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## Chapter 4

# Entering the Sixtieth Year of *Acta Astronautica*<sup>\*</sup>

Yi-Wei Chang,<sup>†</sup> Jeng-Shing Chern<sup>‡</sup> and Jean-Pierre Marec<sup>§</sup>

### Abstract

The *Acta Astronautica* journal was first published in 1955 as the official journal of the International Astronautical Federation (IAF) with the title *Astronautica Acta*. It is entering its 60th year in 2014. In 1962, the *Astronautica Acta* became the official journal of the International Academy of Astronautics (IAA) established in 1960. A total of 18 volumes had been published from 1955 to 1973 under the leadership of three Editors-in-Chief: F. Hecht, Theodore von Kármán, and Martin Summerfield. In 1974, A. K. Oppenheim became the new Editor-in-Chief and several evolved changes were performed include change of the title to *Acta Astronautica* (for grammatical correctness), cover page change, and format change. From 1974 to 2010, another three Editor-in-Chiefs led the journal with 67 volumes published. They are A. K. Oppenheim, Jean-Pierre Marec, and Rupert Gerzer. The current Editor-in-Chief, Jeng-Shing Chern (Rock), took over

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the job from 2011. Total pages and articles published in 2012 are 3,586 and 356, respectively. Currently, the *Acta Astronautica* Editorial Board consists of one Editor-in-Chief, 15 Co-Editors, one Managing Editor and one Honorary Editor-in-Chief (Jean-Pierre Marec). After 59 years, the *Acta Astronautica* has become a well-known journal worldwide. Its current rank and impact factor are 7/63 and 0.701, respectively. This chapter presents some of the details as well as new strategies and steps. In particular, support from the IAA academicians are mandatory and most welcome.

## I. Introduction

This is the 59th year of the *Acta Astronautica* journal. Therefore, it is entering its 60th year in 2014. The purpose of this chapter is to present the historical evolutions as well as changes of the journal up to now. First published in 1955 with the title *Astronautica Acta*, it was the official journal of the International Astronautical Federation (IAF). Then the International Academy of Astronautics (IAA) was established in 1960. After two years, the *Astronautica Acta* became the official journal of the IAA. A total of 18 volumes had been published from 1955 to 1973 under the leadership of three Editor-in-Chiefs: F. Hecht, Theodore von Kármán, and Martin Summerfield.

In 1974, A. K. Oppenheim became the new Editor-in-Chief and several evolved changes were performed include change of the title to *Acta Astronautica* (for grammatical correctness), cover page change, and format change. From 1974 to 2010, another three Editors-in-Chief led the journal with 67 volumes published: 1974 to 1985 one volume/year, 12 total; 1986 to 1990 two volumes/year, ten total; 1991 to 1995 three volumes/year, 15 total; and 1996 to 2010 two volumes/year, 30 total. The three Editor-in-Chiefs were A. K. Oppenheim, Jean-Pierre Marec, and Rupert Gerzer. The current Editor-in-Chief, Jeng-Shing Chern (Rock), took over the job from 2011. After 59 years, the *Acta Astronautica* has become a well-known journal worldwide. Its rank has been improved from 14/42 in 2009 to 9/43 in 2010 to 8/45 in 2011 and to 7/63 in 2012. Also, its impact factor has been increased from 0.508 in 2009 to 0.609 in 2010 to 0.614 in 2011 and to 0.701 in 2012. Total pages and articles published in 2012 are 3,586 and 356, respectively. For many years, IAA authorized the Elsevier Science Ltd to handle publication affairs.

Currently, the *Acta Astronautica* Editorial Board consists of one Editor-in-Chief (Rock Jeng-Shing Chern), fifteen Co-Editors (Nickolay N. Smirnov, Antonio Viviani, Rupert Gerzer, Martina Heer, Maria Antonietta Perino, Christophe Bonnal, Filippo Graziani, Vipparthi Adimurthy, Yu Lu, Arun K. Misra, Å. Inge-

mar Skoog, Anna D. Guerman, Radhika Ramachandran, Jiawen Qiu and Jie Chen), one Managing Editor (Eva Yi-Wei Chang), and one Honorary Editor-in-Chief (Jean-Pierre Marec).

Further change occurred in 2012 with a new volume in every month for possible multiple issues in each individual month. This chapter presents some of the details before entering the 60th year of *Acta Astronautica* [1–8]. After this introduction section, the *Astronautica Acta* era is presented in Sections II. Then Sections III, IV, V, and VI present the Parts 1, 2, 3 and 4 of *Acta Astronautica* era, respectively. Finally, Section VII offers conclusions.

## II. Astronautica Acta Era (1955–1973)

When the journal first appeared in 1955 under the title *Astronautica Acta*, it was the official journal of the International Astronautical Federation (IAF) and the publisher was Springer-Verlag, Vienna. As shown in Table 4–1, the first Editor-in-Chief was F. Hecht. With a yellow cover (1955–1959), the journal was printed in single column and published four issues (1955–1958), then six issues (1959–1973) per year, with abstracts in English, German, French (and also Russian from 1965–1973). Figures 4–1 and 4–2 show the cover page and the page 1 of first paper of Volume 1, respectively. In 1960, Theodore von Kármán became Editor-in-Chief of the journal, which then donned a blue cover (1960–1965).

Years	Name	Remark
1955–1959	F. Hecht	1
1960–May 1963	Theodore von Kármán	2
May 1963–1964	(Editorial Board of four members)	(Transition)
1965–1973	Martin Summerfield	3

**Table 4–1:** Editor-in-Chiefs in *Astronautica Acta* Era.

From 1962 on, *Astronautica Acta* became the journal of the newly founded International Academy of Astronautics (IAA). Figure 4–3 shows the cover page of its Vol. VIII/FASC. 1 published in 1962 after becoming official journal of IAA. At the death of von Kármán in 1963, the journal continued with the co-editors Frank J. Malina, Irene Sänger-Bredt, Leonid I. Sedov and Raymond I. Siestrunk [1–2]. In 1965, Martin Summerfield became the Editor-in-Chief of the large format, white cover, two-column new series with P. Germain and O. Lutz as co-editors.

# ASTRONAUTICA ACTA

OFFIZIELLES ORGAN DER  
INTERNATIONALEN  
ASTRONAUTISCHEN  
FÖDERATION

OFFICIAL JOURNAL OF THE  
INTERNATIONAL  
ASTRONAUTICAL  
FEDERATION

ORGANE OFFICIELLE DE LA  
FÉDÉRATION  
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D'ASTRONAUTIQUE

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VOL. I

MIT 40 ABILDUNGEN / WITH 40 FIGURES / AVEC 40 FIGURES



SPRINGER-VERLAG · WIEN

I. R. MAXWELL & CO. LTD. · LONDON/PARIS/NEW YORK

1955

**Figure 4-1:** Cover page of Volume 1 of *Astronautica Acta* (in yellow color).

## Die Erforschung der Initialvorgänge bei Verbrennungsprozessen<sup>1</sup>

Von

Irene Säger-Bredt, Stuttgart<sup>1</sup>, GdW

**Zusammenfassung.** Im Brennpunkt des Interesses der Strahlentechnik stehen gegenüber der eigentlich chemischen und die kernechemischen Verbrennungsprozesse im Wettbewerb miteinander.

Während die Erforschung des Kinetikverhaltens den folgerichtigen Weg von der individuellen Einzelreaktion aufsteigend über die Geschwindigkeitsgesetze der reagierenden Massen, bis hin zur Erforschung chemischer Gleichgewichte, bis hin zum allgemeinen Weg, indem man zunächst Gleichgewichtsverhältnisse und Massenwirkungsgesetze im makroskopischen Gasmass unterwirft und sich erst in späterer Zeit schrittweise dem Mechanismus der eigentlichen Reaktion bzw. einzelnen Molekülstufen zuwendet, so daß dieser grundlegende Schlüssel zum Verständnis chemischer Verbrennungsprozesse heute noch praktisch fehlt.

In der vorliegenden Arbeit werden die bisherigen experimentellen Verfahren zum Studium des letztgenannten Problems und ihre Ergebnisse hinsichtlich ihrer Eignung, eine Antwort auf die Frage nach dem primären Erscheinungsbild exothermer Reaktionen unmittelbar nach dem Reaktionsanstoß zu geben, kritisch untersucht. Abschließend wird die Methode geklärter Molekülreaktionen als komplementäres Verfahren in der einschlägigen Entwicklungsrichtung ausführlich erörtert und als aus-schließlich befunden.

**Abstract.** Chemical combustion processes and nuclear reactions are the competing energy sources that attracted our attention in the field of rocket propulsion.

While research on nuclear reactions began with the study of individual nuclear collisions and proceeded to the laws governing reactions in bulk matter (i. e., collisionless and collisional), the investigation of molecular reactions has had an opposite historical development. In the latter case, equilibria and the laws of mass action in large gaseous volumes were considered first and only recently have advances been made in the study of the mechanism of the actual reaction occurring in individual molecular encounters, so that this route towards the fundamental understanding of combustion processes has been practically quiescent until now.

In this paper, we examine the experimental methods which have been applied to resolve this latter problem and discuss their results in the light of their value in resolving the question of the form, in which exothermic reaction energy is actually manifested, at the moment of its release. Finally we discuss the method of crossed molecular beams, a logical outcome of present research development trends, and estimate that it could give satisfactory results.

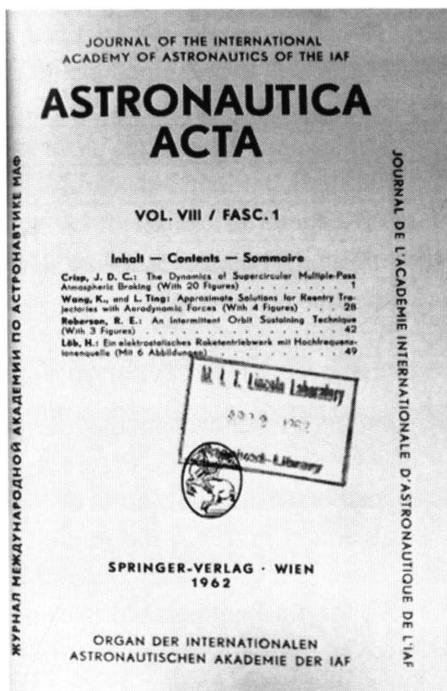
**Résumé.** Actuellement c'est l'exploitation des processus rivaux de combustion, c. à d. celui de la combustion chimique par opposition à celui de la combustion nucléaire, qui se trouve au centre de l'intérêt de la technique de propulsion à réaction. Tandis que les études des réactions nucléaires se développent d'une façon consécutive à partir de l'observation d'une réaction individuelle entre deux noyaux entrés en choc, jusqu'aux lois d'équilibre de l'interaction des masses, l'histoire de la recherche des réactions chimiques moléculaires se déroule dans le sens inverse en

<sup>1</sup> Vorgelegt beim V. I. A. F. Kongress in Innsbruck am 3. August 1954.

<sup>2</sup> Forschungsinstitut für Physik der Strahlentechnik, Stuttgart-Friedrichshafen.

1\*

**Figure 4-2:** Page 1 of Issue 1 Volume 1 of *Astronautica Acta* (first page of first paper).



**Figure 4-3:** Cover page of *Astronautica Acta* Vol. VIII/FASC. 1 (1962) after becoming official journal of IAA.

When the contract of Springer-Verlag with the Academy expired in 1966, Pergamon Press in London was approached. New arrangements which included financial support for the IAA were accepted [3]. It was felt that Pergamon Press would promote *Astronautica Acta* more aggressively, increasing—it was hoped—urgently needed circulation [4]. *Astronautica Acta* thus continued with Pergamon Press from 1967 onwards to the end of its era in 1973.

### III. Acta Astronautica Era Part 1: 1974 to October 1978

Table 4–2 shows the Editors-in-Chief in the *Acta Astronautica* era from 1974 to the present time. A. K. Oppenheim was the fourth Editor-in-Chief from January 1974 to October 1978. After him there was a transition for one year, three months. Then it came the J.-P. Marec era from 1980 to 2008. Actually, J.-P. Marec already took the editorship position during the transition period. Therefore, his era lasted almost 30 years. Currently, he is the Honorary Editor-in-Chief of the journal. Then it was Rupert Gerzer who took over the job in 2008, and then Rock Jeng-Shing Chern in 2011. It is seen from Table 4–2 there are overlaps between two successive editor-in-chiefs. This is a necessary mechanism to ensure smooth transfer of editorial work as well as high quality of *Acta Astronautica* publications.

Years	Name	Remark
1974–October 1978	A. K. Oppenheim	4
October 1978–1979	(AATC)	(Transition)
1980–2008	Jean-Pierre Marec	5
2008–2011	Rupert Gerzer	6
2011–present	Rock Jeng-Shing Chern	7

**Table 4–2:** Editor-in-Chiefs in *Acta Astronautica* Era.

When A. K. Oppenheim took the Editor-in-Chief position of the new era, he introduced a number of changes [5]:

1. Modified the title to *Acta Astronautica* for the sake of proper grammar [4];
2. Changed to blue cover and new format;
3. Went back to one-column text;
4. Published monthly issues (in fact, one yearly volume of six double issues);
5. Published special issues on dedicated topics;

6. Added new sections “Communications” and “Comments” for which prompt publication was required;
7. Abandoned French and Russian versions of abstracts;
8. Added French and Russian versions of the list of contents;
9. Etc.

In particular, Communications were short articles presented in the manner of the “Comptes Rendus de l’Académie des Sciences” or “Doklady Akademii Nauk” by the members of IAA, but not necessarily authored by them. However, these contributions were subjected to a review procedure [5]. To complete his editorial team, A. K. Oppenheim was looking for an Associate Editor for Astrodynamics and Marcel Barrère recommended J.-P. Marec.

Figure 4–4 shows a historical picture of A. K. Oppenheim, J.-P. Marec and Mrs. Oppenheim in discussion during the 26th IAC held in Lisbon, 1975 [1].



**Figure 4–4:** Oppenheim (right), Marec (left) and Mrs. Oppenheim (middle) in discussion (26th IAC, Lisbon, Portugal, 1975).

#### **IV. Acta Astronautica Era**

##### **Part 2: October 1978 to 1979**

When A. K. Oppenheim resigned his editorship in October 1978, a radical change was made in the editorial structure. Starting in 1979, responsibility for publication was delegated to an *Acta Astronautica* Trustees Committee (AATC) composed of L. G. Napolitano (Chairman), M. Barrère and A. Jaumotte. Negotiation with the publisher Pergamon Press made it possible to continue uninter-



rupted production of the journal under the supervision of this Committee [6]. Two Executive Editors, J.-P. Marec and G. G. Chernyi, were appointed to handle the editorial tasks with the help of a Managing Editor, Max Salmon, and a team of Associate Editors. The Board of Trustees of IAA expected that the new orientation of *Acta Astronautica* should be an incentive for closer contacts within the Academy members and for an increasing number of subscribers [6].

Considerable work was done by J.-P. Marec and Max Salmon in this transition period with the benevolent help of AATC, G. G. Chernyi, Associate Editors, IAF/IAA Secretariat and the publisher Pergamon Press. Main tasks were:

1. To ensure the continuous publication of the journal during this delicate transition period;
2. To reduce the backlog of articles;
3. To define more precisely the journal operation and the role of the different protagonists: AATC, Executive Editors, Managing Editor, Associate Editors, Reviewers, Secretariat, Publisher, i.e., in some way define the statutes of the journal;
4. To choose the Associate Editors;
5. To set up the review procedure in two steps (Associate Editor/Reviewer), with the writing of all the necessary forms and the reminders;
6. To establish with the particular help of L. G. Napolitano, the special procedure for the Academy Transactions Notes, similar to Oppenheim's Communications, but without review for IAA members;
7. To ensure a better balance between the topics, between regular and special issues (IAC, IAA Symposia, dedicated topics), between articles and notes;
8. Try to better promote the journal with the help of the Publisher.

All these efforts led to some success as stated in the IAA 1980 Annual Report: "The results of the first year operation of *Acta Astronautica* under the direction of the AATC were satisfactory. After this trial period, changes in the editorial team were made as anticipated. The journal has now one Editor, J.-P. Marec" [7].

## **V. Acta Astronautica Era**

### **Part 3: 1980 to 2008**

J.-P. Marec started to work on the journal at the transition period until 1 January 2008 when he transferred the Editor-in-Chief title to his successor, Rupert Gerzer. After that, he still agreed to process the papers received before this date. Therefore, for about 30 years of editorship on position, he introduced in detail the different actors who played important roles in the journal [1, 8].

## **IAA Publications & Communication Committee (PCC)**

General policy of the journal was defined in close contact, first with AATC from 1979 to 1982 and then with IAA Publications & Communication Committee (PCC) after 1983. The PCC was chaired by the IAA Vice-President Publications, i.e., R. Gibson (1983–1987), H. Jordan (1987–1989), G. Haerendel (1989–1997), E. Vallerani (1997–2001), H. Matsuo (2001–2003), Y. N. Koptev (2003–2005), and S. Konyukov (2005–2009).

Twice each year in the PCC meeting, J.-P. Marec issued a status report on the journal. The collection of these reports provides detailed historical records of the journal's life. Most of the PC meeting agenda was devoted to fruitful discussions on *Acta Astronautica*. He had the opportunities of discussion with the successive IAA Presidents: Ch. Draper, G. E. Mueller, M. Yarymovych and E. Stone. Also, he quite frequently had discussions with the IAA Secretary General Jean-Michel Contant who has been extremely helpful over many years.

## **Acta Astronautica Editorial Team**

The value of a journal such as *Acta Astronautica* highly relies on the quality and willingness of its Editorial Team which encompasses in this era the following actors.

### *Editor-in-Chief*

During his editorship, the role was essentially twofold: (1) To define general strategy of the journal in close connection with the PCC, the Secretary General and the Publisher; (2) Participation in paper processing by choosing a suitable Associate Editor, checking of reviews and revised version, final decision, and some copyediting (with the help of the Managing Editor since 1994) prior to dispatch to the publisher. Copyediting was particularly heavy at the beginning, when articles were submitted in paper form and often badly presented.

### *Co-Editors*

The role of co-editors was to promote the journal in different parts of the world and to help in solving possible difficulties with authors. From 1980 to 2007, there were three co-editors: G. G. Chernyi for Europe, J. Grey for the Americas and S. Saito for Asia (replaced in 2006 and 2007 by R. Gerzer).

A particular tribute should be paid to G. G. Chernyi who, in addition, helped for the translation of the journal contents into Russian during many years.

### *Associate Editors*

The scope of *Acta Astronautica* was considered to be too large to leave the task of finding competent reviewers to the Editor-in-Chief alone, as it is possible

for more specialized journals. He needed to be assisted by Associate Editors (AE) for the different broad topics. Thus a two-step review procedure was set up: a contributed paper received by the Editor-in-Chief was sent to the appropriate Associate Editor who was in charge of finding the competent reviewers, managing the review process and returning the review to the Editor-in-Chief with his own opinion on the paper and on the review (too hard? too lenient?). This ensured a sort of double review, but sequentially and not in parallel. Note that, in 1988, 70 percent of Pergamon journals used one to two referees only. More recently, informatics and emailing offered new possibilities and, in order to reduce the review delay, a second reviewer was used, either sometimes for back-up, or in parallel as it was systematically the case for the IAC reviewed papers.

In Marec's selection and appointment of Associate Editors, the criteria used were prestige, scientific expertise and a geographical balance. The role of the AE was not only to take care of the review of papers but also, to some extent, obtain papers, provide general advises and encourage subscriptions.

From 1980 to 1986, the Associate Editors were B. Egorov, K. A. Ehricke, R. E. Lo, R. J. Parks, R. Somoza (from 1982) and N. X. Vinh. In 1987, the team of Associate Editors was revised and topics were clearly indicated in the journal: M. Bignier (System and Missions), C. de Jaeger (Basic Sciences), E. Galloway (Social Sciences), O. Gazenko (Life Sciences), R. E. Lo (Propulsion), P. Santini (Materials and Structures), and N. X. Vinh (Astrodynamics).

Finally, in 2003, a new revision was necessary to better match the reorganization of the IAA scientific activities in Commissions (and, in some way, also to match the IAA Trustees Sections and the IAC Symposia). Ten Associate Editors, corresponding to ten topics, were thus nominated: A. K. Misra (Astrodynamics), W. Koschel (Fluid Mechanics, Propulsion and Energy), P. Santini (Materials and Structures), R.-M. Bonnet (Physics, Sensors and Experiments), J. N. Pelton (Informatics and Communications), E. Ilyin (Life Sciences), J. C. Mankins (Systems), T. Yasaka (Operations), R. A. Williamson (Policy and Economics), P. Jankowitsch (Social Sciences). It should be noted for the future that, for such a mainly scientific and technical journal as *Acta Astronautica*, the IAA Commission 1 on Space Physical Sciences alone needed to be represented by not less than ten Associate Editors, whereas the other five IAA Commissions only needed one Associate Editor each. The Associate Editor for Astrodynamics (N. X. Vinh, then A. K. Misra) traditionally experienced the greater workload.

### *Reviewers*

As already mentioned, the reviewers were chosen by the Associate Editors. As a token of appreciation, their names were periodically listed at the end of a

volume (traditionally at the end of the year). Some Elsevier books (Reviewer rewards) were also offered to the best ones (i.e. best ratio: quality of review/delay).

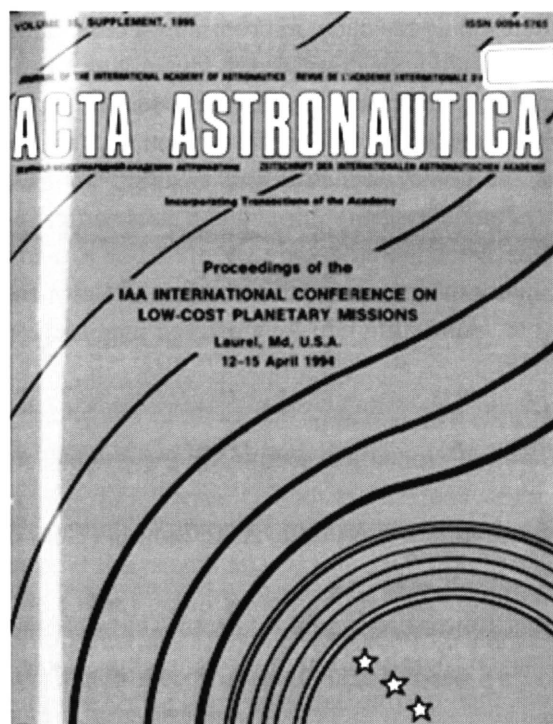
#### *Guest Editors for Special Issues*

Special issues were dedicated to particular topics (e.g., Humans in Space, SETI, Cosmic Studies, Low Cost Planetary Missions, Microsatellites, Materials, Astrodynamics, etc.), often linked to IAA Symposia. Once the proposal for a special issue was approved by the PCC, a Guest Editor was nominated and responsible of editorial tasks (contents, possible further review, copyediting) before transmitting the complete file to the Editor-in-Chief for a last check prior to dispatch to the Publisher.

Each year, a special issue was devoted to selected proceedings of IAC papers. The final selection of those papers was made by R. Monti for IAF and J.-P. Marec for IAA based on the recommendations of session chairmen. These papers were published without further review. The Guest Editor for these proceedings was R. Monti. Other selected papers were published in regular issues, without review (at the beginning), then with review by the corresponding session chairmen (who were supposed to make a quicker review, since they already knew the paper they had selected from the abstract, then listened to at the Congress). This worked satisfactorily. The papers issued from the IAC represented about 60 percent of the total amount of papers published in *Acta Astronautica*. All this implied an interface with IAF facilitated by the nice contact with its Secretariat (M. Claudin then A. Moulin), from whom Marec received the set of recommended preprints and forms issued by the session chairmen. More recently, the preprints were received electronically (CD). The copyright agreement between IAA, IAF, AIAA (preprints publisher) and Elsevier was revisited around 2004.

At the beginning, the special issues published papers selected but not further reviewed in order to gain time under a red cover (as shown in Figure 4–5), instead of the classical blue cover for regular typeset issues. Later, when more papers were submitted electronically, most of the special issues were also typeset, and the red color was devoted to non-reviewed proceedings-type papers only. This was limited to IAC selected proceedings. Papers of all other proceedings were reviewed following a strong recommendation from G. Haerendel when he chaired the PCC.

During the period 1981–2007, the special issues counted in average for about 30 percent of the booklets but 63 percent of the issues. These quantities give a better idea since a thick special issue booklet might count for several regular issues. These apparently large numbers were due to the fact that the yearly special issues devoted to IACs were thick proceedings to include so many selected papers from multi topics.



**Figure 4-5:** Special issue cover page of *Acta Astronautica* (Vol. 35 Supplement 1, 1995).

### *Editors for Special Issues*

In view of the importance of special issues, and despite of the fact that most editorial task was taken by the Guest Editors, J.-P. Marec thought some help for managing this particular aspect was needed. Pierre Molette kindly agreed to give a hand from 2001 on, and was nominated Editor for Special Issues. In particular, he revisited the terms of reference of Guest Editors for special issues and set a tracking table providing the status of these issues. However, after a negative experience in 2004, *Acta Astronautica* decided not to publish IAA Plenary Sessions because of time delay.

### *Editor for Notes*

In order to better promote the Notes, solicit them among the Academy members and manage the process, an Editor for Notes was set up in 1991. He has been at first the acting or a former Chairman of the PCC, i.e., G. Haerendel (1991–1996), E. Vallerani (1997–2002), H. Matsuo (2003–2005), and later R. Gerzer (2006–2007).

At the beginning, an author wishing to have a Note published in the journal had to seek the endorsement of two Academy Members (or one Member and one

corresponding Member) of the same appropriate Section and of different nationalities. Their names would appear together with the Note. He had then to send his manuscript and the two letters of recommendation to the Editor-in-Chief who would publish it without further review. If the author was a Member or a Corresponding Member, no recommendation was required. Later, the endorsement of only one Academy Member was required and a submission form to be sent to the Editor for Notes facilitated the procedure.

In spite of many efforts made, the number of Notes remained too low (at most one or two per issue) although they offered many advantages to Academy members and authors.

#### *Editor(s) for Ex Mundo Astronautico*

The Ex Mundo Astronautico section of the journal contains information pertaining to the IAA. The Editors for Ex Mundo Astronautico were J.-M. Conant (1986–present) and, for a short time, A. L. Slotkin (1986–1991).

#### *Managing Editor*

The Managing Editor had the hard task to: (1) track papers during the editorial phase, update constantly a voluminous tracking table (paper form, then EXCEL informatics, then on-line data base); (2) send reminders to late Associate Editors and authors; (3) prepare any mailing for the Editor-in-Chief, etc.

The successive Managing Editors were M. Salmon (1979–1993), J. Jampol (1994–2005) and J.-L. Bussière (2006–2007) helped by M. Fust from DLR.

Many efforts have been done to reduce the editorial time. Editorial time is defined as time between first submission and arrival at the publishers' offices. As we have seen, the editorial process of a contributed article encompasses several phases (registration, choice of Associate Editor, two-step reviewing, checking of review and decision, possible revision by author, checking and copyediting of final version prior to dispatch to the publishers), which involve several members of the editorial team (Managing Editor, Editor-in-Chief, Associate Editor/Reviewer, Secretariat). Some improvements have been done through informatics, but it is always difficult to fight against late reviewers (who are participating benevolently!) or even authors when revising. Transitioning the process to EES (Elsevier Editorial System) in 2007 has greatly improved the situation.

In order to reduce the revision delay, it was decided in 2003 that after five months for major revision, the article would be considered as a new paper with a new log-in and a new reception date. Reference to IAC Congress origin would be made only if article was published less than one year after the Congress.

### *Secretariat*

The IAA Secretary General, J.-M. Contant, took a very important part in the journal's life. In particular, he was in charge of all financial aspects and helped a lot for transition of *Acta Astronautica* to informatics. The secretary, F. Dennemont, was in charge of typing and dispatching the mail, mainly before the extensive use of informatics which eased the correspondence, log-in of manuscripts, storing of names and addresses, etc. He also developed personal tools for the tracking of papers.

### **The Publishers**

Successive Publishers of *Acta Astronautica* were Springer-Verlag (1955–1966), Pergamon Press (1967–1993) and Elsevier (1994–present). We were in close contact with the Publisher, both for paper processing and for strategy.

For paper processing, Marec was in contact with a Journal Manager in Elsevier, to whom he sent the papers after some copyediting. The Journal Manager was in charge of the editing before sending the paper for typesetting, then proofing and dispatch to production. They also defined together the order of contents of each issue according to the different topics. Successive contact points were: Caroline Warman and Caroline Johnson.

For strategy, J.-M. Contant and Marec were in contact with a Publishing Editor: M. Church from Pergamon Press, then successively C. Muncaster, N. Garvey, I. Kandler, V. Preston and C. Christensen from Elsevier. They had a strategy meeting about once a year, and the Publisher's representative reported at the PCC meetings.

With I. Kandler they discussed in 2004 the possibility of transferring Space Policy papers of *Acta Astronautica* to *Space Policy and Law* (Elsevier/Social Sciences). And also set a partnership with the Journal of Chinese Society of Aeronautics and Astronautics (CSAA) *Acta Aeronautica and Astronautica Sinica* published in Chinese.

There were some items of particular interest related to the publisher.

### *Aims and Scope*

The Aims and Scope of *Acta Astronautica* have not evolved since the first issue. They still state: “*Acta Astronautica* publishes original contributions in all fields of basic, engineering, life and social space sciences and of space technology related to: (1) the peaceful scientific exploration of space, (2) its exploitation for human welfare and progress, and (3) the conception, design, development and operation of space-borne and Earth-based systems needed to accomplish the foregoing two tasks. *Acta Astronautica* publishes: (a) normal issues containing contributed papers; (b) issues dedicated to Astronautical Congresses, IAA Sym-

posia or to any other topic of scientific international relevance; (c) Transactions of the Academy, in a section containing scientific notes communicated by or through Academy members.”

### *Languages*

Languages used in the journal have evolved, with a constant tendency to use English only.

Full text was always allowed in English, but for some time also in French (1955–2003), German (1955–2003) and Russian (1965–2003).

Abstract was given in the language of the article and, if needed, with translation into English and, for some time, into French (1955–1973), German (1955–1973) and Russian (1965–1973).

From 1955 to 1973, there was only one Contents list where titles were given in the language of the article. After 1974, a Contents list in English also appeared in French (1974–2004), and Russian (1974–2004).

Cover subtitle “Journal of the International Academy of Astronautics” appeared in English and, for a long time, in French (1955–2007), German (1955–2007) and Russian (1960–2007).

### *Page Budget*

The yearly page budget, number of volumes and number of issues (one issue contained about ten papers of about eight pages) increased steadily. From one yearly volume of four (1955–1958) then six (1959–1973) “thin” issues at the beginning (210 pages only, all in all in 1955!), to two yearly volumes (one of 12 monthly issues and one devoted to the IAC selected proceedings), then two yearly volumes of 12 bimonthly issues including the IAC proceedings for about 240 papers and 2,000 pages.

We recall for example that in 1988, the page budget was only 1,600 pages (about 200 papers), in two volumes including special issues. But this is to be compared with Pergamon 1988 figures: only 9 percent of Pergamon journals published at that time between 200 and 300 papers per year. *Acta Astronautica* was, and still is, a well supplied journal.

### *Journal Profiles*

Elsevier provided interesting statistics concerning *Acta Astronautica*.

For example in 2003, the author profile by region (regular and special issues) was: USA and Canada 39 percent, Western Europe 36 percent, Asia 13 percent, Eastern Europe 6 percent, rest of the world 6 percent.

Around 2004, the topic profile was: Astrodynamics 28 percent, Fluid Mechanics, Propulsion and Energy 13 percent, Materials and Structures 4 percent, Physics, Sensors and Experiments 9 percent, Informatics and Communications 1



percent, Life Sciences 15 percent, Systems 1 percent, Operations 23 percent, Policy and Economics 4 percent, Social Sciences 2 percent (but this excluded the IAC proceedings, which would have significantly modified the figures, in particular for Communications and, above all, Systems).

### *Impact Factor*

Impact factor (IF) is often considered to indicate the quality of articles published in a journal. The higher the impact factor, the higher the average number of citations articles received and hence the greater perceived quality. For example, the impact factor and the ranking of *Acta Astronautica* among the Elsevier journals in Aerospace Engineering and Technology were: 0.04 and 17/20 in 1995; 0.14 and 12/26 in 2001; 0.284 and 16/27 in 2002; 0.307 and 16/26 in 2003; 0.314 (IF only) in 2006; 0.289 (IF only) in 2007; and 0.374 and 16/25 in 2008.

This has always been recognized by Elsevier as being rather satisfactory for a journal with such a wide scope. However, it is hoped that the IF will be improved in the future notably through the use of the EES.

### *The Journal Online*

#### ScienceDirect

*Acta Astronautica* is now available on ScienceDirect—the world's largest supplier of Scientific, Technical and Medical information including over 1,800 journals from Elsevier Science. Since the end of 2003, *Acta Astronautica* is available in ScienceDirect back-file from its very first issue published in 1974. Abstracts are free on the site. Institutions who subscribe have access to all articles. Individuals can download articles with a limited fee. For example, the numbers of articles downloaded were about 10,000 in 2001; 30,000 in 2002; 50,000 in 2003 and 70,000 in 2004. The year 2009 marked ScienceDirect's 1 billionth download in which 281,429 were *Acta Astronautica* articles.

Authors have now the opportunity to submit figures in color which are published in black and white in the print copy of the journal, but appear in color on ScienceDirect at no extra cost to authors.

#### Web Editions

From the beginning of 2000, most Elsevier Science journals will have been available as Web editions to complement the print subscriptions. The "Top 25 Downloads" articles links are published on the journal homepage.

#### ContentsDirect

*Acta Astronautica* has been included in Elsevier Science's ContentsDirect service since 1996. It is a free alerting service which provides the list of contents with direct links to articles via ScienceDirect (if access is available) for every

issue of a journal direct to the user's PC via email two to four weeks prior to the issue appearing in libraries. The launch of CiteAlert, a free automated service that notifies authors when their articles are cited in Elsevier-published journals, was in 2009.

#### Author Gateway

The Author Gateway is Elsevier's new online tool for authors available since 2002. It allows authors to view and access the information and tools they need to submit an article, find out journal information, track their article after it enters production and get further citation information.

#### Publication Time

Published papers now include receipt date, revised receipt date and acceptance date listed below title and author(s) name(s).

Production time is now the time between arrival at the Elsevier offices and (1) Web publication of the article in final version of ScienceDirect, (2) Web publication of the complete journal issue on ScienceDirect, and (3) dispatch of the printed issue from the warehouse. From 2003 to 2007, the web production time and the print production time were about 10 and 20 weeks, respectively.

Total publication time encompasses every step from submission of the manuscript to dispatch of the printed copy to subscribers. Many efforts have been made to decrease this timeframe, *Acta Astronautica* has been successful in recent years in eliminating a hefty backlog, adopting the use of EES and a PCC supported decision to no longer publish non peer reviewed conference proceedings.

Nevertheless, *Acta Astronautica* has maintained a regular publishing schedule (except episodically, for example for some time around 1997). This is due to a regular flux of articles, in particular those provided by the IAC. The problem has been slow publication rather than timely publication.

#### Marketing

*Acta Astronautica* has been promoted by the publishers in a variety of ways, both generic and specific: by direct mail, through Elsevier Science electronic initiatives, with leaflets and by exhibiting at conferences, etc.

#### Circulation

Despite all these efforts the total number of subscriptions decreased steadily, following a general tendency, as the publisher recognizes. For example, it was 450 in 1987, 193 in 2002 and 151 in 2003. The number of Academy members subscriptions remained dramatically low (only about 10 percent subscribe), despite the significantly reduced subscription rates and the renewed efforts of IAA officers at all levels to convince members to subscribe. It is hoped that this

will change with the online access to the journal that has been made available to all members with a subscription at no additional cost.

In 2003, the geographic subscription profile was: USA and Canada 37 percent, Western Europe 37 percent, Asia 21 percent, Eastern Europe 2 percent, rest of the world 3 percent. The customer type profile was: Academic 47 percent, Governmental 26 percent, Corporate 8 percent, others 19 percent.

### **A Challenge: The Transition of Editorial Processing to Informatics**

Transition of the editorial processing to informatics was a real challenge because it had to be done in parallel with the normal running of the journal and almost without extra workforce since it was well known that “informatics reduces the workload!” It would rather have been said “informatics, *after implementation and tests*, is expected to reduce the workload.”

When M. Salmon was Managing Editor, the whole editorial processing used hard copies (articles, letters, tracking tables). Typing of letters and mailing was done by the IAA Secretariat.

With J. Jampol they introduced some informatics, first for typing the letters, then for emailing and tracking of papers (using a large EXCEL table, from beginning of 2005). Papers were more and more submitted electronically. The IAA Secretariat had also some tool to track the papers.

At that time, Marec found great advantage to be able to meet the Managing Editor in person about once a week, to take care detailed stock of *Acta Astronautica* matters. Then almost all contacts used emails which he found less convenience.

When working with J.-L. Bussière in 2005, they used in parallel for the tracking of *Acta Astronautica* data base set up with the help of J.-M. Contant and F. Prieur. They also used for online information of authors on the status of their papers during the editorial phase (as it already was possible at Elsevier in the publication phase). Note that there was at that time an increasing pressure of authors due to the easy use of emailing, and much time was spent just to answer their questions. Emails were systematically used by J.-L. Bussière for his contacts with Associate Editors and by M. Fust for her contacts with authors. Unfortunately, the data base suffered from severe informatics difficulties some times in 2007 and 2008 which drastically increased the editorial workload. Hence, it was then found preferable to turn to EES which appeared to be available for the processing in editorial phase.

## The Way Ahead

This transition to EES was again a new challenge that Marec preferred to leave to a successor, after about 30 years of steady efforts on behalf of *Acta Astronautica*. Rupert Gerzer replaced him on 1 January 2008, but he still had in charge the editorial processing of all papers received before this date. This was complicated by difficulties in the back-tracking of some papers, linked to the unavailability of parts of the *Acta Astronautica* data base and mail, due to the informatics mishaps mentioned above. This was fortunately completed finally. Marec always keeps an interested eye on the journal since he was nominated Honorary Editor-in-Chief and is still a member of the PCC.

Looking back at the corresponding rows of the *Acta Astronautica* blue (or red) issues on the shelves of the IAA secretariat (during his editorship, 1981-2007, 54 volumes corresponding to 327 booklets and 648 issues were published), I think that all those who have been involved in this common venture can conclude that they have not lost their time. I am sure that this will continue as well, even better, in the future for this prestigious archive journal of the Academy. This is my dearest wish.

—Jean-Pierre Marec

## VI. *Acta Astronautica* Era Part 4: 2008–Present

After Rupert Gerzer took-over the Editor-in-Chiefship of *Acta Astronautica* on 1 January 2008, and then Rock Jeng-Shing Chern on 1 January 2011, the major responsibilities are to enhance the quality and to promote the IF as well as ranking of the journal along with the PCC of IAA, Editorial Board team and Elsevier.

The current Editorial Board team consists of 18 members from nine countries. Besides the Honorary Editor-in-Chief, the Editor-in-Chief and the Managing Editor, there are 15 Co-Editors. We do not use the title “Associate Editor” since all “Co-Editors” have to act both roles. In order to keep smooth running of the journal, the team only got minor adjustments: Rupert Gerzer and Rock Jeng-Shing Chern changed their roles between Editor-in-Chief and Co-Editor in 2011, Managing Editor M. Fust left the team in 2011 with Eva Yi-Wei Chang taking the job in 2012, Co-Editor Kai-Uwe Schrogl left in 2011 with seven joining in 2011 (Vipparthi Adimurthy and Yu Lu), 2012 (Arun K. Misra and Anna D. Guerman) and 2013 (Radhika Ramachandran, Jiawen Qiu and Jie Chen), respectively. Enlargement of the Editorial Board team is forced by the rapid growth of

new submissions annually, e.g., < 600, 679 and 799 in 2010, 2011 and 2012, respectively.

Several strategies and steps have been taken with evidences of improvement appear recently. The strategies and steps include:

1. To eliminate the special issue for IAC Proceedings: As J.-P. Marec already mentioned, PCC only allows peer viewed papers to be published in the journal. On the other hand, it takes considerable time to handle so many recommended papers (more than 200) from the session chairmen after each IAC. As a consequence, no special issue proceedings can be published within one year of each Congress. Alternatively, the IAC session chairmen-recommended papers are handled like regular submissions to the journal which go through all peer review processes. Exceptions are that the IAC-recommended papers are usually in very good quality and have shorter review/revise time with a lower rate of rejection.

2. To shorten the time from paper submission to online publication: When a reviewer is invited, he/she has two weeks to consider either agree or disagree with the invitation. After two weeks a reminder is sent automatically from EES and gives the reviewer one more week to make a decision. If there is still no reply, the reviewer will be uninvited and the responsible Co-Editor needs to find another candidate as a reviewer. Furthermore, the reviewer has one month to complete the review work after agreeing to the invitation. The EES sends out reminders once per week for delayed reviews, but is limited to three times for each individual reviewer. Again, the reviewer shall be uninvited after that and a new candidate needs be invited. However, due to the fact that good reviewers are always very busy, this is a very time consuming process by itself sometimes.

3. To switch the role of co-editor recruitment from IAA Commissions to IAA and Editor-in-Chief: The members of first Co-Editor group in early 2008 were recommended by chairs of six IAA Commissions. This policy has been changed since the *Acta Astronautica* is under the supervision of the PCC of IAA. Therefore, the IAA President, the IAA Vice-President (Publications), the IAA Secretary General and the Editor-in-Chief are more dynamic and flexible to recruit proper co-editors in accordance with the paper handling requirements.

4. To handle IAC recommended papers immediately after the event: For each of the nearly 200 technical sessions of IAC, the session chairmen are requested to fill a best papers recommendation form. On the average, two papers are recommended in each session. After collecting forms from all sessions, the IAF Secretariat forwards papers related and not related to space law to the International Institute of Space Law (IISL) and the Managing Editor of *Acta Astronautica*, respectively. In the previous IACs, it took about five months for the authors of recommended papers to be notified and their papers submitted to the

journal. This year, it is requested that the Managing Editor attends the 64th IAC and collect a copy of the paper recommendation forms. The authors can be notified right after the IAC and start preparing submission of papers. It is hoped that paper submissions can be completed by the end of 2013 and all recommended papers be disposed (either published or rejected) before 65th IAC.

5. To set up guidelines for publishing special issues: Up to now, almost all special issues for IAF and IAA sponsored symposia or others are published two years after the events. This time delay causes the published papers from being cited in time. Therefore, the PCC and Elsevier have set up a guideline that all special issues must be published in nine months after the events. Otherwise, the special issue could be cancelled with all accepted papers published as regular ones. We expect a certain degree of difficulty at the beginning. However, this is a must step for long-term consideration.

6. To recruit more invited papers and review articles: Although more than 300 papers are published annually in the recent years, the journal is experiencing a relative lack of state-of-art invited papers and review articles. The main reason could be that, as J.-P. Marec mentioned, it is a journal with too wide a scope. Since the IAA has more than 1,200 Academician Members, however, it should not be too difficult to recruit top-level articles.

As a summary, the variations in pages/articles and IF/ranking with time are shown in Tables 4–3 and 4–4, respectively. Figures 4–6 and 4–7 show the current blue cover page and two-column format of *Acta Astronautica*, respectively. The maximum and minimum numbers of papers in one single issue or double issues (more precisely in one booklet) are:

Maximum number booklet: 74 papers, 765 pages, Issues 7–8, Volume 68, April–May 2011.

Minimum number booklet: 3 papers, 66 pages, Issue 10, Volume 50, April 2002; 3 papers, 72 pages, Issue 10, Volume 55, November 2004.

Year	Volume #	Issues/books	Pages	Articles
1974	1	12/6	1509	116
1975	2	12/6	1,034	101
1976	3	12/6	1,081	94
1977	4	12/6	1,127	101
1978	5	12/6	1,233	91
1979	6	12/8	1,758	139
1980	7	12/10	1,485	121
1981	8	12/9	1,433	134
1982	9	12/11	749	115

1983	10	12/11	809	100
1984	11	12/9	825	100
1985	12	12/11	1,040	134
1986	13,14	12/11	1,240	147
1987	15,16	12/12	1,467	179
1988	17,18	12/12	1,637	210
1989	19,20	12/12	1,215	148
1990	21,22	12/11	1,246	141
1991	23–25	12/12	1,565	187
1992	26–28	12/11	1,596	203
1993	29–31	12/13	1,607	158
1994	32–34	12/13	1,402	192
1995	35–37	24/18	2,888	310
1996	38,39	24/14	2,016	226
1997	40,41	24/12	1,774	157
1998	42,43	24/8	1,391	81
1999	44,45	24/11	1,568	172
2000	46,47	24/11	1,662	186
2001	48,49	24/9	1,671	166
2002	50,51	24/16	1,676	181
2003	52,53	24/11	2,072	210
2004	54,55	24/17	1,984	232
2005	56,57	24/14	1,968	214
2006	58,59	24/16	1,832	203
2007	60,61	24/12	2,150	251
2008	62,63	24/11	2,114	248
2009	64,65	24/13	3,144	313
2010	66,67	24/12	3,112	331
2011	68,69	24/12	3,292	344
2012	70–81	13/13	3,586	356
2013	82–92	14/14	2,902	291

**Table 4–3:** Publication Evolution of *Acta Astronautica*.

	2008	2009	2010	2011	2012
IF	0.374	0.508	0.609	0.614	0.701
Ranking	16/25	14/42	9/43	8/45	8/60

**Table 4–4:** Improvements in IF and Ranking.



Figure 4-6: Current blue cover page of *Acta Astronautica*.



Figure 4-7: Current two-column format of *Acta Astronautica*.



## VII. Conclusions

Firstly published in 1955 titled *Astronautica Acta*, next year (2014) will be the 60th year of the *Acta Astronautica* journal. Even under the sponsors of IAF, IAA and IISL, it is still an extremely hard work and needs a lot of effort from many volunteers to grow up the journal. It had very low IF with a ranking almost at the end in 1990s. Then the IF was improved gradually with the ranking climbed to 15 percent among the aerospace engineering category journals in 2000s. All the success is attributable to previous Editor-in-Chiefs, in particular, Jean-Pierre Marec, and their backup groups who built and strengthened the basis of *Acta Astronautica*. Nowadays, the responsibility of inheriting the past and ushering in the future are on the shoulders of current Editorial Board. We have confidence to enhance the quality and improve the worldwide effectiveness of *Acta Astronautica* continuously in the future by taking further strategies and steps. Supports from the IAA Academicians are mandatory and most welcome.

## Acknowledgment

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## Acronyms

AATC	<i>Acta Astronautica</i> Trustees Committee
AE	Associate Editor
CSAA	Chinese Society of Aeronautics and Astronautics
EES	Elsevier Editorial System
IAA	International Academy of Astronautics
IAC	International Astronautical Congress
IAF	International Astronautical Federation
IF	impact factor
IISL	International Institute of Space Law
N/A	not applicable, or, not available
PCC	Publications & Communication Committee (of IAA)

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