995)

A major event took place during the 1995 Spring Meeting in Paris when a record 30 abstracts were suddenly proposed. Since many were good, and with sessions limited to 8-9 papers maximum, I suggested to try a third session, which was accepted by the History Committee and the IAF.

These sessions thus became specialized, Organizations, Technical and Memoirs/General, adopting the following year their current formal structure of Memoirs, Organizational histories, Scientific and technical reviews.

Also, and for the last time, because of problems with collecting papers, publication of both 1994 and 1995 Symposia was done by D. Elder and Chris-

tophe Rothmund in a single, bumper, Volume 23 (IAA Vol. 15) as late as in 2001:

Jerusalem on 11 and 14 October 1994 with pioneers V. Mishin (on reusable launchers),* B. Rauschenbach (on Moon surface research), Erna Oberth (on Hermann Oberth) and papers on Krafft Ehrlicke, *Lunar Module*, *National Reconnaissance Office* (NRO), Baikonur, Russian manned lunar program, Michael Yangel, Cold War in space (the first paper by Russian Maxim Tarasenko), SE 1500 the first French guided and series missile, *Société pour l'Etude de la Propulsion par Réaction* (SEPR)/*Société Européenne de Propulsion* (SEP), Ukraine space history, Yangel.

Oslo on 3 and 6 October 1995 with pioneers K. Dannenberg (on Albert Püllenbergl), G. James (on youth space experiments), B. Rauschenbach and papers on H. Oberth and Rudolf Nebel, spaceflight simulation shows/Luna Park (Part I), *Grand Central Co* (by Robert Bramscher, who unfortunately died later), Homer Stewart, Rand in pre-Apollo times, Apollo at 25, V 2 impact in Russia, Soviet space industry (by M. Tarasenko, who unfortunately was killed by a car on 14 May 1999 in Moscow), Baikonur, Ukrainian launchers, Yuzhnoye, ramjet SE 4500, *Ariane* roots, *A-1 "Astérix"* satellite, *Laboratoire de Recherches Balistiques et Aérodynamiques* (LRBA) 4212 rocket, British *Delta* engine, *San Marco*, Japanese festival rockets, *Pencil* rocket.

1996 then saw a new record of 39 abstracts, of which only 28 were however selected:

Beijing on 8, 10 and 11 October 1996, covered by Volume 25 (IAA Vol. 16) also edited in 2001 by Hervé Moulin and D. Elder, with pioneers Oleg Gazenko (on Tsiolkovsky), B. Rauschenbach (on rocket stability), cosmonaut Valentina Ponomareva (on the first woman cosmonaut team) and papers on spaceflight simulation shows (Part II), H. Oberth, *Redstone* rocket, *Apollo* fire, Russian space designers, Plesetsk, Russian Moon manned program, 30th History Symposium anniversary, SNCASE rockets of the 50's, *D-1* satellite, *Ariane*, Vickers rocket model, *Long March*, Chinese solid engines, Japanese solid WW II rockets, German rockets in Africa, Australian Frank Cotton's pressure suit.

Figure 19–6: Oleg Gazenko in 1986.
(*IAF – The First 50 Years*).



* He died on 10 October 2001.

The Symposium was honored by the presence of Chinese pioneer Tsien (who died on 31 October 2009) and Arthur Clarke. Afterwards, in a magnificent reuniting after *2001 A Space Odyssey*, F. Ordway who was the technical advisor to Stanley Kubrick, together with a few of us, visited A. C. Clarke in his hotel.

Unfortunately, there again were problems with the collection of the 1997 Symposium papers, which only were published in 2005 as Volume 26 (IAA Vol. 17) by G. James:

Torino on 7, 8 and 9 October 1997 with pioneers K. Dannenberg (on Mitchell Sharpe who died in 1997), G. James (on RRI cargo rockets), B. Rauschenbach (on Jury Kondratyuk) and papers on K. Tsiolkovsky space voyages and elevator, W. von Braun thesis, Rocketdyne, X-20, Navy's *Hydra*, early American space lasers, *US Space & Rocket Center*, Russian ramjets, early Russian liquid engines, *Voskhod*, Kapustin Yar, Khrunichev, Vlacheslav Kovtunencko, PS-2 *Sputnik 40 Years* replica, Le Prieur and the first air-launched rockets, Sud Aviation X 422 the first cruise missile, LRBA/SEP engines, early British space policy, WW II Japanese liquid rockets, sun synchronous orbit, Syrian cosmonaut Muhammad Fares (Syrian author G. Edelby unfortunately never came again).

There was also a special tribute to Bill Hilton who proposed the "Molnya orbit" in 1960.

A surprise appearance was Boris Chertok, whom we had to accommodate in our Symposium, which created a diplomatic row with the final speaker, an American author...

In the light of the recurrent problems with the publication of our papers, done each year by a member of the Committee, on a voluntary basis, and after a proposal by R. Launius in 2004, it was decided that Å. I. Skoog would coordinate an effort to catch up progressively with publications, the two next ones thus being issued in 2007:

Melbourne on 29 and 30 September and 1 October 1998, with Volume 27 (IAA Vol. 18) edited by Kerrie Dougherty, with pioneer Martin Sweeting (on *Surrey Satellite Technology Ltd-SSTL*) and papers on Chinese, Japanese, Laos and Thai festival rockets (Part I), *2001 A Space Odyssey*, *Navaho*, *Ranger*, Moon race, F. Tsander, Russian solid propulsion, French astronautics in the 30's, French biological experiments, Franco-American cooperation, SEREB VE 111 *Topaze* the first French inertial rocket, Cosford Museum's German WW II rockets, *Black Arrow*, *Ohka* suicide aircraft, Australia space activities and cooperation with NASA, Australian space societies. An available paper by B. Rauschen-

bach* on the first Russian space organizations was unfortunately not allowed to be published, as not presented.

A remarkable visit of Woomera was organized, its launch pads (*Wresat, Europa, Skylark*...even the one planned by Kistler, American ground station, the Museum...).

Amsterdam on 5, 6 and 7 October 1999, with Volume 28 (IAA Vol. 19) edited by Frank Winter, with pioneers Guy Severin, G. James and papers on John Atwood, North Aviation, RRI rockets, *Apollo* impact, large solids, Russian liquid engines, Russian Moon rockets, I. Sanger-Bredt, French post-WW II rockets (Part I), French mid-50's satellite projects, *Veronique* and *Vesta*, French biological parabolic flights, *Black Prince*, Australian rockets, early Dutch activities, early multi-stage Chinese rockets, *Shusui* fighter, Argentinian rockets, celestial mechanics, gravity assist, commercial satellites.

Also, on the occasion of that 50th Congress, a remarkable lunch was organized with the pioneers of the first Congress, F. Durant, HH. Koelle, F. Ordway, L. Shepherd and Tomifumi Godai, IAF president.



Figure 19–7: Interpreter, F. Durant, J. Villain, C. Gourdet, H. Moulin, HH. Koelle, T. Godai, L. Shepherd & wife, F. Ordway & wife, P. Jung. (*IAF – The First 50 Years*).

A new volume was published in 2009:

Rio on 3, 4 and 5 October 2000, with Volume 30 (IAA Vol. 20) edited by Otfried Liepack, with papers on Russian military space, Baikonur tragedy, French post-WW II rockets (Part II), French liquid engines, French student activities, Hermann Noordung, early Chinese rockets, UK large solids, Kagoshima, Indian space activities, Czech in space, Argentinian T. Tabanera, Argentina biological flights.

* He died early April 2001.

IX. The History Committee Dissolved (2000)

The year of 2000 could have been sad when the History Committee was wiped out in the tumultuous IAA reform,* being relegated to a Study Group having to beg every year for a renewal, an insult to the international team having continuously organized 34 Symposia of trailblazing quality, every year since 1967, plus progressively publishing outstanding proceedings. However, a few of us fought very hard to continue the work, and successful we were in the end...

Precisely beginning to catch up, two proceedings were published in 2010:

Toulouse on 1, 3 and 4 October 2001, with Volume 32 (IAA Vol. 21) edited by C. Rothmund, with pioneers HH. Koelle, L. R. Shepherd and papers on John Parsons, Kurt Debus, Army Doppler system, *Bumper* in Cape Canaveral, early Russian biological flights, Russian suits (Part I), Khrunichev reusable vehicles, great 19th Century rocket pioneer Louis Susane, Victor Coissac, Henri Moureu, France and IGY, ONERA OPd rockets, post-war UK space policy, *Science Museum*, *Baby* rocket, early Chinese *Fire Dragon*, Australian *Jabiru* rocket, Romanian Dorin Pavel.

This time, no less than two visits were organized:

- the Latécoère plant, where rockets were built in the 50's/60's
- the Congreve sites, where he lived (we were exceptionally allowed to enter for the first time his home, today's the Archbishop house!), where he was initially buried, and his probable present grave.

X. A Fourth Session (2002)

With the Congress in prestigious Houston, and a nearly record 37 abstracts, exceptionally all good ones, I proposed to have an additional, plenary, history session with several pioneers (Joseph Gavin, W. Pickering, John Young replacing Harrison Schmitt):

Houston on 14, 15, 17 and 18 October 2002, with Volume 33 (IAA Vol. 22) edited by Michael Ciancone, Rick Sturdevant being the new AAS series editor, with pioneers F. Durant (on Goddard and Lindbergh), Joseph Gavin (on the LM), W. Pickering, Harrison Schmitt, R. Truax (on sea launches) and papers on Galileo Galilei, Darrell Romick, David Lasser, *Central Intelligence Agency* (CIA) and space, American nuclear engines, manned voice transmissions, space-flight and American public, *Laika*, Victor Coissac novels, Albert Ducrocq the

* The rationale being to have a more dynamic Academy, all committees were dissolved, even the active ones! Only three groups in the whole Congress publish their acts, History, Safety and Rescue, International Institute of Space Law (IISL).

greatest space communicator, French committees in the 50's, SEPR and LRBA engines, *Bélier-Centaure-Dragon* rockets, *Fire Dragon* flight, Austro-Hungarian Franz Ulinski, Japan *National Space Development Agency* (NASDA), Australian ground stations, Romania MRE engine, Slovenian *Vega* rockets, Bulgarian space, launchers reliability.

Another innovation was a poster session, on NASA archives, Johnson Spaceflight Center oral history, Vladimir Utkin, Luigi Gussalli.

The Congress being coupled with the *Committee On SPace Research* (CO-SPAR), we also had for the first time a joint session with them, with pioneer Wesley Huntress on interplanetary probes.

XI. A special session dedicated to the host country contribution (2003)

No less than three volumes were edited in 2011:

Bremen on 29, 30 September, 2 and 3 October 2003 with Volume 34 (IAA Vol. 23) edited by O. Liepack. This saw the greatest ever number of abstracts, 42, of which 36 were selected. I thus proposed to organize a fourth special session on the post-war contribution of the German engineers, in the wake of wildly erroneous statements in France on the subject. This also perfectly coincided with the aftermath of the fall of the Berlin Wall. We had the extraordinary revelation on 3 October by B. Chertok* that his first job had been to transfer the Germans engineers to Soviet Union, and that he played his career by voluntarily



delaying such a transfer (like the French)! Other speakers for their respective countries were Hartmut Sängner (son of Eugen),[†] Jesco von Puttkamer and F. Ordway, P. Jung (who concluded German influence had been much overblown in France), John Becklake for the UK, Kerrie Dougherty on the astonishing project to hire E. Sängner in Australia.

Figure 19–8: J. Becklake, P. Jung, O. Liepack, Thorsten Cordes, B. Chertok, Jesco von Puttkamer, F. Ordway. (*IAF – The First 50 Years*).

* He died on 14 December 2011.

† He passed away on 17 December 2015.

With the participation of cosmonaut Dorin Prunariu (on Oberth), the other papers were on American engines cooling, Arthur Rudolph, US policy on debris, propellant tanks pressurization, Tsiolkovsky influence abroad, Russian suits (Part II), Vassily Budnik, Rakettenflugplatz Berlin, *Monica* and *Dauphin-Eridan* rockets, Franco-German cooperation in propulsion, *Ohsumi* satellite, Japan-USA relations in the 60's, Austrian pioneers, V 2 in the Netherlands, Romanian engines, Slovenian RCHX-1 *Storm*, *Fire Dragon* aerodynamics.

There was again a Poster session, but with only one poster eventually provided, on the Hermes spaceplane, the latter was eventually included in our sessions.

A visit to Peenemünde again was organized.

We however had to fight hard to keep our fourth session, the IAC even wanting us to go back to two sessions!

Vancouver on 4, 5, 6 and 7 October 2004 with Volume 35 (IAA Vol. 24) edited by Å. I. Skoog, with papers on R. Goddard influence, University of Alabama collections, *Apollo* astronauts, *Apollo* NASA-industry links, Energomash, Russian suits (Part III), O. M. Makarov, post-WWII German engineers in France (Part II), inertial navigation in France, French early 60's meteorological rockets, Spadeadam *Blue Streak*, *Falstaff* in Australia, Canada space program, Japan-US cooperation in the 70's, *Mu* launcher, updated *Fire Dragon* aerodynamics update, Slovenian rockets and scientists, aircraft rocket engines.



The special session covered the *International Space Station* (ISS) with pioneer Karl Doetsch and astronaut Bjarni Tryggvason: stations history, in orbit research, Goldin and O'Keefe, Canada contribution.

Figure 19-9: Karl Doetsch. (*IAF – The First 50 Years*).

There was a poster session on Taiwan *Space Program Office*.

There was yet another innovation, a Joint Current Event on 8 October with the IAC-04-V Space Transportation Symposium (V.7 Launch Service Economics session), on the Canadian Avro *Arrow* heavy fighter contribution to the US space program.

Fukuoka on 18, 19 and 20 October 2005 with Volume 36 (IAA Vol. 25) edited by Emily Springer. With a low number of abstracts (24), there were only 3 sessions, with papers on E. Sänger, Fred Whipple, post-war Russian industry, Vassily Voznyuk, VE 210 *Rubis* highest European sounding rocket, post-war French solids, SNECMA test facilities, Chinese apogee motors, Australian sounding rockets.

The now well established special session, on the local organizer contribution to rocketry and space, Japan, covered traditional farmer rockets, military rockets of the 30's and the 40's, post-war rockets, liquid rockets, Tanegashima, international cooperation.

Yet another bad omen was the creation on 19 October 2005 of the joint IAF/IAA/IISL *Advisory Committee on History Activities* (ACHA)—which soon started performing historical activities, in blatant contradiction with its own terms of reference, as well as the 1961 agreement. It even got subsidies, a shocking contrast to the decades of free, volunteering work by the IAA History Committee members, which have to pay, albeit at a reduced rate, for the books.*

Continuing to reduce the backlog, two volumes were published in 2012:

Valencia on 3, 4 and 5 October 2006 with Volume 37 (IAA Vol. 26) edited by Marsha Freeman, with papers on R. Goddard optimal ascent problem, Rudolf Hermann, Project *Emily* (*Thor* in the UK), X-15B, early NASA biological flights, *Apollo* international aspects, NASA *Office of Advanced Research and Technology* (OART), *University of Alabama* oral history, Ukrainian pioneers, V. M. Kovtounenko, French Ruelle *Maruca* SAM, French fluorine engine, Hermann Bondi, Swedish sounding rockets, Australian *Weapons Research Establishment* (WRE), Portugal in space, from balloons to spacecraft, the word “cosmonautics” origins.

The special session on Spain presented the first Spanish plan, sounding rockets, *Ariane* in Spain, satellites, *Hispasat*, El Arenosillo, Ignacio Da Riva (*Instituto Da Riva/ Universidad Politecnica de Madrid* IDR/UPM) microgravity institute, ground stations.

There was, for the last time, a poster session, on the *Euroavia* student association.

Yet another novelty was a Highlight Lecture on 6 October dedicated to Frank Malina, by his son Roger.

Hyderabad on 26, 27 and 28 September 2007 with Volume 38 (IAA Vol. 27) edited by Anthony Springer, with papers on T. von Kármán, Johnson space policy, *Apollo* lunar rendezvous, Vladimir Kukushkin, Latécoère *Malaface* cruise

* The Editor gets one free copy of his book.

missile precursor, SEP HM4 engine, *Sakigake* and *Suisei* probes, spy satellites and Cold War.

There were two special sessions, due to the great *Sputnik 1* 50th anniversary, leading to a regrouping of the Memoirs and Technical review sessions:

- *Sputnik 1*/IGY/space race on the 50th anniversary of the launch of *Sputnik 1*, with papers on the latter, *Sputnik* origins, *Sputnik 4* remains in the USA, Russian experts in Israel, *Sputnik 1* and Portugal. A huge surprise was the revelation that there had been a competitor to the R-7 and *Sputnik 1* with M. Yangel's R-12!
- India contribution covered a summary of Indian activities, Tipu Sultan rockets of the 18th Century, SLV-3 guidance, modern rockets, cooperation with Russia, analysis of India progress.

After our Committee had further proposed a Plenary Session on *Sputnik 1*, we were totally excluded from it on 25 September,* the ESA representative even making a grossly wrong statement about the "purely civil origins of space in Europe"!

To strengthen our publishing activities, it was decided to nominate a third coordinator, in charge of the editing of the year's proceedings.

Again, two proceedings were published in 2013, those of 2008 and 2009:

Glasgow on 29 and 30 September and 2 October 2008 with Volume 39 (IAA Vol. 28) edited by John Harlow, with papers on James Wyld, Robert Forward, *Argus* project, NASA OART and the space station, *Apollo* social aspects, Russian meteorological rockets, Russian missile defense, Russian manned Moon flybys, SEP *Ludion* personal transporter, Luigi Broglio, Australian *Wresat*, Alfred Nobel camera rocket, Argentinian Ricardo Dyrgalla.

A spectacular revelation was that the rocket equation had already been established by Belgian general Casimir Coquilhat in 1871!

There were again two special sessions:

- the usual one about UK contribution (activities, politics, early industry, Stevenage)
- one dedicated to the 50th anniversary of the IGY (NASA, France).

XII. The Committee is Back, Symposia Index (2009)

2009 was pivotal, when the History Committee, after a long struggle, at last was reinstated on 13 October, in the light of an impressive 43 years of Symposia under his belt, and many other activities.

* Participants included Igor Sorokin (Korolev), and a video of an interview with B. Chertok was shown.

Thus in 2009 a huge undertaking concluded when H. Moulin published an index for all Symposia papers from 1967 to 2000 (as AAS Volume 31), with a compilation of all abstracts, a summary of all sessions structures and indices according to author's name and country, periods and themes.

H. Moulin was working on an update when he untimely left us on 7 April this year.

The Symposium temporarily went back to 3 sessions, as there were only 16 papers:

Daejeon on 13 and 15 October 2009 with Volume 40 (IAA Vol. 29) edited by C. Rothmund, with papers on XLR99 engine, G. Lozino-Lozinsky, R-36 and Ukrainian engines (by long time active and friend Vladimir Prisniakov, who studied in Grenoble, and sadly died shortly afterwards on 28 November 2009), *Vexin* engine, China space development, scientist Minoru Oda, Japan policy in the 80's, Israeli space efforts, astronautics since 1950, navigation and Kalman filter, space systems evolution.

The special session dedicated to Korea had papers on 15th Century Dae-Sin-Gi-Jeon rocket, 1377-2009 rockets, *Kompsat*, North Korea activities.

Catch up was nearly achieved in 2014 with again two publications:

Prague on 29 and 30 September and 1 October 2010 with Volume 41 (IAA Vol. 30) edited by K. Dougherty, with pioneer Vladimir Kopal (on IAA) and papers on Conrad Haas, ARS test stand, Ernst Stuhlinger, Nixon and Ford administrations policies, A. Sternfeld, Vasily Budnik, Nikolai Gerasyuta, Ruelle *Masurca* SAM, Dassault Aerospace Transporter, Val Cleaver, UK X-ray telescopes, *Institute of Space and Astronautical Science* (ISAS), Israeli *Abir* satellite, Argentinian Miguel Sanchez Pena, IGY impact.

A first was a recorded interview of L. Shepherd, who passed away in 2002, together with the corresponding full-talk DVD joined to the book.

There were two special sessions:

- the IAA 50th anniversary (L. Shepherd talk, creation, US members, *Swedish Interplanetary Society*)
- Czech and Slovakia contribution (beginnings, satellite observations, Charles University cooperation with Russia, Intercosmos/solar physics, *Magion* satellite, life science, manned flight simulation).

Cape Town on 4 and 6 October 2011 with Volume 42 (IAA Vol. 31) edited by O. Liepack, with papers on Walter Häussermann, end of OART, MATRA SAM's, Japan science satellite names, Japan-US cooperation in the 70's, China space activities, *Shavit 2* rocket, early rockets, Tsiolkovsky-Goddard-Oberth, Kalman filter.

There were yet another two special sessions:

- 50th anniversary of manned flight (Gagarin flight, opposition to *Apollo*, US spaceplanes, *Spiral*, Gagarin and France with the revelations that a French paper explained at the time the Soviet secret was using rockets launched from trains running between mountains (!)* and that a Russian laser reflector for Lunokhod had been tested in Cannes)
- South Africa and Africa contribution (the first 50 years, activities, hidden 80's activities, satellites, South Africa AMSAT, Africa space activities - Algeria, Egypt, Kenya, Libya, Nigeria, Zaïre).

Also a highly successful Plenary Session was organized on Gagarin, in co-operation with Igor Sorokin (chairman of the Astronauts Session), under the aegis of astronaut John-David Bartoe, with the participation of astronauts Catherine Coleman, Chiaki Mukai, Thomas Reiter, Valeri Ryumin. During the session a mobile suddenly rang on the podium, which everybody thought to be a mistake, until Cathy grabbed it and started an exchange between the room and... the ISS just flying overhead! After a big round of applause, she even apologized for “disrupting” the session—I very gladly thanked her for the magnificent surprise.

Unfortunately, as feared, a frontal duplication was confirmed when ACHA published a first study, on IGY, which furthermore was freely distributed during the 2011 Spring Meeting. We immediately asked IAA for a repatriation of these ACHA activities and budget within our Committee, which has been paying for decades from its own pocket to perform its activities—only meeting a deafening silence.

In the same vein, the IAF started in 2010 to require that we go back to three sessions, even writing on 14 March 2011 an insulting letter squarely accusing us of blocking the use of rooms for other symposia!

XIII. Back to Three Sessions, Publication Finally on Track

Anyhow, the History Committee already had decided in 2006 to go back to three sessions, keeping the special one, as the workload for four sessions was too heavy, the cost for printing too high, and it left little time to follow other congress sessions. Also, IAF kept pushing to reduce our sessions on the basis that we were not rejecting enough papers compared to the other symposia!† The switch had been planned to take effect from 2008, but the various anniversaries men-

* Did a spy notice the train used to carry the R-7 to the pad—but with wrong conclusions?

† I wryly suggested to reject all our abstracts, thus ensuring the History Committee would have the best rejection ratio of the Congress. Actually our purpose is to meticulously record every bit of historical information, not to select which one is best, like in technical sessions.

tioned above delayed it to 2012, by which time the number of papers had anyhow diminished. The Memoirs and Organizational histories sessions were thus re-grouped.

Publication finally became routine in 2015 with 2 volumes:

Naples on 1 and 4 October 2012 with Volume 43 (IAA Vol. 32) edited by Niklas Reinke, with pioneer Ernesto Vallerani and papers on A. Ananoff, *Corona*, *Lunar Roving Vehicle* (LRV), Vladimir Vernadsky, early *Luna*'s, Huntsville film digitalization, Russian aerospike engines, Yuzhnoye ballistics school, L. Damblanc, French policy 54-65, *Valois* engine, V 2 in Sweden, British assisted take-offs, Israeli Marcel Klajn, women astronauts.



Figure 19–10: Ernesto Vallerani. (*IAF – The First 50 Years*).

There were again two special half sessions:

- Italy, on L. Broglio, from *Spacelab* to ISS by E. Vallerani, TSS-1 tethered satellite, Giuseppe Colombo
- W. von Braun tribute on the centenary of his birth: Walter Thiel (by his grandniece Karen), Willy Ley, K. Dannenberg, W. von Braun vision, *Redstone/Jupiter*.

Thanks to Charles Lundquist, seven students of the University of Alabama presented papers.

Beijing on 23, 26 and September 2013 with Volume 45 (IAA Vol. 33) edited by Andrew Erickson, with a surprisingly low number of papers (13) on Vladimir Yazdovsky, Heinz-Hermann Koelle, Japanese *Rockoon*, David Fearn, Spaceport Australia, *Shavit*, *Ofek 1* satellite, reaction vehicles up to 1670-1869, *Acta Astronautica* 60th year.

The special session on China contribution covered R. Hermann and Qian Xuesen (alias Tsien), 1946 Chinese rocket program, launch vehicles, rockets and satellites.

Toronto on 29 September and 2 October 2014 with Volume 46 (IAA Vol. 34) edited by M. Freeman, with pioneer G. James (on working with W. von Braun and Krafft Ehrlicke) and papers on the purported influence of R. Goddard in Germany, W. von Braun and S. Korolev, German engineers in the USA, US

railroad and space programs compared, the AAS, *Viking* probe impact, Ukrainian schools, DEFA PARCA SAM, late 60's Israeli rockets, Alexandr Kakalov "Alexandrov," P. Paulet.

A video of the interview of Iván Almár was presented. Two special half sessions took place, with again another innovative transversal collaboration, with the Search for Extra Terrestrial Intelligence (SETI) Symposium:

- Canada contribution covered 100 years of aerospace, the space program, Bruce Aikenhead
- SETI covered the first 25 years, SETI technology evolution, Canadian contribution, message to intelligent civilization.

A special tribute was organized on 2 October by Robert Godwin in the memory of great historian F. Ordway, who passed away on 1 July 2014, with an exhibit and talks by several Committee members. As a student in *La Sorbonne*, he had been the only American during the first IAC. He was asked by W. von Braun to work for him, published much and was by far the longest active member of our Committee.

Jerusalem on 12 and 15 October 2015 with Volume 47 (IAA Vol. 35) edited by Tal Inbar, with papers on 0-g training, *Gemini*, Russian and US launchers commercialization, R-7 engines, Alexei Leonov EVA, the Mishin diaries, reaction vehicles 1870-1900, South American space, space tourism.

The special session on Israeli contribution, with pioneer Aby Har-Even, covered the origins, *Jericho*, from Ben Gurion to Begin, Technion rockets, Yonatan Mass, Yitzak Mayo.

I had the lucky occasion to meet the widow of Charley Attali, the *Diamant* manager, who emigrated to Israel. This produced the exceptional discovery that he later became the father of the highly successful Israeli drones.

XIV. Conclusion

The History Symposium is an extraordinary and unique success in the field of space history.

It has resulted in the publication of an astounding 775 papers, of variable quality, on the space and rocket activities of no less than 57 countries. It has seen a constellation of pioneers presenting their achievements, or being present.

No book or encyclopedia ever had or has such a breadth of coverage.

Within the Symposium, the History Committee furthermore organized several events in the frame of the Congress: Current Event, Highlight Lecture, Special Session and Plenary Session, both its own ones, and transversally in cooperation with other Symposia.

Visits and commemorations have also been organized.

Theodore von Kármán legacy is thus even more than his well-known technical, scientific and organizational achievements.

The IAA, the authors, the editors and the publishers have to be congratulated on this magnificent job, to be amplified for the next 50 years, such as a follow on to H. Moulin's index. But with a now established competitor in the IAC, care has to be taken by the History Committee not to be relegated to an event organizer...

Dedication

This chapter is dedicated to my friend, Hervé Moulin, a long time, active, member of the History Committee, who introduced me to it back in 1985.

It also is dedicated to two of my nominators in the IAA, the two Fred's, Fred Durant III and Fred Ordway III, who also honored me with an invitation to the Cosmos Club in Washington.

IAA (AAS) vol.	Year	Cover Picture
1 (6)	1967/68	Konstantin Tsiolkosky
2 (7)	1969/72	Robert Goddard
3 (8)	1973/74	Hermann Oberth
4 (9)	1975/77	Robert Esnault-Pelterie
5 (10)	1978/80	Sergei Korolev
6 (11)	1981/82	Wernher von Braun
7 (12)	1983	Theodore von Kármán
8 (14)	1984/85	Hermann Noordung
9 (15)	1986/87	Valentin Glushko
10 (17)	1988/89	W. Pickering, J. van Allen, von Braun
11 (19)	1990	Yuri Gagarin
12 (20)	1991	Ernst Steinhoff
13 (21)	1992	Guido von Pirquet*
14 (22)	1993	Max Valier
15 (23)	1994/95	Deke Slayton
16 (25)	1996	Eugen Sänger
17 (26)	1997	Walter Thiel
18 (27)	1998	Honeysuckle/A. Shepard, E. Rees
19 (28)	1999	Jules Verne
20 (30)	2000	Boris Rauschenbach
– (31)	index	Fred Durant, JM Kooy
21 (32)	2001	Kurt Debus
22 (33)	2002	David Lasser
23 (34)	2003	von Braun, Heinz-Hermann Koelle
24 (35)	2004	John Chapman

25 (36)	2005	Hideo Itokawa
26 (37)	2006	Frank Malina
27 (38)	2007	Sputnik 1
28 (39)	2008	Luigi Broglio and Lyndon Johnson
29 (40)	2009	Gleb Lozino-Lozinsky
30 (41)	2010	Valentina Tereshkova, Les Shepherd
31 (42)	2011	Walter Häussermann
32 (43)	2012	Alexandre Ananoff
33 (45)	2013	Qian Xuesen (Tsien)
34 (46)	2014	Durant, Fred Ordway, Teofilo Tabanera
35 (47)	2015	Alexei Leonov

* Louis Damblanc had been selected by the editor, with approval by F. Ordway.

Table 19-1: AAS volumes covers.

Authors	Number of papers
F. Winter	31
P. Jung	31
H. Moulin	19
C. Rothmund	19
F. Ordway	17
Y. Matogawa	16
B. Rauschenbach	15
V. Prisniakov	15
JJ. Serra	15
K. Dougherty	13
ÅI. Skoog	11
J. Becklake	11

Table 19-2: Author's papers.

Algeria	Czechoslovakia	N. Korea	Slovenia
Argentina	Denmark	S. Korea	South Africa
Australia	Egypt	Laos	Spain
Austria	Finland	Libya	Sweden
Belgium	France	Mexico	Switzerland
Bolivia	Germany	Netherlands	Syria
Brazil	Hungary	New Zealand	Taiwan
Bulgaria	India	Nigeria	Thailand
Burma	Iraq	Peru	UK
Cambodia	Israel	Poland	Ukraine
Canada	Italy	Portugal	Uruguay
Chile	Japan	Romania	USA
China	Kazakhstan	Russia	Yugoslavia
Colombia	Kenya	Slovakia	Zaire
Cuba			
		Total	57

Table 19-3: Countries covered.

N°	Date	Place	Sessions	Papers	Coordinator	Chair	Rapporteur	Subject Countries
1	26.9.67	Belgrade	2	13	C Dollfus	EM Emme		Fr,Ge,It,Rus,UK,US
2	16.10.68	New York	2	14	FC Durant	G Jitavsky L Blosset		Austri,Cz,Fr,Ge,It,Rus,Swe US
3	10.10.69	Mar del Plata	1	8	EM Emme	EM Emme		Per,Rom,Rus,Swe,US
4	9.10.70	Constance	1	9	EM Emme	EM Emme		Austri,Fr,Ge,Indi,It,Neth Rus,Sp,Swe,Swi,UK,US
5	23.9.71	Brussels	1	12	EM Emme	VN Sokolsky CR Hall		Austri,Be,Fr,Ge,Pol,Rus,Sp Swi,US
6	13.10.72	Vienna	2	10	EM Emme	EM Emme		Fr,Ge,Hun,It,Pol,Rus,Swi US
7	11.12.10.73	Baku	2	11	EM Emme	EM Emme VN Sokolsky		Fr,Ger,Rus,Swe,UK,US
8	4.5.10.74	Amsterdam	2	9	EM Emme	CR Hall		Fr,Hun,Pol,Rus,US
9	24.26.9.75	Lisbon	2	10	EM Emme	VN Sokolsky MW Rosen		Fr,Ge,Pol,Rom,Rus,Swe,UK US
10	15.10.76	Anaheim	1	5	EM Emme	CR Hall VN Sokolsky		Ge,Rus,Swi,US
11	28.9.77	Prague	1	7	EM Emme	EN Emme VN Sokolsky		Cze,Fr,Ge,Hun,It,Rus,US
12	6.10.78	Dubrovnik	1	9	EM Emme	GS James VN Sokolsky		Fin,Fr,Ge,Hun,It,Rom,Rus Swe,UK,US
13	21.9.79	Munich	1	7	EM Emme	EM Emme VN Sokolsky		Burm,Camb,Chin,Fr,Ge Irak,It,Jap,Laos,Net,Rus,Sp Thai,UK,US,Yu
14	28.9.80	Tokyo	1	8	EM Emme	EM Emme VN Sokolsky		Chin,Ge,Rom,Rus,Tai,US
15	11.9.81	Rome	1	10	EM Emme	FC Durant III VN Sokolsky		Ge,Pol,Rus,US
16	27.9.82	Paris	1	9	EM Emme	FC Durant III VN Sokolsky	GS James	Fr,Rom,Rus,US
17	12.10.83	Budapest	2	15	W Büdeler	FC Durant III VN Sokolsky	J Becklake	Fr,Ge,Hun,Kor,Pol,Rom Rus,UK,US

	13.10.83								FC Durant III VN Sokolsky	FI Ordway III	
18	9.10.84	Lausanne	2	11		FI Ordway III			FC Durant III VN Sokolsky FC Durant III VN Sokolsky	W Bädeler J Becklake	Chin.,Fr.,Rom.,Rus.,Taiw.,UK US
19	9.10.85	Stockholm	1	9		FI Ordway III			FC Durant III VN Sokolsky	J Becklake	Den.,Fr.,It.,Jap.,Indi.,Neth.,Pol., Rus.,UK,US
20	9.10.86	Innsbruck	2	12		FI Orway III J Becklake			FC Durant III VN Sokolsky FC Durant III FI Ordway III	KR Lattu H Moulin «	Austri.,Bul.,Ge.,Rus.,US,UK
21	13.10.87 16.10.87	Brighton	2	20		FI Ordway III J Becklake			FI Ordway III VN Sokolsky J Becklake FC Durant III	GP Kennedy «	Bul.,Chin.,Fr.,Ge.,It.,Laos.,Pol., Rus.,Thai.,UK,US
22	11.10.88 14.10.88	Bangalore	2	13		J Becklake GP Kennedy			GP Kennedy VN Sokolsky J Becklake VN Sokolsky	? ?	Fr.,India.,It.,Rus.,UK,US
23	12.10.89 13.10.89	Malaga	2	12		J Becklake GP Kennedy			FC Durant III VN Sokolsky FC Durant III VN Sokolsky	R Dowling P Jung	Fr.,Ge.,Rus.,UK,US
24	10.10.90 11.10.90	Dresden	2	14		J Becklake			FI Ordway III AI Skoog GP Kennedy VN Sokolsky	R Dowling P Jung	Fr.,Ge.,It.,Rom.,Rus.,US
25	7.10.91 8.10.91	Montreal	2	16		J Becklake GP Kennedy			FI Ordway III P Jung FI Ordway III VN Sokolsky	R Dowling J Villain	Fr.,Ge.,Rom.,Rus.,UK,US
26	1.9.92 2.9.92	Washington	2	16		J Becklake GP Kennedy			VN Sokolsky AI Skoog FI Ordway III J Villain	P Jung KH Rohrwild	Austra.,Fr.,Ge.,Jap.,Rus.,US

27	21.10.93	Graz	2	16	J Becklake KH Rohrwild	VN Sokolsky AI Skoog FI Ordway III P Jung	C Rothmund MR Sharpe	Aus/Hun,Fr,Ge,Japan,Pol,Rus UK,US
28	22.10.93							
28	11.10.94	Jerusalem	2	16	J Becklake P Jung	FI Ordway III VN Sokolsky J Becklake J Villain	KH Rohrwild D Gould K Dougherty C Rothmund	Fr,Ge,Rus,Ukr,US
28	14.10.94							
29	3.10.95	Oslo	3	23	P Jung J Braun	C Rothmund Y Matogawa VN Sokolsky H Moulin FI Ordway III J Harlow	K Dougherty T Pirard O Liepack RD Gould M Tarasenko A Russo	Belg,Fr,Ge,It,Japan,Kaz,Rus UK,Ukr,US
29	6.10.95							
29	6.10.95							
30	8.10.96	Beijing	3	22	P Jung FI Ordway III	O Liepack VN Sokolsky Y Matogawa J Harlow J Braun KH Rohrwild	F Winter H Moulin K Dougherty S McKenna-Lawlor T Pirard DR Gould	Austra,Bel,Chin,Egy,Fr,Ge, Ita,Japan,Kaz,Libya,Rus,Swi UK,Ukr,US,Zai
30	10.10.96							
30	11.10.96							
31	7.10.97	Turin	3	26	P Jung FI Ordway III	VN Sokolsky O Liepack KH Rohrwild J Braun J Harlow Y Matogawa	H Moulin F Winter T Pirard S Chen S McKenna-Lawlor A Russo	Fr,Japan,Kaz,Rom,Rus,Syr UK,Ukr,US
31	8.10.97							
31	9.10.97							
32	29.9.98	Melbourne	3	22	P Jung FI Ordway III	S Chen KG McCracken H Moulin J Braun VN Sokolsky O Liepack	S McKenna-Lawlor S Thomas K Dougherty J Harlow Y Matogawa V Ponomareva	Austra,Chin,Fr,Ge,Japan,Laos, Neth,Rus,Thai,UK,Uk,US
32	30.9.98							
32	1.10.98							
33	5.10.99	Amsterdam	3	22	P Jung FI Ordway III	KH Rohrwild HM Rehorst J Braun Y Matogawa	K Dougherty H Moulin DJ Millard M Tarasenko	Arg.,Austra,Chin,Fr,Ge,Japan Neth,Rom,UK,Ukr,US
33	6.10.99							

	7.10.04							R Launius K Doetsch	O Liepack R Lieberman	
39	18.10.05	Fukuoka	3	15	GS James Y Matogawa C Rothmund			H Moulin F Ordway O Liepack	T Pirard	Austra,Chin.,Ge.,Fr.,Jap.,Rus Ukr,US
	19.10.05							R Launius R Liebermann J Harlow J Braun	R Launius R Liebermann J Harlow J Braun	
	20.10.05							K Dougherty P Jung	Y Matogawa	
40	3.10.06	Valencia	4	27	M Freeman GS James C. Rothmund			J Dorado O Liepack	Y Matogawa	Austra.,Fr.,Ita.,Neth.,Port.,Spa Swe,Ukr,USA
	4.10.06							M Freeman AI Skoog K Dougherty P Jung	T Pirard P Cosyn R Dowling J Braun J Harlow	
	4.10.06									
	5.10.06									
41	26.9.07	Hyderabad	4	21	S Dick C. Rothmund A. Springer (ed)			M Freeman H Moulin F Ordway V Glushkov P Jung K Dougherty O Liepack M Rao	P Cosyn R Dowling AI Skoog T Pirard E Springer C Lundquist G James Y Matogawa	Fr.,Indi.,Jap.,Por.,Rus,Ukr USA
	27.9.07									
	27.9.07									
	28.9.07									
42	29.9.08	Glasgow	4	20	S Dick C Rothmund AI Skoog J Harlow (ed)			D Millard P Jung M Freeman H Moulin S Dick K Dougherty J. Harlow O. Liepack	F Ordway C Rothmund T Pirard AI Skoog C Lundquist E Springer P Cosyn Y Matogawa	Arg.,Austra.,Bel.,Fr.,Ita.,Rus Swe,UK,US
	30.9.08									
	2.10.08									
	2.10.08									
43	13.10.09	Daejeon	3	16	Y Matogawa AI Skoog C. Rothmund (ed)			H Moulin M Freeman Y Matogawa P Cosyn O Liepack	N Reinke A Erikson C Rothmund T Pirard Y Matogawa	Bul,Chin.,Fr.,Ge.,Indi.,Isr.,Jap N.,Kor.,S.,Kor.,Rus,Ukr,US
	15.10.09									
	15.10.09									

44	29.9.10 30.9.10 30.9.10 1.10.10	Prague	4	26	Y Matogawa C Rothmund Aí Skoog K Dougherty (ed)	J. Seon Aí Skoog K Dougherty M Freeman H Moulin S McKenna-Lawlor P Jung J Becklake C Lundquist	N Reinke T Pirard W Jones L Perek	Arg,Cze,Fr,Ge,Isr,Jap,Pol Rus,Slova,Swe,UK,Ukr,US
45	4.10.11 6.10.11 6.10.11 4.10.11	Cape Town	4	20	C Rothmund Aí Skoog P Jung P Cosyn (ed)	Y Matogawa K Dougherty M Freeman H Moulin S McKenna-Lawlor P Jung O Liepack	O Liepack P Cosyn T Pirard O Liepack W Jones C Rothmund C Rothmund	Alg,Chin,Egy,Fr,Ge,Indi Isr,Jap,Ken,Ltby,Nigeri Rus,S Afr,US,Zai
46	1.10.12 4.10.12 4.10.12	Naples	3	24	C Rothmund Aí Skoog P Jung N Reinke (ed)	M Freeman H Moulin S McKenna-Lawlor K Dougherty O Liepack	T Pirard N Reinke W Jones C Rothmund P Cosyn	Fr,Ge,Isr,Ita,Rus,Swe,UK Ukr,US
47	23.9.13 26.9.13 26.9.13	Beijing	3	13	C Rothmund Aí Skoog P Jung A Erickson (ed)	M Freeman H Moulin K Dougherty S McKenna-Lawlor C Rothmund	T Pirard N Reinke C Rothmund W Jones C Lundquist	Austra,Chin,Ge,Isr,Jap,Rus UK
48	29.9.14 2.10.14 2.10.14	Toronto	3	20	C Rothmund Aí Skoog P Jung M Freeman (ed)	M Freeman S McKenna-Lawlor K Dougherty H Moulin G Langedoc O Liepack C Maccone	T Pirard N Reinke W Jones P Jung P Cosyn	Bul,Can,Fr,Ge,Hun,Isr,Per Rus,Ukr,US
49	12.10.15 15.10.15	Jerusalem	3	16	C Rothmund Aí Skoog P Jung	M Freeman N Reinke K Dougherty	T Pirard H Moulin W Jones	Arg,Bel,Bol,Bra,Chil,Chin Col,Fr,Ge,Isr,Ita,Mex,Per Rom,Rus,Swe,Swi,UK,US

15.10.15				T. Inbar (ed)	C Rothmund T Inbar O Liepack	P Jukola J Harlow C Lundquist	
50	16	Guadalajara	3				
							775 total

Table 19-4: Summary of History of Astronautics Symposium.

References

- ¹ V. N. Sokolsky, F. C. Durant III and F. I. Ordway III, "A Study of the History of Rocketry and Astronautics in the International Academy of Astronautics," in *History of Rocketry and Astronautics* (Proceedings of the Thirtieth History Symposium of the International Academy of Astronautics – Beijing, China, 1996), Hervé Moulin and Donald C. Elder, editors, AAS History Series, Volume 25, IAA History Symposia, Volume 16, (San Diego, California: Published for the American Astronautical Society by Univelt, Inc., 2003), pp. 51–63 (paper 96-IAA 2.2.01 presented at the 30th History Symposium of the International Academy of Astronautics as part of the 47th International Astronautical Federation Congress, Beijing, China, 7–11 October 1996).
- ² Hervé Moulin, editor, *History of Rocketry and Astronautics, IAA History Symposia 1967–2000 – Abstracts and Index*, AAS History Series, Volume 31 (San Diego, California: Published for the American Astronautical Society by Univelt, Inc., 2009).