International Astronomical Union International Union of the History and Philosophy of Science

DHS/IUHPS

THE ICHA NEWSLETTER

NEWSLETTER OF THE INTER-UNION COMMISSION FOR HISTORY OF ASTRONOMY

No. 4 - December 2002

SUMMARY

A. International Conference on "Astronomical Instruments and Archives from the Asia_Pacific Region"

Held at Cheongju, Korea from 2 to 5 July 2002, this C41/ICHA conference was the first international conference under the auspices of the ICHA. Approximately 80 participants and guests attended this meeting: from East Asia, India, South-East Asia, North and Central America, Europe, Australia and South Africa. Members of the Scientific Organising Committee were as follows: Nha Il-Seong (Korea, Chairman), F.R. Stephenson (UK, Deputy Chairman), W. Orchiston (Australia, Secretary), C. Allen (Mexico), Kwan-Yu Chen (USA), S. Débarbat (France), S.J. Dick (USA), A. Gurshtein (Russia/USA), B. Hidayat (Indonesia), R. Kochhar (India), Liu Ciyuan (China), T. Nakamura (Japan), and B. Soonthornthum (Thailand). The conference was sponsored by: the City of Cheongju; Korea Astronomy Observatory; and the Korean Ministry of Science and Technology.

Participants and guests were formally welcomed by members of Cheongju City Council and the Korea Astronomy Observatory. Commemorative lectures were given by F.R. Stephenson and Nha Il-Seong. A wide range of oral papers were then presented. These were grouped into seven major themes: Archives and historiography; Astronomers and History; Exchange and Development of Astronomical Knowledge; Observational Records and Modern Scientific Applications; Early Astronomical Instrumentation; Recent Astronomical Instrumentation; and Star Charts and Calendars. Concluding remarks were given by R. Strom (Netherlands). A large number of posters were also displayed.

Social aspects of the conference included a Welcome Banquet, visits to places of interest in the Cheongju area, and a Closing Dinner.

Papers are currently being edited with a view to publication of the proceedings in 2003. Editors are: Nha Il-Seong, S. Débarbat, W. Orchiston, and F. R. Stephenson.

F. Richard Stephenson

B. History of Astronomy at the Sydney IAU General Assembly

1. The Program

Despite missing out on a Joint Discussion, C41/ICHA has ended up with the most diverse and most exciting history of astronomy (HoA) program of any General Assembly (GA), and we look forward to a big turn-out by our members at the 2003 July GA in Sydney, Australia.

Because of timetabling strictures, we have only been assigned two and a half days for our program, during the second week of the General Assembly, but we will be running two parallel HoA streams throughout much of this period. This means that there is a rich program to choose from, and we have done our best to slot sessions against one another that are as different as possible.

The final HoA 'package' involves a mix of Science Meetings (SM), Working Group Meetings (WG) and Business Meetings (BM), and is shown in the following table. Sessions 1 and 2, 2 and 3, and 3 and 4 are separated by morning tea, lunch, and afternoon tea, respectively.

Day	Session	Stream 1	Stream 2
Monday 21 July	1	**SM1:** Applied Historical Astronomy	**SM2:** Early Australian Radio Astronomy
	2	**SM1:** Applied Historical Astronomy	**SM2:** Early Australian Radio Astronomy
	3	**WG1:** Archives WG (overview)	**SM2:** Early Australian Radio Astronomy
	4	**WG1:** Archives WG (papers)	**SM2:** Early Australian Radio Astronomy
Tuesday 22 July	1	**WG3:** Historical Instruments WG (overview)	**SM3:** Recent Research
	2	**WG3:** Historical Instruments WG (papers)	**SM3:** Recent Research
	3	**WG4:** Transits of Venus WG (overview)	**SM3:** Recent Research
	4	**WG4:** Transits of Venus WG (papers)	**SM3:** Recent Research
Wednesday 23 July	1		**BM1:** C41/ICHA AGM
	2	**WG2:** Astronomical Chronology WG (overview)	**SM4:** Ethno/Archaeoastronomy

Note that because this program has been developed by a Commission and does not form part of any of the GA Symposia, Joint Discussions, or Special Sessions, it may not feature in full in the IAU *Information Bulletins*. You should therefore rely on this *Newsletter*, our June *Newsletter*, the C41/ICHA web site and personal e-mails from the C41/ICHA OC, to keep up with the latest developments regarding the Sydney HoA program.

2. Attendance by Non-IAU Members

There have been a number of enquiries about this and the situation is that non-IAU members can attend General Assemblies as guests of a Commission or Divisional President. Richard Stephenson is the President of C41/ICHA, and he is keen to see a good turn-out for the HoA sessions in Sydney so is happy to extend a blanket invitation to non-IAU members of the ICHA to attend as his guests. If you are a non-IAU member at the moment and are interested in attending the Sydney GA please e-mail Wayne Orchiston as soon as possible (on: wo@aaoepp.aao.gov.au) so that we can make the necessary arrangements.

3. Registration

All those planning to attend the HoA sessions, whether IAU members or not, are required to register for the GA. A copy of the *Registration and Proceedings Pre-Order Form* was attached to IAU *Information Bulletin* 91, and this form is also available electronically on the GA web site:

www.astronomy2003.com

Those submitting their Registration Forms prior to 2003 May 1 are entitled to a reduced rate. Late registration is possible up to 2003 July 11. Further information relating to registration, including payment options and cancellation and refund policy, can be found in IAU *Information Bulletin* 91 (pages 24-25).

Note that accommodation options and a booking form are included in the *Registration and Proceedings Pre-Order Form*. The GA web site and *Information Bulletin* 91 also include information about the GA venue, the overall GA program (including the Opening and Closing Ceremonies, and the General Assembly Dinner), and associated tours, visits and excursions.

Note also that apart from Australian and New Zealand citizens, all travellers must hold a valid visa in order to enter Australia. It is important to check with the Australian Embassy or Consulate in your country of residence well in advance of travel. It may take up to 8 weeks to obtain a visa.

4. Travel Grants

IAU members who intend to present papers in the HoA program but cannot obtain necessary funding from national sources may apply for a travel grant. A copy of the *IAU Travel Grant Application Form* was attached to IAU *Information Bulletin* 91, and this form is also available electronically on the GA web site: www.astronomy2003.com

Completed forms should be submitted to:

Dr Hans Rickman
IAU General Secretary
98 bis Blvd Arago

FR 75014 Paris, France
or faxed to: +33 1 43 25 2616 or e-mailed to: iau@iap.fr

The deadline for all Travel Grant Application Forms is 2003 February 15, and successful applicants will be notified on or about March 15.

Applicants should be aware that "… it is only possible to cover a small part of the total justified needs. Only truly deserving applicants can therefore expect support from the IAU…. Grants will normally be paid … in cash and in Australian dollars (AUD), upon arrival and check-in at the registration desk [in Sydney]." (*Information Bulletin* 91: 22).

5. The Weather in July

July is mid-winter in Australia and the weather can be rather variable. Rain showers are typical, so bring an umbrella and/or raincoat. Temperatures generally range between ~7 and 17 degrees Celsius (though in 2001 and 2002 we had peak daytime July temperatures in the mid-20s), so warm clothing is advisable.

Wayne Orchiston
Sydney HoA Program Co-ordinator

C. Sydney GA: Call for Papers

We have a rich history of astronomy program scheduled for Sydney with a range of meetings that can accommodate *all* research tastes. If you are planning to attend this GA then it is now time to start think about the paper(s) you would like to present - or prepare as poster papers. The presentation time for oral papers will be 15 or 20 minutes, depending on the numbers of papers accepted for each session.

The absolute deadline for submission of titles and abstracts is 2003 April 15. Please provide (a) your name, (b) the title of your paper, (c) which meeting it is for, (d) whether your preference is an oral or a poster paper, and (e) an abstract of no more than 200 words. You should e-mail (or failing that post) this information to the OC Chairperson of the relevant Science or Working Group Meeting (these are listed below). Please send separate e-mails if you have papers for more than one Meeting.

Here are the different Meetings you have to choose from.

SM1: Applied Historical Astronomy

This half-day meeting is concerned with examining ways in which historical data can be used to address current astronomical issues. Perhaps best-known are studies of historic supernovae, eclipses and comets from the Middle East, China, Korea and Japan, but many other possibilities exist. Nor does Applied Historical Astronomy relate solely to "ancient times", for eighteenth and nineteenth century data supplied by those who practised positional astronomy have been used by those researching contemporary astrophysics.

The Organising Committee of this Science Meeting comprises Richard Stephenson (Chair), Liu Ciyuan, Nha Il-Seong, and John Steele. Offers of papers

should be directed to Professor Stephenson (e-mail: f.r.stephenson@durham.ac.uk, or post to: Department of Physics, University of Durham, South Road, Durhan DH1 3LE, UK).

SM2: The Early Development of Australian Radio Astronomy

This Science Meeting will feature a review of early Australian radio astronomy by a leading historian of astronomy, followed by papers given by retired radio astronomers who were involved in the development of Australian radio astronomy between 1945 and 1988. Speakers in this one-day Meeting will be by invitation only, and will include some very well-known names in the history of radio astronomy.

The Organising Committee of this Science Meeting comprises Wayne Orchiston (Co-Chair), Woody Sullivan (Co-Chair), Miller Goss, Dave Jauncey and Ken Kellermann. For further details contact Dr Orchiston (wo@aaoepp.aao.gov.au).

SM4: Ethnoastronomy & Archaeoastronomy

This quarter-day Science Meeting is designed for those with a particular interest in the astronomical systems and beliefs of prehistoric peoples and contemporary ethnic groups. The plan is to publish the oral and poster papers from this Science Meeting, possibly in a special issue of *Archaeoastronomy*.

The Organising Committee of this Science Meeting comprises Clive Ruggles (Chair) and Keith Snedegar. Offers of papers should be directed to Professor Ruggles (e-mail to: rug@le.ac.uk, or post to: School of Archaeological Studies, University of Leicester, University Road, Leicester LE1 7RH, UK).

WG1: Astronomical Archives

This half-day Working Group Meeting is designed for those with a particular interest in astronomical archives or records to report on their research. We are happy to accept various types of papers, including national overviews, reports on the astronomical archives in a single repository, or a detailed discussion of a single historically-significant manuscript.

The Organising Committee of this Working Group Meeting comprises Suzanne Débarbat (Chair), Wolfgang Dick and Wayne Orchiston. Offers of papers should be directed to Dr Débarbat (e-mail to: Suzanne.Debarbat@obspm.fr, or post to: Observatoire de Paris, 61 av de l'Observatoire, 75014 Paris, France).

WG2: Astronomical Chronology

This quarter-day Working Group Meeting is designed to allow those who have been compiling a wide-ranging internationally-approved master list of major milestones in the history of astronomy (including key instruments, astronomical phenomena, discoveries and ideas) to discuss and review their progress.

The Organising Committee of this Working Group Meeting comprises Alex Gurshtein (Chair), Adriaan Blaauw, Teije de Jong and Brian Warner. For further details contact Professor Gurshtein (agurshtein@hotmail.com).

WG3: Historical Instruments

This half-day Working Group Meeting is designed for those with a particular interest in historically-significant astronomical instruments, observatories and sites. We are happy to accept various types of papers, including national overviews, reports on instruments in a single repository or at a single site (e.g. a group of historic radio telescopes), or a detailed discussion of a single historically-important instrument. "Instruments" not only include various types of telescopes, but also spectroscopes, photometers, polarimeters, multi-channel hydrogen-line radio receivers, etc.

The Organising Committee of this Working Group Meeting comprises Nha Il-Seong, John Briggs and Wayne Orchiston. Offers of papers should be directed to Professor Nha (e-mail to: SLISNHA@chollian.net, or post to: The Nha Il-Seong Museum of Astronomy, San-133 Gamchon-myon, Yechon-gun, Kyongbuk 757-910, Korea RP).

WG4: Transits of Venus

This half-day Working Group meeting is designed for those with a particular interest in the seventeenth, eighteenth and nineteenth century transits of Venus. We are happy to accept various types of papers, including international overviews relating to one or more transits, reviews of the observations made of a single transit (either internationally or in a single country), or detailed accounts of an individual transit party's work and scientific results.

The Organising Committee of this Working Group Meeting comprises Wayne Orchiston (Chair), Steven Dick, Alex Gurshtein, Rajesh Kochhar and Luisa Pigatto. Offers of papers should be directed to Dr Orchiston (e-mail to: wo@aaoepp.aao.gov.au, or post to: Anglo-Australian Observatory, PO Box 296, Epping, NSW 2121, Australia).

SM3: Recent Research

If your research work does not fit comfortably into the themes of the Working Group Meetings or any of the afore-mentioned Science Meetings, then SM3 is just for you! This one-day Science Meeting is a “grab-all” category so that no matter what your field of research interest there is a special time and place at this General Assembly where you can talk about your work. We anticipate accepting a wide variety of papers for this one-day Science Meeting.

The Organising Committee of this Science Meeting comprises Tsuko Nakamura (Chair), Wolfgang Dick, Rajesh Kochhar and Brian Warner. Offers of papers should be directed to Dr Nakamura (e-mail: tsuko@cc.nao.ac.jp, or post to: The National Observatory of Japan, 2-21-1 Osawa, Mitaka, Tokyo 181, Japan).

Wayne Orchiston

D. Resolutions for the Sydney GA

Background

The Working Rules of the IAU outline two different sorts of Resolutions that are relevant to C41/ICHA:

> "B: Resolutions, proposed by Divisions or Commissions not attached to a Division [i.e. C41] and adopted by the General Assembly,
> C: Resolutions, adopted by Divisions or Commissions, but not presented to the General Assembly."

In the past, Commission 41 has been very proactive in developing Resolutions of both types, and indeed the formation of our Transits of Venus Working Group at the Manchester GA in 2000 sprung out of just such a resolution.

Commemoration of 2009

During its meeting in Korea in 2002 July the C41/ICHA Organising Committee discussed and eagerly approved the idea to commemorate the year of 2009 as a great milestone of scientific history. Alex Gurshtein prepared the draft of a suitable B-type resolution, and after some refinements this will be submitted to the IAU Executive Committee, and, in accordance with accepted procedure, the general discussion on this issue will take place during the General Assembly at Sydney. The final text of this resolution follows.

The 25th General Assembly of the IAU,

recalling

that the introduction of the telescope in astronomical observations brought about the first fundamental revolution in humankind's perception of the world outside the Earth,

recognizing

that the series of developments initiated by this event led, in time, not only to the vast and richly detailed view of the Universe and humankind's place in it which is modern cosmology, but to the entire framework of fact-based empirical investigation and analysis which underlies contemporary science and technology,

and considering

that the immediate appeal of astronomy to the imagination of humans in all walks of life remains one of the most powerful ways to kindle the interest of young people everywhere in scientific research and education, and thus to contribute to the progress of the quality of human life,

recommends

that the year 2009, the 400th anniversary of Galileo's accomplishments and the real birth of modern telescopic astronomy, be declared the "Year of Astronomy", in which the potential of astronomy to enlighten and enrich humans will be brought to the largest possible audience all over the world,

and requests

that the Officers and Executive Committee together with Commission 41 initiate prompt and effective action to organize this important worldwide event, in collaboration with all appropriate national and international organizations.

Other History of Astronomy Resolutions for the Sydney GA

Currently, a number of C41/ICHA members interested in the history of radio astronomy are in the process of developing a C-type resolution relating to the identification, documentation and preservation of surviving historically-significant radio telescopes and associated instrumentation.

Meanwhile, there is no limit – within reason, of course – to the number of resolutions that C41 can consider at the Sydney GA, so we are happy to hear of suggestions for further resolutions. But please discuss these with me before the end of 2003 January so that we have time to prepare the necessary paperwork.

Wayne Orchiston
E-mail: wo@aaoepp.aao.gov.au

E. C41 Report for the 1997-2000 Triennium

The C41 Triennial Report from Steve Dick's Presidency of Commission 41 was recently published, and the reference is:

Dick, S., 2001. Commission 41: History of Astronomy. In Rickman, H. (ed.). Transactions of the International Astronomical Union, Volume XXIVB. San Francisco, Astronomical Society of the Pacific. Pp.255-258.

Note that this published "official" version is somewhat shorter than Steve's original that appeared in our Newsletter.

Wayne Orchiston (C41/ICHA Secretary)
E-mail: wo@aaoepp.aao.gov.au

F. Triennial Report to the IAU, 2000-2003. Commission 41: History of Astronomy, & the Inter-Union Commission for History of Astronomy (ICHA) (Histoire de l'Astronomie)

PRESIDENT:	Richard Stephenson
VICE-PRESIDENT:	Alex Gurshtein
IMMEDIATE PAST PRESIDENT:	Steven J. Dick
SECRETARY:	Wayne Orchiston
ORGANIZING COMMITTEE:	Wolfgang Dick, Rajesh Kochhar, Tsuko Nakamura, Il-Seong Nha, Woodruff T. Sullivan, Brian Warner

1. FORMATION OF THE INTER-UNION COMMISSION FOR HISTORY OF ASTRONOMY (ICHA)

One of the most important developments during the triennium was the formation, in 2001, of the ICHA by the International Astronomical Union (IAU) and the Division of History of Science of the International Union for History and Philosophy of Science (DHS/IUHPS). This international body represents the interests of *all* professional historians of astronomy worldwide, and encourages research, facilitates communication between researchers, organizes scientific meetings, undertakes collaborative projects, and publishes the bi-annual *ICHA Newsletter*. Membership is open to the entire history of astronomy community, and those who are IAU members become full members of the new Commission, while those who conduct their research through the IUHPS become associate members. The inaugural Organizing Committee comprised the OC of Commission 41.

The official establishment of a genuine Inter-Union Commission by the two parent Unions was a major step forward for the history of astronomy community. IAU Commission 41was founded in 1948, and for decades there was close co-operation between colleagues from this Commission and those associated with the DHS/IUHPS. During the 1970s an attempt was made to have C41 formally recognized as a joint commission of the two Unions, but this initiative was not approved by the IAU. Yet in 1994 the idea was mistakenly promoted that C41 had indeed become "A joint IAU-IUHPS Commission" (IAU Transactions XXIIB, p. 207) — even though its status was unchanged — and this notion was perpetuated through the 1994 ICSU Handbook (see p. 104). Once this fiction of a "Joint Commission" or "Inter-Union Commission" was established, it was accepted without question until the true situation was discovered in late 2000 following the Manchester IAU General Assembly (GA). The quest for a true Inter-Union Commission then became the priority of the C41 Organizing Committee, resulting in the formation of the ICHA in 2001.

For practical purposes, the ICHA and C41 were then treated as a single inter-twined Commission (i.e. C41/ICHA), with a common newsletter and a single web site, and membership of the four Working Groups formed by C41 (see Section 5 below) was opened to all ICHA members.

2. MEMBERSHIP

At the end of the 2000 Manchester GA the total membership of C41 (full members and consultants) stood at 200, but with the founding of the ICHA a proactive membership drive was implemented with the aim of identifying and recruiting active historians of astronomy on a country-by-country basis. In addition to those with more 'conventional' historical interests, attention was paid to those with more specialized research interests, specifically in applied historical astronomy, archaeoastronomy, ethnoastronomy, and the history of radio astronomy. At the time of writing, the membership of the ICHA stood at 648, 49% of whom were IAU members.

Offsetting this substantial increase in overall membership during the triennium were the deaths of the following members: J-P. Cressent (France), N.P. Erpylev (Russia), W. Petri (Germany), C. Ronan (UK), H. von Dechend (Germany), G. Whitrow (UK) and K. Yabuuti (Japan).

3. NEW RESOLUTIONS

At the 2000 Manchester GA the following Type C (Commission) resolutions were approved at the C41 Business Meeting:

> (a) Recognizing the historical importance of previous transits of Venus and the numerous transit of Venus expeditions mounted by many countries, and
> Noting the rarity of the upcoming transits of 2004 and 2012
> *Commission 41 Recommends that the sites of the previous transit of Venus expeditions be inventoried, marked and preserved, as well as instrumentation and documents associated with these expeditions.*
>
> (b) Considering the importance of the contribution of the International Latitude Service to the study of polar motion
> *Commission 41 Recommends that concerted efforts be made to preserve the buildings and instruments associated with the observatories of the International Latitude Service and predecessor observatories especially the associated geodetic monuments or pillars.*

The former resolution led directly to the formation of a Transits of Venus Working Group and its program of research (see below), while the second resolution arose from discussions held in 1999 during IAU Colloquium 178 on "Polar Motion: Historical and Scientific Problems".

4. RESEARCH BY MEMBERS

Members of C41 and the ICHA were particularly active in research during the report period, as the bibliography at the end of this report indicates. However, it is important to remember that this is very much a 'select' listing, and that the total publications by members would exceed this by a factor of 10-20.

Even a cursory examination of the 'Select Bibliography' reveals that members ranged widely in their research projects. Apart from those who focussed on archives, astronomical chronology, historical instruments and transits of Venus – all discussed in more detail in Section 5, below – members researched the history of astronomy for almost all occupied regions of the Earth, and over time-spans that ranged from prehistory right up to the 1990s. Whilst studies involving Babylonian, Egyptian, Greek, Indian, Islamic and Carolingian astronomy are in evidence (e.g. see entries for DeYoung, Eastwood Evans, Goldstein, Hetherington, Kak, King, Sarma, Steele and Swerdlow), some chose to focus on individual astronomers, including luminaries like Copernicus (Goldstein, 2002; Lerner, 2000) and Kepler (Jardine and Segonds, 1999; Voelkel, 1999), and more recent notables such as the Cassinis (Débarbat and Dumont, 1999), Clerke (Brück, 2002), Russell (DeVorkin, 2000) and Tinsley (Eisberg, 2001).

The emergence and development of astrophysics preoccupied some colleagues (e.g. Hearnshaw, 2000; Osterbrock, 2001), while others addressed aspects of cosmology (e.g. see Martinez and Trimble, 2001). Becker (2000), Hentschel (1999) and Marriott (1999), amongst others studied aspects of solar astronomy. More unusual were S. Dick's historical perspectives on the search for extraterrestrial intelligence, and Sheehan and Osterbrock's (2000) foray into astro-psychiatry. In contrast, many members carried out archaeoastronomical or ethnoastronomical research, whilst R. Stephenson and his colleagues used applied historical astronomy to investigate contemporary astronomical issues. Several members researched the early history of radio astronomy history, particularly in Australia and the USA (e.g. see Orchiston and Slee, 2002).

In addition to their on-going research programs, many ICHA members contributed essays for the *Biographical Encyclopedia of Astronomers*, edited by T. Hockey and to be published by Kluwer in 2004. C41/ICHA strongly supports this landmark project, and President, R. Stephenson, will contribute the Foreword.

5. THE WORKING GROUPS

Introduction

There are four different C41/ICHA Working Groups (WGs), three of which were established at the 2000 Manchester GA. All of the WGs were active during the triennium, and information relating to their work programs is presented below.

Archives WG

This WG was established by Commissions 41 and 5 at the 1991 IAU General Assembly, primarily in order to register historically-important extant astronomical archives and encourage their preservation, conservation, cataloguing and

documentation. On-going work by WG members was reported at Special Sessions held at the 1994 and 2000 GAs.

During the triennium, members of the WG were involved in documenting and researching individual astronomical archives in various countries, resulting in a number of publications, two of the most notable being Gingerich (2002) and Chinnici and Gramatowski (2001). Work continued on the preparation of national inventories for Australia, France, Germany, India, Italy, Japan, New Zealand, Russia, the UK and the USA. Several members of the WG participated in the July 2002 Conference on "Astronomical Instruments and Archives from the Asia-Pacific Region", held in Cheongju, Korea, and presented papers.

Committee members of this WG are: S. Débarbat (France — Chair), W. Dick (Germany), D. Green (USA), P. Hingley (UK) and W. Orchiston (Australia). Other ICHA members who were involved in archival work included: R. Ansari (India), A. Blaauw (Netherlands), P. Brosche (Germany), I. Chinnici (Italy), B. Corbin (USA), D. DeVorkin (USA), S. Dick (USA), M. Folkerts (Germany), A. Gurshtein (Russia/USA), J. Hamel (Germany), G. Kilambi (India), J.-B. Lee (Korea), T. Nakamura (Japan), I.-S. Nha (Korea), A. Perkins (UK), E. Proverbio (Italy), M. Rothenburg (USA), F. Schmeidler (Germany), K. Snedegar (USA), A. Verdun (Switzerland), and G. Wilkins (UK).

Astronomical Chronology WG

This WG was formed at the 2000 IAU Manchester GA specifically to compile a wide-ranging internationally-approved compendium or text book identifying and documenting the major milestones in the history of astronomy - including key instruments, astronomical phenomena, discoveries and new ideas - that profoundly influenced its development.

There are very serious doubts that such a compendium or a textbook can be compiled in the foreseeable future, so as a first step in this direction members of the WG have been researching the composition of a carefully thought-out chronology. The aim is to produce an acceptable chronological thesaurus, and a memorandum on methodological aspects of the project was written and approved by the WG.

Committee members of this WG are: A. Gurshtein (Russia — Chair), A. Blaauw (Netherlands), T. de Jong (Netherlands) and B. Warner (South Africa). Other active members of the WG were: C. Allen (Mexico), A. Batten (Canada), P. Broughton (UK) and R. Kochhar (India).

Historical Instruments WG

This WG was set up at the 2000 Manchester GA in order to draw up an inventory of internationally-significant astronomical instruments; to assemble a bibliography of existing publications relating to such instruments; and to encourage colleagues to carry out research on historically-significant instruments and publish their results. The WG was also responsible for tracking progress on an IAU resolution about preservation of surviving instruments associated with the

measurement of the arc of the meridian made by F.G.W. Struve. This resolution was passed at the 1994 GA in The Hague.

During the report period, members of the ICHA from a range of countries were active in researching historically-significant instruments, and a number of these studies resulted in publications (e.g. see Bennett, 2000; Bonoli, 1999; Chinnici, 2000; Hoskin, 2002; Jarrell, 1999; Kennedy et al., 1999; Kunitzsch, 2000; Nakamura, 2002; Orchiston and Slee, 2002; Pepin, 2002; Sarma, 1999; Satterthwaite, 2001b; Staubermann, 2000; Stautz, 1999). In addition, A. Batten continued to liaise with Russian colleagues involved in the Struve arc of the meridian project.

The WG Committee finalized a standardized scheme for the recording of historically-significant instruments, and I-S. Nha and S. Nha established a WG web site (http://www.nhamuseum.org/WG). Another important WG development was I-S. Nha's initiative in organizing the Conference on "Astronomical Instruments and Archives from the Asia-Pacific Region", which was held in Cheongju, Korea, in 2002 July.

Committee members of this WG are: I-S. Nha (Korea — Chair), W. Orchiston (Australia) and J. Briggs (USA). Other ICHA members who researched historic instruments included: P. Abrahams (USA), C. Allen (Mexico), D. Andrews (UK), R. Ariail (USA), A. Batten (Canada), O. Beckman (Sweden), H. Beez (Germany), T. Bell (USA), J. Bennett (UK), M. Bolt (USA), F. Bonoli (Italy), W. Breyer (USA), R. Brooks (Canada), G. Cameron (USA), I. Chinnici (Italy), G. Clifton (UK), S. Débarbat (France), S. Dick (USA), W. Dolz (Germany), I. Glass (South Africa), Y-H. Hahn (Korea), R. Hambleton (USA), J. Hamel (Germany), K. Hentschel (Germany), M. Hoskin (UK), R. Jarrell (Canada), K. Johnson (UK), I. Keil (Germany), E. Kennedy (USA), D. King (Germany), R. Kochhar (India), P. Kunitzsch (Germany), K. Launie (USA), J-B. Lee (Korea), K. Locher (Switzerland), R. Maddison (USA), A. Maurer (Switzerland), A McConnell (UK), M. Miniati (Italy), T. Nakamura (Japan), M.-H. Nam (Korea), M. Nishiyama (Japan), G. Oestmann (Germany), Y. Ohashi (Japan), D. Osterbrock (USA), B. Pepin (USA), L. Pigatto (Italy), P. Plassmeyer (Germany), M. Reynolds (USA), E. Rudd (USA), S. Sarma (India), G. Satterthwaite (UK), S. Schechner (USA), H. Setyanto (Indonesia), P. Shankland (USA), B. Slee (Australia), K. Staubermann (Germany), B. Stautz (Germany), B. Stephenson (USA), F. Turner (UK), D. Warner (USA), G. Wilkins (UK), R. Willach (Switzerland), G. Woldschmidt (Germany), V. Zanini (Italy), and J. Zaun (Germany).

Transits of Venus WG

At the 2000 GA in Manchester this WG was set up in order to inventory, mark and preserve the sites of previous transit of Venus expeditions; research the instruments used at these sites and the observations made; prepare a bibliography of existing publications relating to all transits of Venus; and encourage colleagues to carry out further research and to publish their results.

During the triennium, ICHA members in Australia, Brazil, Canada, Italy, Japan, South Africa, UK, and the USA actively researched various transits and other means of establishing the solar parallax, resulting in a number of different publications (e.g.

see Hughes, 2001; Orchiston, Love and Dick, 2000; Pigatto and Zanini, 2001; Schaefer, 2001), and the WG Committee prepared a bibliography of post 1989 research papers on transits of Venus. In light of the up-coming 2004 and 2012 transits, a number of popular books were published. One of these was co-authored by an ICHA member (Maunder and Moore, 2000), while books by two other members, Chauvin and Sheehan, are due for release in 2003.

Committee members of this WG are: W. Orchiston (Australia — Chair), S. Dick (USA), A. Gurshtein (Russia), R. Kochhar (India) and L. Pigatto (Italy). Other ICHA members who actively researched transits of Venus and other methods of determining the astronomical unit included: M. Chauvin (USA), J. Downes (UK), H. Duerbeck (Germany), D. Fernie (Canada), M. Freitas (Brazil), P. Hingley (UK), D. Hughes (UK), W. Koorts (South Africa), P. Moore (UK), B. Schaefer (USA) and W. Sheehan (USA).

Concluding Remarks

Meetings of all four WGs are scheduled for the July 2003 GA, where WG members and other interested astronomers will be able to report on their work via oral and poster papers.

6. CONFERENCES

Manchester General Assembly

In addition to a business meeting, C41 organizing two different history of astronomy sessions at the 2000 Manchester General Assembly. An SOC comprising R. Stephenson (UK: Chairman), R. Ansari (India), S. Dick (USA), O. Gingerich (USA), I-S. Nha (Korea), W. Orchiston (Australia), M. Standish (USA), W. Sullivan (USA) and D. Yeomans (USA) arranged a one-day JD6 on "Applied Historical Astronomy". This was held on August 11, and more than 100 people in attendance heard the following papers: D. Brown (Babylonian observations), R. Stephenson "East Asian observations), W. Orchiston (Southern Hemisphere observations), R. Ansari (Practical astronomy in Indo-Persian sources), M. Standish (early observations and modern ephemerides), Y. Kolensik (secular variation of planetary orbital elements), L. Morrison (Ancient eclipses and Earth's rotation), D. McCarthy (Earth rotation since AD 1600), D. Yeomans (Creating modern cometary models using ancient Chinese data), M. Bailey (Historical variability of the interplanetary complex), D. Hoyt (Early telescopic sunspot records), D. Hughes (Recorded long-period comet fluxes as an indicator of historic astronomical activity), D. Willis (Scientific interpretation of historical auroral records), D. Green (Remnants of historical supernovae), with a final overview by W. Sullivan. Poster papers were prepared by J. Brooke et al., K. Churyumov, D. Jones, A. Korsun and M. Stavinschi.

On August 16 a C41 Special Session on "Inventory and Preservation of Astronomical Archives, Records, and Artefacts" was organised by S. Dick as part of a DHS/IUHPS initiative to encourage the preservation and inventory of scientific archives in general. The following papers were presented in this half-day meeting: A.

Blaauw (The inventory of IAU archives, and the ESO archives), P. Hingley (Royal Astronomical Society Library and Archives), G. Wilkins (Norman Lockyer Observatory archives), S. Débarbat and J-P. Cressent ("Alidade" and the iconographic base for the astronomical archives preserved in France), W. Dick (German archives), A. Verdun (Status of the Euler edition and archives), A. Gurshtein (Russian archives), B. Corbin and D. Coletti (Preservation and digitization of observatory publications), W. Orchiston (Inventory and preservation of archives and historical instruments in Australia and New Zealand), I-S. Nha (The Nha Il-Seong Museum of Astronomy) and R. Ansari (Archives in India), In addition, I. Hasegawa summarized T. Nakamura's paper on astronomical archives in Japan.

"Astronomical Instruments and Archives from the Asia-Pacific Region"

The international conference, “Astronomical Instruments and Archives from the Asia-Pacific Region”, held in Cheongju (Korea) between 2002 July 2-5, was the first formal activity of the ICHA and was attended by ~80 astronomers and accompanying guests from around the world. Sponsored by the City of Cheongju, the Korea Astronomy Observatory and the Ministry of Science and Technology, the conference was held to mark the construction of the new Nha Il-Seong Museum of Astronomy in Cheongju.

A SOC comprising I-S. Nha (Korea: Chairman), R. Stephenson (UK: Deputy-Chairman), W. Orchiston (Australia: Secretary), C. Allen (Mexico), S. Débarbat (France), K-Y. Chen (USA), S. Dick (USA), A. Gurshtein (Russia/USA), B. Hidayat (Indonesia), R. Kochhar (India), C-Y. Lui (China), T. Nakamura (Japan) and B. Soonthornthum (Thailand) arranged a program of paper sessions and a business meeting. The LOC, chaired by I-S. Nha, organised tours, visits, a banquet and the conference dinner.

The following presented papers: H. Abt and J. Fountain (Chinese jade serrated disks), C. Allen (The Frisius-Arsenius astrolabe in the National History Museum, Mexico), A. Bandyopadhyay (The famous sun-temple of Konarak (1248 A.D.) and Maharaja Jai Singh’s observatory at Jaipur (1734 A.D.): examples of outstanding historical astronomical instruments in India), A. Batten (The 1.8-m Plaskett Telescope in Victoria: Canada's historic instrument), J. Briggs (The legacy of George Ellery Hale), S. Débarbat (Korean instruments preserved in the Paris Observatory collections), W. Dick (Mining the internet: online sources for history of astronomy in the Asia-Pacific region), K-W. Fung (The transmission of Georg von Peurbach's theoricae novae planetarum (new theory of the planets) in 17th century China), A. Gurshtein (Relevant queries in respect to the ancient Chinese sky), Y-H. Hahn (Geometrical analysis of the 18th century Ganpyeong-gui and Hongae Il-gui Korean horizontal sundials), S. Jochi (Zu Chongzhi's method transmitted into Japan), K-A. Kawabata, K. Tanikawa and M. Soma (TT-UT in the 7th century derived from astronomical records in the Nihongi and the Suisu), I-G. Kim and Y-B. Lee (As astronomical analysis of the ‘Fangxing-tu (1711)’, an early Western-type star chart in the possession of Haenam Rokwoo-dang in Korea), R. Kochhar (Modern

astronomical instrumentation in India, 1651-2002), E-H. Lee and K-Y. Chen (The recorded dates of Far-East calendars), K-C. Leung, Y. Lu, and Y-H. Liu (Astronomy of the Yi ethnic minority of China), C-Y. Liu (Solar eclipse records in the Ming Dynasty), T. Nakamura (Japanese heraldic marks relating to astronomy), I-S. Nha (King Sejong's sundial, *Angbu Il-gui*), Y. Ohashi (Medieval Indian astronomical instruments and archives), W. Orchiston (The rise and fall of the Chris Cross: a pioneering Australian radio telescope), W. Orchiston, J. Chapman, and B. Norris (The ATNF Historic Photographic Archive: documenting the history of Australian radio astronomy), L. Pigatto (Astronomical observations made by Jesuits in Peking during the 17th and 18th centuries), B. Soonthornthum (The solar shadow and city walls of Chiang Mai), R. Stephenson (East-Asian records of AD1054 supernova), R. Stephenson (Korean observations of Kepler's supernova), R. Strom (Chinese daytime observations of sungrazing comets), B. Warner (David Gill and the California reflectors). Concluding remarks were presented by R. Strom.

Poster papers were prepared by Y.S. Ahn, Y-B. Lee, Y-S. Lee, and B.S. Han; J-B. Lee and I-S. Nha; Y-B. Lee, I-G. Kim, Y-S. Lee, and G. Oh; Y-S. Lee, S-H. Kim, and M-H. Nam; Y-S. Lee, M-S. Lee, S-H. Kim, Y-B. Lee, and B-Y. Ahn; S. Nha; M. Nishiyama (two); G. Oh; H. Setyanto; S-T. Yi; C. Zhang; and Z. Zhang, and Y. Liu.

The conference proceedings will be edited by S. Débarbat, I-S. Nha, W. Orchiston and R. Stephenson.

Sydney General Assembly

A wide-ranging program involving four different Science Meetings (Applied Historical Astronomy, The Early Development of Australian Radio Astronomy, Ethno/Archaeoastronomy, and Recent Research), meetings of all four Working Groups and a Business Meeting has been planned for the 2003 July General Assembly to be held in Sydney, Australia.

Other Conferences

Other conferences attended by ICHA members during the triennium included the annual meetings of the Astronomische Gesellschaft (Germany) and the Antique Telescope Society; the History of Astronomy Division sessions of the annual American Astronomical Society conferences, the 2000 October colloquium to commemorate the 1500th anniversary of Zu Chongzhi, held in Laishui, China; the 2000 October Stewart Museum globe symposium, held in Montreal, Canada; the 2001 July XXIst International Congress of History of Science, organized by the DHS/IUHPS and held in Mexico City; the 2001 July Fifth Biennial History of Astronomy Workshop, held at Notre Dame University, USA; the 2001 August 4th International Conference on Oriental Astronomy, held in Nanyang, China; the 2001 September colloquium on "European Astronomy in the 20th Century", held in Munich, Germany; the 2001 October international symposium on "Tycho Brahe and Prague: Crossroads of European Science", held in Prague, Czechoslovakia; and the 2002 July LISA IV conference, also held in Prague.

7. NEWSLETTERS, JOURNALS AND WEB SITES

With the founding of the ICHA came the new bi-annual *ICHA Newsletter* edited by I. Chinnici (Italy), A. Gurshtein (Russia/USA), W. Orchiston (Australia) and R. Stephenson (UK), which was launched in 2001 June. Typically ~27 pages in length, this A5 publication contains information about C41 and the ICHA, including obituaries, conferences and GA meetings, the web site, research and publications by members, and the Working Groups. There is also non-C41/ICHA news about history of astronomy societies, exhibitions, internet discussion lists, journals, newsletters, conferences and web sites. In addition to paper copies, the newsletter is available on the Commissions' web site (see URL below).

Apart from the *ICHA Newsletter*, ICHA members were also involved in producing other newsletters, and the following history of astronomy journals: *Archaeoastronomy: The Journal of Astronomy in Culture, Culture and Cosmos*, *Journal of the Antique Telescope Society*, *Journal of Astronomical History and Heritage* and *Journal for the History of Astronomy*. In addition, W. Dick and J. Hamel continued to edit the monograph series, *Acta Historica Astronomiae*.

During the triennium, W. Dick continued to maintain and update the C41/ICHA web site (http://www.astro.uni-bonn.de/~pbrosche/iaucomm41/), with space kindly provided by P. Brosche. In addition to the *ICHA Newsletter*, this site also contains news of the Commissions, a list of all C41 members, and links to other history of astronomy web sites, including the invaluable one that Dick maintains on behalf of the History of Astronomy Working Group of the Astronomische Gesellschaft.

8. SELECT BIBLIOGRAPHY

Given below are some publications by members of C41 and the ICHA during the report period. A full list would be prohibitively long, so those seeking a more complete bibliography should refer to the listings in the *ICHA Newsletter* and to Ruth Freitag's bibliographies which, until recently, appeared on the Commission's Web site, in the Newsletter of the Historical Astronomy Division of the American Astronomical Society, and in the *Journal of Astronomical History and Heritage*.

References

Aveni, A., 1999. Astronomy in the Mexican Codex Borgia. *Archaeoastronomy* 24: S1-S20.

Aveni, A., 2000. Solving the mystery of the Nasca lines. *Archaeology* 53: 26-35.

Bartky, I., 2000. Chicago's Dearborn Observatory: a study in survival. *Journal of Astronomical History and Heritage* 3: 93-114.

Bartky, I., 2000. *Selling the True Time: Nineteenth-century Timekeeping in America*. Stanford University Press, Stanford.

Becker, B., 2000. Priority, persuasion, and the virtue of perseverance: William Huggins's efforts to photograph the solar corona without an eclipse. *Journal for the History of Astronomy* 31: 223-243.

Becker, B., 2001. Visionary memories: William Huggins and the origins of astrophysics. *Journal for the History of Astronomy* 32: 43-62.

Beckman, O., 2002. Samuel Klingenstierna and the achromatic lens. *Journal of the Antique Telescope Society* 22: 9-15; 23:3-8.

Bell, T.E., 2002. The roles of lesser-known American telescope makers in 19th-century American observatories. *Journal of the Antique Telescope Society* 23: 9-18.

Bennett, J.A., 2000. Instruments and illustrations in eighteenth-century astronomy. In Shea, W.R. (ed.). *Science and the Visual Image in the Enlightenment*. Science History Publications, Canton (M.A.). Pp. 137-154.

Blaauw, A., 1999. *Archives of the International Astronomical Union. Inventory for the Years 1919-1970*. IAU, Paris.

Bonoli, F., 1999. Coronelli astronomo e i globi celesti. In Tavoni, M.G. (ed.). *Un Intellettuale Europeo e il Suo Universo: Vincenzo Coronelli (1650-1718)*. Costa Editore, Bologna. Pp. 139-161.

Broda, J., 2000. Mesoamerican astronomy and the ritual calendar. In Selin: 225-267.

Brosche, P., 2000. Kuestner's observations of 1884-85; the turning point in the empirical establishment of polar motion. In Dick *et al*.: 101-107.

Brosche, P., 2001. *Der Astronomen de Herzogin. Leben und Werk von Franz Xaver von Zack (1754-1832)*. Harri Deutsch, Frankfurt am Main (Acta Historica Astronomiae, Volume 12).

Brosche, P., 2002. Die Wiederauffindung de Ceres. *Acta Historica Astronomiae* 14: 80-88.

Brück, M., 2002. *Agnes Mary Clerke and the Rise of Astrophysics*. CUP, Cambridge.

Brush, S.G., 1999. Why was relativity accepted? *Physics in Perspective* 1: 184-214.

Brouzeng, P., and Débarbat, S. (eds.), 2001. *Sur les Traces des Cassini. Astronomes et observatoires du Sud de la France*. Editions du CTHS.

Campion, N., 2000. Babylonian astrology: its origin and legacy in Europe. In Selin: 509-553.

Carlson, J.B., Dearborn, D.S.P., McCluskey, S.C., and Ruggles, C.L.N., 1999. Astronomy in culture. *Archaeoastronomy* 14: 3-21.

Catamo, M., Lancaino, N., Locher, K., Lombadero, M., and Valdes, M., 2000. Fifteen further Greco-Roman sundials from the Mediterranean area and Sudan. *Journal for the History of Astronomy* 31: 203-221.

Chabas, J., and Goldstein, R., 2000. *Astronomy in the Iberian Peninsula: Abraham Zacut and the Transition from Manuscript to Print*. Transactions of the American Philosophical Society, Volume 90, Part 2.

Chapman, A., 1999. The Royal Observatory, Greenwich: the finding of longitude at sea and the advancement of astronomy, 1675-1998. In Moore, P. (ed.). *Yearbook of Astronomy 2000*. Macmillan, London. Pp. 265-280.

Chauvin, M., 2000. Useful and conceptual astronomy in ancient Hawaii. In Selin: 91-125.

Chinnici I., 1999. *La Carte du Ciel: Correspondance Inédite Conservée dans les Archives de l'Observatoire de Paris*, Palermo, Observatoire de Paris & Osservatorio Astronomico di Palermo G. S. Vaiana.

Chinnici, I., 2000. XIX century spectroscopic instruments in Italian astronomical observatories. *Nuncius* 15(2): 671-680

Chinnici, I., and Gramatowski, W., 2001. Le carte di Angelo Secchi conservate presso l'archivio della P. Università Gregoriana. Un inventario inedito rivisitato. *Nuncius* 16(2): 571-627.

Christianson, G.E., 2001. Edwin Hubble: reluctant cosmologist. In Martínez and Trimble: 145-156.

Crowe, M.J., and Dowd, M.F., 1999. Archaeoastronomy and the history of science. *Archaeoastronomy* 14: 22-38.

Dearborn, D.S.P., 2000. The Inca: rulers of the Andes, children of the Sun. In Selin: 197-224.

Débarbat, S., 2000. Borda et l'astronomie. *Bulletin de la Société de Borda* 456: 31-48.

Débarbat, S., and Dumont, S., 1999. Les académiciens astronomes, voyageurs au XVIII^{e} siècle. *Compres-rendus de l'Académie des Sciences* 327 (Sér. II b): 415-429.

DeVorkin, D.H., 2000. *Henry Norris Russell, Dean of American Astronomers*. Princeton University Press, Princeton.

DeVorkin, D.H., 2000. Quantum physics and the stars (V): physicists at Mount Wilson prior to 1922. *Journal for the History of Astronomy* 31: 301-321.

DeYoung, G., 2000. Astronomy in ancient Egypt. In Selin: 475-508.

Dick, S.J., 2000. *Extraterrestrial Life and our World View at the Turn of the Millennium.* Smithsonian Institution, Washington (Dibner Library Lecture).

Dick, S.J. (ed.), 2000. *Many Worlds: The New Universe, Extraterrestrial Life and the Theological Implications*. Templeton Press, Philadelphia.

Dick, S.J., 2002. *Sky and Ocean Joined. The U.S. Naval Observatory, 1830-2000*. Cambridge University Press, Cambridge.

Dick, S.J., McCarthy, D., and Luzum, B. (eds.), 2000. *Polar Motion: Historical and Scientific Problems*. Astronomical Society of the Pacific, San Francisco (Conference Series, Volume 208).

Dick, W., and Fritze, K. (eds.), 2000. *300 Jahre Astronomie in Berlin und Potsdam*. Harri Deutsch, Frankfurt am Main (Acta Historica Astronomiae, Volume 8).

Dick, W., and Hamel, J. (eds.), 2000. *Beitraege zur Astronomiegeschichte, Bd 3*. Harri Deutsch, Frankfurt am Main (Acta Historica Astronomiae, Volume 10).

Dick, W., and Hamel, J. (eds.), 2001. *Beitraege zur Astronomiegeschichte, Bd 4*. Harri Deutsch, Frankfurt am Main (Acta Historica Astronomiae, Volume 13).

Dick, W., and Hamel, J. (eds.), 2002. *Beitraege zur Astronomiegeschichte, Bd 5*. Harri Deutsch, Frankfurt am Main (Acta Historica Astronomiae, Volume 15).

Dick, W., and Muenzel, G., 2000. Friedrich Zoellner's correspondence with Wilhelm Foerster. In Sterken and Staubermann: 121-135.

Dobrzycki, J., 1999. Saturn, Aristotelian astronomy, and Cracow astronomers: an episode from the early years of telescopic astronomy. *Journal for the History of Astronomy* 30: 121-129.

Eastwood, B.S., 2000. Astronomical images and planetary theory in Carolingian studies of Martianus Capella. *Journal for the History of Astronomy* 31: 1-28.

Eastwood, B.S., 2001. Johannes Scottus Eriugena, Sun-centred planets, and Carolingian astronomy. *Journal for the History of Astronomy* 32: 281-324.

Eastwood, B.S., 2002. *The Revival of Planetary Astronomy in Carolingian and Post-Carolingian Europe*. Variorum, Ahgate.

Edmondson, F.K., 2000. Daniel Kirkwood — "dean of American astronomers". *Mercur*y 29(3): 26-33.

Eisberg, J., 2001. Making a science of observational cosmology: the cautious optimism of Beatrice Tinsley. *Journal for the History of Astronomy* 32: 263-278.

Evans, J., 1999. The material culture of Greek astronomy. *Journal for the History of Astronomy* 30: 237-307.

Fermor, J., and Steele, J.M., 2000. The design of Babylonian waterclocks: astronomical and experimental evidence. *Centaurus* 42: 210-222.

Fernie, D.J., 2000. In search of better skies: Harvard in Peru. I. *American Scientist* 88: 396-399.

Fernie, D.J., 2002. *Setting Sail for the Universe. Astronomers and Their Discoveries*. Rutgers University Press.

Gingerich, O., 2002. *An Annotated Census of Copernicus'* Die revolutionibus *(Nuremberg, 1543 and Basel, 1566)*. Brill.

Goldstein, B.R., 2002. On the Babylonian discovery of the periods of lunar motion. *Journal for the History of Astronomy* 33: 1-13.

Goldstein, B.R., 2002. Copernicus and the origin of his heliocentric system. *Journal for the History of Astronomy* 33: 219-235.

Gurshtein, A.A., 1999. History of lunar exploration. In Eckart, P. (ed.). *The Lunar Base Handbook*. McGraw-Hill, New York. Pp. 1-3.

Gussmann, E.-A., Scholz, G., and Dick, W. (eds.), 2000. *Der Grosse Refraktor auf dem Potsdamer Telegrafenberg. Harri Deutsch*. Frankfurt am Main (Acta Historica Astronomiae, Volume 11).

Hamel, J., 2000. Bibliography of publications by Zoellner. In Sterken and Staubermann: 161-180.

Hamel, J., 2000. Die Sonnenuhren des Museums für Astronomie und Technikgeschichte Kassel-Bestandskatalog. *Beitraege zurAstronomiegeschichte* 3: 160-220.

Haynes, R.D., 2000. Astronomy and the dreaming: the astronomy of the Aboriginal Australians. In Selin: 53-90.

Hearnshaw, J.B., 2000. Astrophysics in the 1890s — the dawn of a new age in astronomy. In Szabados, L., and Kurtz, D.W., (eds.). *The Impact of Large-scale Surveys on Pulsating Star Researc*h. Astronomical Society of the Pacific, San Francisco (Conference Series Volume 203). Pp. 1-6.

Hentschel, K., 1999. Photographic mapping of the solar spectrum, 1864-1900. *Journal for the History of Astronomy* 30: 93-119, 201-224.
Hentschel, K., and Wittmann, A. (eds.), 2000. *The Role of Visual Representation in Astronomy: History and Research Practice*. Harri Deutsch, Frankfurt am Main.
Hetherington, N.S., 1999. Plato's place in the history of Greek astronomy: restoring *both* history *and* science to the history of science. *Journal of Astronomical History and Heritage* 2: 87-110.
Hidayat, B., 2000. Indo-Malay astronomy. In Selin: 371-384.
Hidayat, B., 2000. Under a tropical sky: a history of astronomy in Indonesia. *Journal of Astronomical History and Heritage* 3: 45-58.
Hirshfield, A.W., 2001. *Parallax: The Race to Measure the Cosmos*. Freeman, New York.
Hoffleit, D., 2000. Astronomy in Australia — a brief historical survey. *Journal of the American Association of Variable Star Observers* 28: 47-66.
Holmberg, G., 1999. *Reaching for the Stars: Studies in the History of Swedish Stellar and Nebular Astronomy, 1860-1940*. Lund University, Lund.
Hoskin, M., 2001. Gravity and light in the Newtonian universe of stars. In Martínez and Trimble: 11-19.
Hoskin, M., 2001. *Tombs, Temples and their Orientations. A New Perspective on Mediterranean Prehistory*. Ocarina Books, Bognor Regis.
Hoskin, M., 2002. The leviathan of Parsonstown: ambitions and achievements. *Journal for the History of Astronomy* 33: 57-70.
Hughes, D.W., 2001. Six stages in the history of the astronomical unit. *Journal of Astronomical History and Heritage* 4: 15-28.
Jardine, N., 2000. Koyré's Kepler/Kepler's Koyré. *History of Science* 38: 363-376.
Jardine, N., and Segonds, A., 1999. Kepler as reader and translator of Aristotle. In Blackwell, C., and Kusukawa, S. (eds.). *Philosophy in the Sixteenth and Seventeenth Centuries: Conversations with Aristotle*. Aldershot, Ashgate. Pp. 206-233.
Jarrell, R.A., 1999. J.S. Plaskett and the modern large reflecting telescope. *Journal for the History of Astronomy* 30: 359-390.
Jones, A., 1999. *Astronomical Papyri from Oxyrhynchus (P. Oxy. 4113-4300a)*. American Philosophical Society Memoirs, Volume 233.
Jones, A., 2000. Studies in the astronomy of the Roman period. IV: Solar tables based on a non-Hipparchan model. *Centaurus* 42: 77-88.
Kak, S., 2000. Birth and development of Indian astronomy. In Selin: 303-340.
Keil, I., 2000. *Augustus Opticus: Johann Wiesel (1583-1662) und 200 Jahre Optisches Handwerk in Augsburg*. Akademie Verlag, Berlin.
Kennedy, E.S., Kunitzsch, P., and Lorch, R.P., 1999. *The Melon-shaped Astrolabe in Arabic Astronomy*. Steiner, Stuttgart.
King, D.A., 2000. Mathematical astronomy in Islamic civilization. In Selin: 585-613.
King, D.A., 2002. A *Vetustissimus* Arabic treatise on the *Quadrans Vetus*. *Journal for the History of Astronomy* 33: 237-255.

Kochhar, R.K., Pre-telescopic astronomy in India. In Rahman, A. (ed.). *History of Indian Science, Technology and Culture, A.D. 1000-1800*. Oxford University Press, New Delhi. Pp. 171-197.
Krupp, E.C., 2000. Negotiating the highwire of heaven: the Milky Way and the itinerary of the soul. In Fideler, D. (ed.). *Alexandria. 5*. Phanes Press, Grand Rapids. Pp. 74-102.
Krupp, E.C., 2000. Sky tales and why we tell them. In Selin: 1-30.
Kunitzsch, P., 2000. European celestial globes of the 17th and 18th centuries with Arabic inscriptions. *Hadīt ad-Dār* 7: 22f.
Langermann, Y.T., 2000. Hebrew astronomy: deep soundings from a rich tradition. In Selin: 555-584.
Lerner, M.P., 2000. Copernicus in Paris in 1612: a teaching text of *De Revolutionibus*. *Journal for the History of Astronomy* 31: 55-67.
Liller, W., 2000. Ancient astronomical monuments in Polynesia. In Selin: 127-160.
Liu, C.-Y., 2001. Analysis of the astronomical records on King Wu's conquest. *Science in China A* 44: 1216-1224.
Liu, C.-Y., 2002. Astronomy in the Xia-Shang-Zhou Chronology Project. *Journal of Astronomical History and Heritage* 5: 1-8.
McCarthy, D.P., and Breen, A., 2000. À propos du synode de Whitby. Étude des observations astronomiques dans les Annales irlandaises. *Annales de Bretagne et des Pays de l'Ouest* 107(3): 25-56.
McConnell, A., and Brech, A., 1999. Nathaniel and Edward Pigott, itinerant astronomers. *Royal Society of London Notes and Records* 53: 305-318.
Maddison, R., 2000. The history of the Oxford/Keele 12" Grubb refractor from 1874. *Journal of the Antique Telescope Society* 19: 16-21.
Marriott, R.A., 1999. 1927: a British eclipse. *Journal of the British Astronomical Association* 109: 117-143.
Martínez, V.J., and Trimble, V. (eds.), 2001. *Historical Development of Modern Cosmo*logy. Astronomical Society of the Pacific, San Francisco (Conference Series, Volume 252).
Maunder, M.J. de F., and Moore, P., 2000. *Transit: When Planets Cross the Sun*. Springer, London.
Monaco, G., 2000. *L'astronomia a Roma*. Osservatorio Astronomico di Roma, Roma.
Nakamura, T., 2002. Acceptance and adaptation of actants and sextants in Japan during the eighteens and nineteenth centuries. *Journal of Astronomical History and Heritage* 5: 9-20.
Nha, I.-S., 2000. *History of Korean Astronomy*. Seoul, Seoul National University Press [in Korean].
Nha, I.-S., and Lee, J.-B., 2002. *Story of Solar and Lunar Eclipses*. Seoul, King Sejong Memorial Society [in Korean].
Olson, R.J.M., and Pasachoff, J.M., 1999. *Fire in the Sky: Comets and Meteors. The Decisive Centuries in British Art and Science*. CUP, Cambridge.
Orchiston, W., 2000. A Polynesian astronomical perspective: the Maori of New Zealand. In Selin: 161-196.

Orchiston, W., 2001. From amateur astronomer to observatory director: the curious case of R.T.A. Innes. *Publications of the Astronomical Society of Australia* 18: 317-327.

Orchiston, W., 2001. 'Sentinel of the Southern Heavens': the Windsor Observatory of John Tebbutt. *Journal of the Antique Telescope Society* 21: 11-23.

Orchiston, W., and Slee, B., 2002. Ingenuity and initiative in Australian radio astronomy: the Dover Heights 'hole-in-the-ground' antenna. *Journal of Astronomical History and Heritage* 5: 21-34.

Orchiston, W., Love, T., and Dick, S., 2000. Refining the Astronomical Unit: Queenstown and the 1874 transit of Venus. *Journal of Astronomical History and Heritage* 3: 23-44.

Osterbrock, D.E., 2000. A fortunate life in astronomy. *Annual Reviews of Astronomy and Astrophysics* 38: 1-33.

Osterbrock, D.E., 2001. Herman Zanstra, Donald H. Menzel, and the Zanstra method of nebular astrophysics. *Journal for the History of Astronomy* 32: 93-108.

Osterbrock, D.E., 2001. *Walter Baade: A Life in Astrophysics*. Princeton University Press, Princeton.

Osterbrock, D.E., 2002. Young Don Menzel's amazing adventures at Lick Observatory. *Journal for the History of Astronomy* 33: 95-118.

Park, S.-R., 2000. History of astronomy in Korea. In Selin: 409-421.

Pepin, M.B., 2002. *The Emergence of the Telescope. Janssen, Lipperhey, and the Unknown Man*. T Tauri Productions, Duncanville.

Pigatto, L., 2000. Giuseppe Toaldo: profilo biobibliografico. In Pigatto, L. (ed.). *Giuseppe Toaldo e il suo Tempe, Nel Bicentenario della Morte, Scienza e Lumi tra Veneto ed Europa …* (Contributi per la Soria dell'Università di Padova, 33). Pp. 5-100.

Pigatto, L., and Zanini, V., 2001. Spectroscopic observations of the 1874 transit of Venus: the Italian party at Muddapur, eastern India. *Journal of Astronomical History and Heritage* 4: 43-58.

Renshaw, S., and Ihara, S., 1999. Archaeoastronomy and astronomy in culture in Japan: paving the way to interdisciplinary study. *Archaeoastronomy* 14: 59-88.

Renshaw, S.L., and Ihara, S., 2000. A culture history of astronomy in Japan. In Selin: 385-407.

Rothenberg, M., 1999. Amateurs and the Society during the formative years. In DeVorkin, D.H. (ed.). *The American Astronomical Society's First Century*. AAS. Pp. 40-52.

Rudd, M.E., Jaecks, D.H., Willach, R., Sorrenson, R., and Abrahams, P., 2000. New light on an old question: why invented the achromatic telescope? *Journal of the Antique Telescope Society* 19: 3-12.

Ruggles, C.L.N., 1999. *Astronomy in Prehistoric Britain and Ireland*. Yale University Press, New Haven.

Ruggles, C.L.N., 2000. Astronomy, oral literature, and landscape in ancient Hawai'i. *Archaeoastronomy: The Journal of Astronomy in Culture* 14(2): 33-86.

Saliba, G., 1999. Critiques of Ptolemaic astronomy in Islamic Spain. *Al-Qantara* 20: 3-25.
Sarma, S.R., 1999. Yantrarāja: the astrolabe in Sanskrit. *Indian Journal of History of Science* 34: 145-158.
Satterthwaite, G., 2001. Airy and positional astronomy. *Journal of Astronomical History and Heritage* 4: 101-113.
Satterthwaite, G., 2001. Airy's transit circle. *Journal of Astronomical History and Heritage* 4: 115-141.
Schaefer, B.E., 2001. The latitude of the observer of the *Almagest* star catalogue. *Journal for the History of Astronomy* 32: 1-42.
Schaefer, B.E., 2001. The transit of Venus and the notorious black drop effect. *Journal for the History of Astronomy* 32: 325-336.
Schechner, S., 2001. The material culture of astronomy in daily life: sundials, science, and social change. *Journal for the History of Astronomy* 32: 189-222.
Selin, H. (ed.), 2000. *Astronomy Across Cultures: The History of Non-Western Astronomy*. Kluwer, Dordrecht.
Sheehan, W., and Osterbrock, D.E., 2000. Hale's "little elf": the mental breakdowns of George Ellery Hale. *Journal for the History of Astronomy* 31: 93-114.
Shi, Y., 2000. Eclipse observations made by Jesuit astronomers in China: a reconsideration. *Journal for the History of Astronomy* 31: 135-147.
Simon, G., and Débarbat, S. (eds.), 2001. *Optics and Astronomy*. Brepols (Proceedings of the XXth International Congress of History of Science, Volume XII).
Simonia, I., 2001. Little known aspects of the history of Georgian astronomy. *Journal of Astronomical History and Heritage* 4: 59-73.
Smith, R.W., 1999. *A Union Made in Heaven: A History of Amateur Astronomers Inc., 1949-1999*. Printed for the author, Elizabeth (N.J.).
Snedegar, K., 2000. Astronomical practices in Africa south of the Sahara. In Selin: 455-473.
Snedegar, K., 2001. The Gill-Roberts correspondence. *Monthly Notices of the Astronomical Society of Southern Africa* 54(6): 17-24.
Staubermann, K., 2000. The trouble with the instrument: Zöllner's photometer. *Journal for the History of Astronomy* 31: 323-338.
Stautz, B., 1999. *Die Astrolabiensammlungen des Deutschen Museums und der Bayerischen Nationalmuseums*. Oldenbourg, München.
Steele, J.M., 2000. A re-analysis of the eclipse observations in Ptolemy's Almagest. *Centaurus* 42: 89-108.
Steele, J.M., 2000. Eclipse prediction in Mesopotamia. *Archive for History of Exact Sciences* 54: 421-454.
Steele, J.M., 2000. *Observations and Predictions of Eclipse Times by Early Astronomers*. Kluwer, Dordrecht.
Stephenson, B., Bolt, M., and Friedman, A.F., 2000. *The Universe Unveiled: Instruments and Images Through History*. CUP, Cambridge.

Stephenson, F.R., and Green, D.A., 2002. *Historical Supernovae and their Remnants*. OUP, Oxford.
Stephenson, F.R., and Morrison, L.V., 2001. Historical Eclipses and the Variability of the Earth's rotation. *Journal of Geodynamics* 32: 247-265.
Stephenson, F.R., and Willis, D.M., 2000. Simultaneous auroral observations described in the historical records of China, Japan and Korea from ancient times to AD 1700. *Annales Geophysicae* 18: 1-10.
Stephenson, F.R., and Willis, D.M., 2001. Solar and auroral evidence for an intense recurrent geomagnetic storm during December in AD 1128. *Annales Geophysicae* 19: 1-14.
Sterken, C., and Staubermann, K. (eds.), 2000. *Karl Friedrich Zöllner and the Historical Dimension of Astronomical Photometry*. *A Collection of Papers on the History of Photometry. A Collection of Papers on the History of Photometry*. VUB Press, Brussels.
Sun, X., 2000. Crossing the boundaries between heaven and man: astronomy in ancient China. In Selin: 423-454.
Swerdlow, N.M. (ed.), 1999. *Ancient Astronomy and Celestial Divination*. MIT Press, Cambridge (Mass).
Tagliaferri, G., and Tucci, P., 1999. Carlini and Plana on the theory of the moon and their dispute with Laplace. *Annals of Science* 56: 221-269.
Taton, R., 2000. *Études d'histoire des Sciences*. Brepols, Turnhout.
Theodossiou, E., Danezis, E., Manimanis, V.N., and Kalyva, E.-M., 2002. From Pythagoreans to Kepler: the dispute between the geocentric and the heliocentric systems. *Journal of Astronomical History and Heritage* 5: 89-98.
Trimble, V., 2000. A hecatomb to Urania. *Bulletin of the Astronomical Society of I*ndia 28: 1-13.
Vargha, M., 1999. *The Konkoly Observatory Chronicle. In Commemoration of its Centenary*. Konkoly Observatory, Budapest.
Varisco, D.M., 2000. Islamic folk astronomy. In Selin: 615-650.
Voelkel, J.R., 1999. *Johannes Kepler and the New Astronomy*. OUP, New York.
Voelkel, J.R., and Gingerich, O., 2001. Giovanni Antonio Magini's "Keplerian" tables of 1614 and their implications for the reception of Keplerian astronomy in the seventeenth century. *Journal for the History of Astronomy* 32: 237-262.
Watson, F., 2002. Newton's telescope and the half-filled bathtub. *Anglo-Australian Observatory Newsletter* 100: 14-15.
Whitesell, P.M., 2000. Nineteenth-century longitude determinations in the Great Lakes region: government-university collaborations. *Journal of Astronomical History and Heritage* 3: 131-157.
Wilkins, G.A., 2000a. *Catalogue of the correspondence of Sir Norman Lockyer*. University of Exeter.
Wilkins, G.A., 2000b. Project MERIT and the formation of the International Earth Rotation Service. In Dick *et al*.: 187-200.
Willach, R., 2001. James Short and the development of the reflecting telescope. *Journal of the Antique Telescope Society* 20: 3-18.

Xu, Z., Pankenier, D.W., and Jiang, Y., 2000. *East Asian Archaeoastronomy: Historical Records of Astronomical Observations of China, Japan, and Korea*. Gordon and Breach, Amsterdam.

F. Richard Stephenson (C41/ICHA President)
Wayne Orchiston (C41/ICHA Secretary)

G. The IAU, astronomical archives, Commissions 41 and the ICHA*

The year 1998 marked the 50th anniversary of the creation of International Astronomical Union Commission 41. It was formed in Zurich during the VIIth General Assembly (GA), the first one after the 1935 GA in Paris. The Commission was named *History of Astronomy* and it had less than 20 members. At the VIIIth GA in Rome in 1952 about a dozen new members joined the Commission, and three years later at the Dublin GA, reports and a bibliography were given for the 30 members.

The first apparent interest in astronomical archives was included in the Report of Commission 41 and in the sessions, under the proposal of Kulikovsky, at the Moscow GA in 1958, when "… the desirability of publishing short accounts of the archives of astronomical observatories and institutions, with special reference to letters from astronomers of their countries who have worked there …" was discussed, but there was no follow-up at the GA's held in Berkeley in 1961 or Hamburg in 1964.

After the destruction of some papers and documents of a notable astronomer of high standing, Commission 41 submitted a resolution about instruments and documents of historical interest and this was passed by the GA in Prague in 1967. The resolution included the following statement:

> "It laments the fact that the personal papers of some astronomers have been destroyed by those unacquainted with their value, and therefore urges individuals and observatories to protect and preserve such manuscripts and letters."

Forbes and others in Commission 41 supported the microfilming of documents on the history of astronomy.

From this time the number of members of Commission 41 began to increase, showing a growing interest in this field of astronomy. There were 54 members in 1970 (at the Brighton GA), 59 in 1973 (Sydney), 66 in 1976 (Grenoble), 73 in 1979 (Montreal), 79 in 1982 (Patras), and 102 in 1985 (Delhi). Meanwhile, "C41 consultants" were introduced in 1967 for those who were not IAU members but were actively involved in history of astronomy activities, and by 1976 their number had risen to 41. During these growth years of the 1970s and 80s, the "preservation of

* This is the first of what we hope will be a series of on-going reports by the various C41/ICHA Working Groups. Eds.

twentieth-century astronomy", "preserving written records" and "microfilming of documents in several countries" were mentioned at various times, and in 1982, "the use of historical records in astronomical research". Another important development was the founding of the *Journal for the History of Astronomy* in 1970, and almost from the start descriptions of important astronomical archives featured in its pages.

During meetings of Commission 41 at the Baltimore GA in 1988, Débarbat "… raised the question of library and archives conservation, and noted that despite our lamentations in 1967, and similar regrets expressed in 1977 by Commission 5 (Documentation and Astronomical Data) personal papers of great importance to the history of astronomy continue to be dispersed or destroyed." At that time it was resolved that she be invited to act on behalf of the Commission "… in setting up a working party to explore the problem jointly with Commission 5."

Three years later at the 1991 GA in Buenos Aires, a resolution proposed by Commissions 5 and 41 was passed after discussions between Débarbat and Hauck (President of Commission 5). The first objective was to stop the wholesale destruction of material of historical value, and the second objective was to make the whereabouts of such material better known to scholars. Many instances were reported at this meeting of situations where directors of institutes, librarians, and others invested great care in the preservation of materials over long time intervals, only to be followed by others who were entirely without any feeling for the past and were prepared to sell or destroy our astronomical heritage. Resolution C4 on "Astronomical Archives", which was endorsed by the GA, recommended that the Union supported the initiatives taken by Commissions 5 and 41

> "1 - to establish a register of the whereabouts of all extant astronomical archives of historical interest;
> 2 - to impress on observatories and other institutions their responsibility for the preservation, conservation, and where possible, cataloguing of such archives;
> 3 - to search for an institution that will allocate space and funds for maintaining such a register and publishing it."

The following Working Group (WG) was established to action this resolution: S. Débarbat (as the up-coming President of Commission 41), S.J. Dick (Commission 41), E. Proverbio (Commission 41), B. Hauck (President of Commission 5), D. Dewhirst (Commission 5).

At the 1994 GA in The Hague, Débarbat reported that during the triennium the members of the WG were not able to meet, but information was circulated and the President of Commission 41 had discussions with a number of people responsible for astronomical archives. Meanwhile Professor Blaauw (a former President of the IAU) published a book titled *History of the IAU: The Birth and First Half-Century of the IAU*, and because some of the funds allocated for its preparation were unspent, Commission 41 successfully submitted the following resolution (B2) on "Funding the archival organization of the IAU":

> "**Suggests** to the Executive Committee that these remaining funds be used for the archival organization and cataloguing of the early IAU files in preparation for depositing them in a suitable archive."

The following related resolution (C4) on a "Search for an Inventory of Existing Archives", also proposed by Commission 41, was endorsed:

> "**Noting** that Professor Blaauw's recent "History of the IAU" shows the great value of astronomical archives, **Encourages** a search for an inventory for all archives related to the history of the IAU, to be undertaken by members at their home institutions and other places and reported to Commission 41."

It should be noted that during the 1994 GA, Commission 41 also organized the celebration of "Seventy-Five Years of the IAU" in the form of a Joint Discussion, and among those who attended were at least six past General Secretaries or Presidents of the IAU, all of whom were interested in the archives of the Union.

By the Kyoto GA in 1997, the number of members of Commission 41 had risen to 155, while at the 2000 GA in Manchester the President reported there were about 200 members and consultants, showing the increasing interest of astronomers in the history of their discipline.

At this last GA, Commission 41 joined an initiative of the Commission on Bibliography and Documentation of the Division of History of Science of the International Union for History and Philosophy of Science (DHS/IUHPS) in running a Special Session on "Inventory and Preservation of Astronomical Archives, Records and Artifacts". At this meeting it was announced that the archives of the IAU, which had been catalogued by Professor Blaauw as a result of the resolution taken in 1994, were now housed at the Archives de l'Académie des Sciences in Paris and were available to *bona fide* researchers upon the approval of the General Secretary of the IAU.

Drawing on the momentum generated by this Special Session, Commission 41 reactivated the Archives Working Group, with a new Committee comprising Suzanne Débarbat (Chair: France), Dan Green (USA) and Peter Hingley (UK). In 2002, two further Committee members, Wolfgang Dick (Germany) and Wayne Orchiston (Australia), were added. At the Manchester GA, Commission 41 also formed three other Working Groups (on Astronomical Chronology, Historical Instruments, and Transits of Venus), and another feature of this GA was a very successful Joint Discussion on "Applied Historical Astronomy", attended by more than 100 people.

During the last three years members of the Archives WG have continued to build up national inventories of astronomical archives in different countries, and to document, research and disseminate information on individual archives, and on individual archival records. Meanwhile, in 2001 the IAU and the DHS/IUHPS formed the Inter-Union Commission for History of Astronomy (ICHA), and it was decided that the four existing WGs would be shared by C41 and this new Commission.

The first archives initiative under this new structure occurred in 2002 July when the Archives WG joined with the Historical Instruments WG in organising a highly-successful four-day conference on "Astronomical Instruments and Archives from the Asia-Pacific Region" which was held in Cheongju, Korea.

The next opportunity for members of the C41/ICHA Archives WG to report on their work – either through verbal papers or poster papers – will be at the 2003 July GA in Sydney, when a half-day WG Meeting has been scheduled.

At the Korean Conference a number of our members highlighted the fact that archives underpin most historical research projects. This being the case, we hope that in the long run the activities of the Archives WG will prove to be of great benefit to the rank and file membership of C41 and the ICHA.

Suzanne Débarbat
Observatoire de Paris
61 Avenue de l'Observatoire,75014 Paris, France
Suzanne.Debarbat@obspm.fr

H. The C41/ICHA Transits of Venus Working Group. I: An Introduction

1. Introduction

Currently IAU Commission 41 (History of Astronomy) and the Inter-Union Commission for History of Astronomy have four active Working Groups (WGs):

- Archives (chaired by Dr Suzanne Débarbat, France)
- Astronomical Chronology (chaired by Professor Alex Gurshtein, Russia)
- Historical Instruments (chaired by Professor Il-Seong Nha, Korea)
- Transits of Venus (chaired by Dr Wayne Orchiston, Australia)

2. Formation of the Transits of Venus WG

Ever since Crabtree and Horrocks observed the 1639 transit of Venus, these rare events have captivated astronomers, none more so than in 1761, 1769, 1874 and 1882 when they were vital tools in determining that basic celestial yardstick, the 'astronomical unit'.

There is already a formidable transits of Venus bibliography which documents considerable scholarship, but at the 2000 General Assembly of the IAU in Manchester the following Resolution was adopted at the Business Meeting of Commission 41:

> "**Recognizing** the historical importance of previous transits of Venus and the numerous transit of Venus expeditions mounted by various countries, and
>
> **Noting** the rarity of the upcoming transits in 2004 and 2012

> Commission 41 **Recommends** that the sites of previous transit of Venus expeditions be inventoried, marked and preserved, as well as instrumentation and documents associated with these expeditions."

In order to take this Resolution forward, a Transits of Venus WG was formed. In addition to inventorying, marking and preserving the sites of previous transit of Venus expeditions and researching the instruments used at these sites and the observations made, the WG also aims to prepare a bibliography of existing publications relating to all transits of Venus, and encourage colleagues to carry out further research and to publish their results.

The following WG Committee was set up: Dr Wayne Orchiston (Australia – Chair), Dr Steven Dick (USA), Professor Alexander Gurshtein (Russia) and Professor Rajesh Kochhar (India). In 2002 July, Dr Luisa Pigatto (Italy) was added to the Committee.

3. Progress since Manchester

Since its formation, ICHA members in Australia, Brazil, Canada, Germany, Italy, Japan, the Netherlands, South Africa, UK, and the USA have actively researched various transits and other means of establishing the solar parallax, resulting in a number of publications (e.g. see Hughes, 2001; Orchiston, Love and Dick, 2000; Pigatto and Zanini, 2001; Schaefer, 2001), and the WG Committee has begun preparing a list of post-1989 research papers on transits of Venus (see Section 5, below). In light of the up-coming 2004 and 2012 transits, a number of popular books have been published. One of these is co-authored by ICHA member, Sir Patrick Moore (see Maunder and Moore, 2000), while books by two other members, Michael Chauvin and William Sheehan (with co-author John Westfall), are due for release in 2003. In addition, Steven Dick's monumental history of the US Naval Observatory contains a sizable chapter about the 1874 and 1882 transit programs.

Meanwhile, much work is in progress. By way of example, Luisa Pigatto and her Italian colleagues are studying the various Italian expeditions, and preparing a list of transit of Venus publications. Hilmar Duerbeck recently presented a conference paper on "The German Venus expedition to Persia in 1874"and is developing this work and his research on the 1882 transit further; Herta Wolf is also researching German and other expeditions, with emphasis on photography. In the Netherlands, Rob van Gent, Al van Helden, Huib Zuidervaart and other astronomers are busy writing papers and gathering texts and materials about Dutch transit of Venus observations, while Steve van Roode has established a fine web site (http://home.hetnet.nl/~smvanroode/venustransit/).

Jessica Ratcliff is studying the nineteenth century British transit of Venus programs for a D. Phil. at Oxford University, while Peter Hingley (n.d.) has prepared a paper on the 1874 expedition to Kerguelen Island and Michael Chauvin's (2003) book focuses on the British expedition to Hawaii in 1874. Willie Koorts is investigating observations of the transit made in South Africa and monuments associated with the transit stations (see his excellent web site:

http://canopus.saao.ac.za/~wpk/tov1882/tovwell.html), and Wayne Orchiston is carrying out similar studies for Australia and New Zealand.

Peter Broughton and colleagues from the Historical Committee of the Royal Astronomical Society of Canada are planning to install a monument near St Johns, Newfoundland, where John Winthrop observed the 1761 transit, and Sara Schechner from the Collection of Historical Scientific Instruments at Harvard University is investigating the possibility of having someone construct a replica of the Short reflecting telescope used by Winthrop (that could be used by the Canadian group for an historic re-enactment, and then loaned to institutions for display purposes).

Further south, James Bryan is studying transit observations made from Texas, William Sheehan has researched Todd's expedition to Mt Hamilton in 1882 and Robert Ariail is gathering information on 12.7 cm (5-in.) Clark refractors used by US expeditions in 1874, while R.R. de Freitas Mourão is researching Brazilian observations of the nineteenth century transits for a book.

On the display front, Harvard University is planning to show off the instruments used by Winthrop in their new museum gallery, Klaus Staubermann is organising an exhibition about Dutch transit of Venus observations for the Utrecht University museum and Nick Lomb is planning a display on Australia transit expeditions for Sydney Observatory. In addition, William Sheehan and Tony Misch are preparing a movie of the 1882 transit based on old plates they have located, and the much anticipated world premier is scheduled for the Sydney General Assembly!

Finally, Juergen Giessen has set up an excellent transit of Venus web site, with a long list of links (see: http://www.venus-transit.de), and Stephen Johnston, Sara Schechner and Steven Turner are in the process of creating a web site on behalf of the Scientific Instrument Commission of the International Union of the History and Philosophy of Science. The C41/ICHA WG looks forward to working closely with this group, and providing information and photographs for the web site and the associated database.

4. Concluding Remarks

Although a number of major unforeseen 'distractions' preoccupied those on the Committee of this WG following the Manchester General Assembly, some valuable progress has been made. However, we anticipate an exponential increase in activity as the date of the 2004 transit nears.

In the shorter term, WG members and other interested astronomers will be able to report on their transits of Venus research via oral and poster papers at a half-day WG meeting that is scheduled for the 2003 July General Assembly of the IAU in Sydney. In addition, Gordon Bromage is planning an international conference at Preston, U.K., in 2004 June, which will include a sizable transits of Venus component.

5. References

Listed below are some papers and books that deal wholly or in part with transits of Venus, published since 1990. A further list will be provided in the next general report of the WG.

Chapman, A., 1990. Jeremiah Horrocks, the transit of Venus, and the 'New Astronomy' in early seventeenth century England. *Quarterly Journal of the Royal Astronomical Society*, 31: 333-357.

Chauvin, M., 1993. Astronomy in the Sandwich Islands: the 1874 transit of Venus. *The Hawaiian Journal of History*, 27: 185-225.

Chauvin, M., 2003. *Hokulo's: The British 1874 Transit of Venus Expedition to Hawaii*. Bishop Museum Press, Honolulu.

Dick, S.J., 1995. The American transit of Venus expedition of 1882, including San Antonio. *Bulletin of the American Astronomical Society*, 27: 1331.

Dick, S.J., 2002. *Sky and Ocean Joined. The U.S. Naval Observatory, 1830-2000*. Cambridge University Press, Cambridge.

Dick, S.J., Orchiston, W., and Love, T., 1998. Simon Newcomb, William Harkness and the nineteenth century American transit of Venus expeditions. *Journal for the History of Astronomy*, 29: 221-255.

Fernie, J.D., 1998. Transits, travels and tribulations. 4. *American Scientist*, 86: 422-425 [about the 1769 expeditions of d'Auteroche and William Wales].

Hingley, P.D., n.d. The priest and the stuffed penguin: the 1874 transit of Venus expedition to Kerguelen Island. MS.

Howse, D., and Murray, A., 1997. Lieutenant Cook and the transit of Venus, 1769. *Astronomy & Geophysics*, 38(4): 27-30.

Hughes, D.W., 2001. Six stages in the history of the astronomical unit. *Journal of Astronomical History and Heritage*, 4: 15-28.

Kollerstrom, N., 1991. Crabtree's Venus-transit measurement. *Quarterly Journal of the Royal Astronomical Society*, 32: 51.

Macdonald, P., 1991. The transits of Venus in 2004 and 2012. *Journal of the British Astronomical Association*, 101: 176-178.

Maor, E., 2000. *June 8, 2004: Venus in Transit*. Princeton University Press.

Maunder, M., and Moore, P., 2000. *Transit: When Planets Cross the Sun*. Springer-Verlag, London.

Morikubo, S. (ed.), 1994. *Twentieth Anniversary of Building the Monument to the Transit of Venus of 1874*. Tokyo [in Japanese].

Muenzel, G., 2001. Ladislaus Weinel (1848-1913). *Acta Historica Astronomiae*, 13: 127-166. [In German]

Orchiston, W., 1998. From the South Seas to the Sun: the astronomy of Cook's voyages. In M. Lincoln (ed.). *Science and Exploration in the Pacific. European Voyages to the Southern Oceans in the Eighteenth Century*. Boydell Press, in association with the National Maritime Museum, Woodbridge, pp.55-72.

Orchiston, W., and Buchanan, A., 1993. Illuminating incidents in Antipodean astronomy: Campbell Town, and the 1874 transit of Venus. *Australian Journal of Astronomy*, 5: 11-31.

Orchiston, W., and Howse, D., 1998. From transit of Venus to teaching navigation: the work of William Wales. *Astronomy & Geophysics* 39(6): 21-24. Reprinted, with some elaborations, in *Journal of Navigation*, 53: 156-166 (2000).

Orchiston, W., Love, T., and Dick, S.J., 2000. Refining the astronomical unit: Queenstown and the 1874 transit of Venus. *Journal of Astronomical History and Heritage*, 3: 23-44.

Pigatto, L., and Zanini, V., 2001. Spectroscopic observations of the 1874 transit of Venus: the Italian party at Muddapur, eastern India. *Journal of Astronomical History and Heritage*, 4: 43-58.

Ponko, V., 1994. 19th century science in New Mexico: the 1882 transit of Venus observations at Cerro Roblero. *Journal of the West*, 33: 44-51.

Ponko, V., 1995. Cedar Key, Florida and the transit of Venus: the 1882 site observations. *Gulf Coast Historical Review*, 10: 47-65.

Schaefer, B.E., 2001. The transit of Venus and the notorious Black Drop Effect. *Journal for the History of Astronomy*, 32: 325-336.

Sellers, D., 2001. *The Transit of Venus. The Quest to Find the True Distance of the Sun*. Maga Velda Press, Leeds.

Smith, D.L., and Jetson, T., 1994. Samuel Tillman and the transit of Venus, Campbell Town, Tasmania, 1874. *Tasmanian History Research Association Papers and Proceedings*, 41: 141-153.

Stephenson, F.R., 1990. Historical evidence concerning the Sun: interpretation of sunspot records during the telescopic and pretelescopic eras. *Philosophical Transactions of the Royal Society*, A330: 499-512.

van Helden, A., 1995. Measuring solar parallax: the Venus transits of 1761 and 1769 and their nineteenth-century sequels. In R. Taton and C. Wilson (eds.), *The General History of Astronomy. Volume 2. Planetary Astronomy from the Renaissance to the Rise of Astrophysics. Part B: The Eighteenth and Nineteenth Centuries*. Cambridge University Press, Cambridge, pp.153-168.

Westfall, J.E., 1992. The 1769 transit of Venus expedition to San Jose del Cabo. In Edberg, S.J. (ed.). *Research Amateur Astronomy*. Astronomical Society of the Pacific , San Francisco (Conference Series, Volume 33), pp. 234-242.

Young, G., 1990. Two expeditions to Tahiti: 1769 and 1989. *Astronomy Now*, 4(2): 43-45.

Wayne Orchiston
Anglo-Australian Observatory,
PO Box 296, Epping, NSW 2121,
Australia
E-mail: wo@aaoepp.aao.gov.au

Steven J. Dick
US Naval Observatory,
3450 Massachusetts Avenue NW,
Washington DC 20392-5420, USA
E-mail: dick.steve@usno.navy.mil

Alexander Gurshtein
Mesa State College, Box 2674,
Grand Junction, CO 81 502, USA
E-mail: agurshtein@hotmail.com

Rajesh Kochhar
National Institute of Science,
Technology and Development Studies,

Dr. K.S. Krishnan Marg, Pusa,
New Delhi 110012, India
Luisa Pigatto
Astronomical Observatory of Padova,
Vicolo dell'Osservatorio,
5–35122 Padova, Italy
E-mail: pigatto@pd.astro.it

I. Specialist Research Groups

One of the consequences of the growth of C41 and the ICHA during 2002 is that we now have many active researchers in a number of discrete niche areas of history of astronomy. Some of these niche areas are already accommodated by existing Working Groups, but others are not.

In order to provide some structure, we have identified seven different areas where it makes sense to form specialist research groups whose members can liaise with one another, and plan and participate in collaborate research projects. These groups are identified below, and if you would like to be involved in any of them simply e-mail the appropriate contact person.

Research Group	Contact	E-mail
Applied Historical Astronomy	Richard Stephenson (UK)	f.r.stephenson@durham.ac.uk
Astronomical Archives	Suzanne Débarbat (France)	Suzanne.Debarbat@obspm.fr
Astronomical Chronology	Alexander Gurshtein (USA)	agurshtein@hotmail.com
Ethno/Archaeastronomy	Clive Ruggles (UK)	rug@leicester.ac.uk
Historical Instruments	Il-Seong Nha (Korea)	SLISNHA@chollian.net
Radio Astronomy	Wayne Orchiston (Australia)	wo@aaoepp.aao.gov.au
Transits of Venus	Wayne Orchiston (Australia)	wo@aaoepp.aao.gov.au

All of these research areas currently involve 20 or more ICHA members (and in the case of Radio Astronomy and Historical Instruments more than 50 members).

The formation of other specialist research groups (e.g. Astrophysics) is under consideration, and suitable suggestions by members are welcomed. To be viable, a group needs a minimal active membership of 20 researchers.

Wayne Orchiston
E-mail: wo@aaoepp.aao.gov.au

J. The ICHA Membership Drive

During 2002 October, we submitted a raft of new IAU application forms to the IAU General Secretary, along with the membership list of the Inter-Union

Commission for History of Astronomy (ICHA), thus bringing the initial phase of the membership to an end. This has been a massive effort, and it is a great relief to have it behind us.

There were several aspects to the membership drive. Our primary objective was to build up the membership of the ICHA so that it truly represents the best interests of historians of astronomy world-wide. Because the ICHA was established by the IAU and the International Union for History and Philosophy of Science in 2001, between IAU General Assemblies, it was necessary to provide the IAU with a foundation membership list that will be ratified at the Sydney General Assembly (GA) in 2003 July. So the drive was on. We started with the 200 members and consultants of Commission 41, and added to this by recruiting other IAU members with historic interests who were not already members of C41. This netted 118 new C41 members. We also looked beyond the IAU, and on a country-by-country basis identified those with research backgrounds in the history of astronomy and invited them to join the ICHA.

Part of this overall process involved identifying a number of niche specializations that were best served through C41 and the ICHA. Specifically, we targeted those with interests in applied historical astronomy, ethnoastronomy and/or archaeoastronomy, historical telescopes and instrumentation, and the history of radio astronomy. The ICHA membership list submitted to the IAU in October contains 676 names, a very pleasing outcome for all this effort. Meanwhile, we continue to add further names to the list, but these people will only be formally approved as ICHA members at the IAU GA in 2006.

Another element of the membership drive was to try and bring more historians of astronomy into the IAU and particularly those with history or history of science (rather than astronomy) backgrounds. One way an individual can apply for IAU membership is to submit an application through a Commission, and the C41 Organising Committee identified more than 100 ICHA members with appropriate research and publication backgrounds and encouraged them to consider applying. About 70 of these people took up this option, and each application will be considered by the relevant national committee for astronomy. Gaining IAU membership is no trivial matter, so unfortunately we cannot expect all of these applicants to be successful.

The final phase of the current membership drive involves proposing that most ICHA members who are not IAU members become consultants of Commission 41, and we will submit the relevant list of names in 2003 February. C41 'Consultants' are non-IAU members who support the programs and objectives of C41, and are actively involved in history of astronomy research. They are active members of C41, receive the IAU *Information Bulletins*, and can participate in GAs and other IAU meetings.

Through these initiatives, we anticipate that most ICHA members will be approved as C41 members or C41 consultants at the Sydney GA.

F. Richard Stephenson
Wayne Orchiston

K. C41/ICHA: Call for Nominations

At the July 2003 IAU General Assembly in Sydney we must elect a new C41/ICHA Organizing Committee (OC) for the 2003-2006 Triennium. We now invite nominations for the following positions:

President
Vice-President
Seven Ordinary Members

Note that only those who are current IAU members are eligible for nomination, and that nominations can only be submitted by IAU members and C41 consultants. It is perfectly acceptable for a candidate to nominate him/herself.

For your information, the current C41/ICHA OC comprises:

President:	F. Richard Stephenson (UK)
Vice-President:	Alexander Gurshtein (Russia/USA)
Immediate Past President:	Steven J. Dick (USA)
Secretary:	Wayne Orchiston (Australia)
Ordinary Members:	Wolfgang Dick (Germany)
	Rajesh Kochhar (India)
	Tsuko Nakamura (Japan)
	Il-Seong Nha (Korea)
	Woodruff T. Sullivan (USA)
	Brian Warner (South Africa)

All current incumbents, except for Richard Stephenson and Alexander Gurshtein, are eligible for re-election (but Wayne Orchiston does not intend to stand for the OC). Richard Stephenson will automatically become the new Immediate Past President, and if tradition prevails, Alex Gurshtein will move into the Presidency.

Nominations should be e-mailed to wo@aaoepp.aao.gov.au, or posted to

Dr Wayne Orchiston
Secretary C41/ICHA
Anglo-Australian Observatory
PO Box 296
Epping
NSW 2121
Australia

Make sure your nomination includes

- the name of the candidate

- the position you are nominating them for (President, Vice-President, Secretary or Ordinary Member)
- your name
- and if you are not nominating yourself a statement that the candidate has agreed to stand for the position in question.

The deadline for receipt of nominations is 2003 March 31.

The full slate of candidates will be announced in the 2003 June Newsletter, leaving time for those who cannot attend the Sydney General Assembly to cast proxy votes.

Wayne Orchiston (C41/ICHA Secretary)

L. The June 2003 Newsletter

Our plan is to mail out the June 2003 Newsletter at the end of May 2003.

This will leave plenty of time for those who will be at the July General Assembly to plan which sessions they will attend, and for those C41/ICHA members who cannot attend to submit proxy votes for the slate of OC nominations.

Ileana Chinnici

M. The Struve Geodetic Arc as a World Heritage Monument - Progress to date

For at least 2200 years the dimensions of the Earth have been determined by astronomers, mathematicians and surveyors following the method of Eratosthenes, and this remained in vogue until the era of satellite geodesy. The method was to measure the linear distance between two widely-separated points (maybe 2000 km apart) that were more or less on the same line of longitude using triangulation - a process that forms the basis of all mapping. A chain of triangles with sides perhaps 50 to 100 km long was formed between elevated positions so as to connect the two extreme points. A minimum of one line within this chain, together with all the angles, were measured as accurately as possible (i.e the distance from 3-10 p.p.m., and angles to fractions of a second). Spherical trigonometry then allowed the coordination of all the vertices, together with determination of their linear separation. Astronomical observations taken at each end determined the angular separation of the two points in terms of latitude. Combining the two results allowed computation of the size of the Earth if taken as spherical. For the ellipsoidal shape of the Earth at least two such arcs were required. Among those who made an important geodetic contribution during the nineteenth century was the Russian astronomer, F.G.W. Struve.

It was at a scientific conference in Tartu in 1993 that the idea was first floated for a selection of the surviving station points on the Struve Geodetic Arc to be preserved as a World Heritage Monument under UNESCO. In 1994 at the FIG (International

Federation of Surveyors) Congress in Melbourne a delegate from Finland put forward a Resolution along the same lines as did the IAU (International Astronomical Union) at its General Assembly in 1994. Support has also been received from the IAG (International Association for Geodesy). Little progress was made until the FIG Congress in Brighton, UK in 1998 when what had been an ad hoc Group for the History of Surveying was made into a Permanent Institution.

From then that body has been gradually persuading each of the 10 countries concerned to cooperate in furthering the original idea. This has been a slow process for a variety of reasons not least of which has been finance. However I am personally hopeful that by 1st February 2004 we will be in a position to put a detailed case to UNESCO for consideration. (Submissions are only acceptable for that date each year).

Each of the 10 countries has received a copy of an interim dossier that we have put to the EU and to UNESCO to further the aims for the arc. This contains all the details as held in April 2002 and will form the basis of the final submission. The photographs were reproduced in black/white although for the final submission they will be in colour. Long introductory notes are included to assist those who might well not be surveyors to understand what it is we are trying to preserve. With that are reproduced various maps and data from the original Struve volumes.

The further aims of the whole exercise have grown somewhat from the original idea and so should be spelt out here. It is suggested that the aims should now be:

1. Complete the choice, recovery, demarcation and documentation of a selection of points in each country.
2. Submit a detailed dossier (Interim Report) to UNESCO
3. If successful, then a GPS campaign be organised to incorporate all the selected points (40-45 in total) in a single scheme.
4. That the idea of preservation be extended south from Izmail, across the Mediterranean Sea and down the 30th Arc of the Meridian of East Africa to its southern end in S Africa.
5. That the archive of the Struve Arc material which is to be found in several locations, be indexed for the benefit of future scholars and researchers.
6. That the Struve volumes relating to the Arc be scanned and recorded on CD and made available to researchers and libraries.
7. All this cannot be achieved without a large injection of finance and hence our submission to the EU through the Interim Report.

Taking each of these in turn.

1. Recovery and preservation of points

This is obviously the first priority since everything else revolves on its success. As an incentive for all countries to complete as soon as possible a copy of an Interim Report was sent to each authority. This allows each to see what the others have done and the type of material required for the final submission.

The final submission will have the illustrations in colour to enhance its impact and in additional to the inclusion of the material not then to hand it will also incorporate a number of corrections and additions to the text and contain more information on the proposed follow-up activities.

Points selected for preservation have to be fully documented in terms of location maps, coordinates and access details as well as bearing an appropriate plaque and pertinent photographs.

Each authority also has to supply a letter from an appropriate Government Minister signifying the Government's intention to maintain each point and to allow public access them.

As far as the number of points for preservation in any one country it is difficult to generalise when the actual Struve Arc stations per country vary from 1 to 83. The two countries with by far the most possibilities are Finland and The Ukraine with 83 and 50 respectively. So we might expect each of these to have, say, five spread through the country. Six of the countries have between 15 and 30 possibilities so they might select 3 or 4 whilst Sweden with 7 might select 2 or 3 and Russia has only one choice which has been completed. This would give a total of between 31 and 38 but all countries are at liberty to select more (or less).

Which points to select should take into account such factors as ease of access, distribution across the country and significance of the point - e.g. baseline terminal or astronomical point. In Norway for example most points were recovered but some required a helicopter trip to be reached or were many hours trek from civilisation.

As of 1 July 2002 the situation was that some 27 points had been identified and a further 12 or so were awaited. Moldova has indicated that during August 2002 they were to start searching while we have no information regarding the Ukraine. All other countries have progressed some of the way and just a few have completed their requirement.

2. Submission to UNESCO

The submission to UNESCO is unlike any other (as I understand it) since they normally deal with structures such as factories, castles and the like that cover a single, recognisable, large area, perhaps of many hectares extent. In our case we are in effect seeking to preserve some 40 points each of a few square cm. in extent and separated by hundreds of kms. Whilst each point has a cairn, pillar or equivalent it is in effect the small spot (cross, hole, nail or whatever) that is our prime concern, all interconnected by intangible lines that are nowhere visible on the ground.

3. GPS scheme

If the submission is successful then it is proposed to organise a single GPS campaign covering all of the preserved points. This will obviously be extremely expensive and was the main reason for the submission of an Interim Report to the EU and UNESCO in the hope of getting a financial grant to cover this operation. A private expert in GPS has been identified who is willing to supervise such a project

but he will obviously require cooperation in each of the 10 countries not only with the logistics but also local assistance from each Survey Department. Such a project would require considerable organisation and take some six months to execute properly.

One long term use of such a coordination would be for those scientists who monitor the movement of continental plates.

4. Connection to the Arc of the 30th Meridian

Some 40 years after the completion of the Struve arc work on another began in South Africa. Like the Struve Arc it goes through many countries- S Africa, Bechuanaland (Botswana), S. Rhodesia (Zimbabwe), N. Rhodesia (Zambia), Tanganyika (Tanzania), The Congo (Burundi), Uganda, Sudan and Egypt. This extends some 65½º (7200 kms) with over 600 points and took over 60 years to complete.

This did leave the gap across the Mediterranean Sea and a join to the southern end of the Struve Arc. In 1953 the 1370th Photo-Mapping Group, of the US Air Force completed a Shoran connection from Northern Egypt to Crete and from there normal triangulation connected to Greece. Alternatively there is a connection from Egypt through the Eastern Mediterranean countries to Turkey and thence into Bulgaria, Rumania and the Ukraine. Thus one way or another there is apparent bridging of the gap of 14º between the 30th Arc and the Struve Arc.The total distance from Buffelsfontein in S. Africa to Fuglenaes in N Norway is around 104º 40' or about 11450 km (7150 miles).

The stations in the African countries on the whole tend to be as some form of concrete pillar or surface mark so should be more readily identifiable than those on the Struve Arc and also more readily refurbished and marked with a plaque. Thus it is hoped that once the Struve Arc is accepted the 30th Meridian section could follow within one or two years.

5. The Struve Archive

Indexing of Struve material in Moscow has been underway since June 2002 through the good work of Vitali Kaptjug and his colleagues. Finance for this has been partially provided by the Royal Institution of Chartered Surveyors in London and by the FIG History Group but further support is sought within the request to the EU. Initially it was hoped to copy all the archived material in some form and put it on CD but this proved too difficult to achieve. In particular the sudden ten fold increase in the required royalty per sheet made it prohibitive. As an alternative, detailed indexing should at least be of considerable assistance to future researchers.

6. The Struve Volumes

These are very scarce and at present the Institution for the History of Surveying does not possess a copy. As such volumes are of prime importance to any Struve

researchers it is hoped that someone with access to the volumes will offer to put them on to a CD for the benefit of future researchers.

7. Finance

Throughout the above points finance has a major part to play. Hence we come back to the Interim Report and its submission to the EU and UNESCO for possible funding. If all of that which is sought materialises then it would greatly assist all those aspects above that refer to the Struve Arc (as opposed to its extension southwards). Failing that, either cuts will need to be made in the plans or more assistance sought from the participating countries.

Postscript

During the conference in Estonia a special trip was made to Tartu observatory where a commemorative plaque was unveiled surrounding the initial point used by Struve for his survey.

(These notes are based on a presentation made at the "Struve Arc 150" conference in Tallinn and Tartu, September 2002)

Jim R. Smith
International Institution for the History of Surveying & Measurement
24 Woodbury Ave, Petersfield, Hants GU32 2EE, UK
Tel and fax. +44(0)1730 262619, e-mail: 101765.332@compuserve.com

---

N. Journals and Publications

Journal for the History of Astronomy

Vol. 33, 2002:

- **Bernard R. Goldstein:** On the Babylonian Discovery of the Periods of Lunar Motion, 1-13
- **Alexander Jones**: Eratosthenes, Hipparchus, and the Obliquity of the Ecliptic, 15-19
- **Christopher Cullen**: The First Complete Chinese Theory of the Moon: The Innovations of Liu Hong *c*. A.D. 200, 21-39
- **O. S. Tursunov and S. H. Azizov**: A Medieval Observational Instrument in Tashkent, 41-44
- **Dennis W. Duke**: Dating the *Almagest* Star Catalogue Using Proper Motions: A Reconsideration, 45-55
- **Michael Hoskin**: The Leviathan of Parsonstown: Ambitions and Achievements, 57-70
- **Donald E. Osterbrock**: Young Don Menzel's Amazing Adventures at Lick Observatory, 95-118

- **David DeVorkin**: Menzel at Princeton, 119-131
- **David Layzer**: Atoms, Stars, and Nebulae: Remembering Donald H. Menzel, 133-138
- **Jay M. Pasachoff**: Menzel and Eclipses, 139-156
- **Thomas J. Bogdan**: Donald Menzel and the Beginnings of the High Altitude Observatory, 157-192
- **Ruth Prelowski Liebowitz**: Donald Menzel and the Creation of the Sacramento Peak Observatory, 193-211
- **Bernard R. Goldstein**: Copernicus and the Origin of His Heliocentric System, 219-235
- **David A. King**: A *Vetustissimus* Arabic Treatise on the *Quadrans Vetus*, 237-255
- **Sarah Symons**: Two Fragments of Diagonal Star Clocks in the British Museum, 257-260
- **John M. Steele**: BM 36948: A Saturn Ephemeris Calculated Using System A from Babylon, 261-264
- **Hermann R. Dobler**: The Dating of Ptolemy's Star Catalogue, 265-277
- **Bradley E. Schaefer**: The Latitude and Epoch for the Formation of the Southern Greek Constellations, 313-350
- **Paul Charbonneau**: The Rise and Fall of the First Solar Cycle Model, 351-372
- **J. Turner**: The Observatory and the Quadrant in Eighteenth-century Europe, 373-385

Michael Hoskin
Churchill College, Cambridge, England, CB3 0DS
tel. 01223-840284, fax 01223-565532, E-mail: michael.hoskin@ntlworld.com

Culture and Cosmos

Vol. 5, Part 2, Autumn/Winter 2002:

- **Arkadiusz Soltysiak:** The bull of Heaven in Mesopotamian Sources, pp. 3-21.
- **George Demetra:** Manuel I Komnenos and Michael Glycas: A Twelfth-Century Defence and Refutation of Astrology; Part 2: Manuel I Komnenos' Defence of Astrology, pp. 23-51.
- **Garry Phillipson and Peter Case:** The Hidden Lineage of Modern Management Science: Astrology, Alchemy and the Myers-Briggs Type Indicators, pp. 53-72.

Volume 6, Number 1, Spring/Summer 2002:

- **Ari Belenkyi:** A Unique Feature of the Jewish Calendar - *Dehiyot*, pp. 3-22

- **George Demetra:** Manuel I Komnenos and Michael Glycas: A Twelfth-Century Defence and Refutation of Astrology; Part 3: Michael Glycas' Refutation of Astrology, pp. 23-43
- **Germana Ernst:** The Sky in a Room: Campanella's *Apologeticus* in defence of the pamphlet *De siderali fato vitando*, pp. 45-55
- **Tommaso Campanella (**transl. by **Noga Arikha):** Apologia for the opuscule on *De siderali fato vitando*, pp. 55-71.

Abstracts of papers up to Vol 5 no 2 are on the Web site:
http://www.CultureAndCosmos.com

Nicholas Campion (Editor)
51 Bellevue Crescent, Bristol BS8 4TF, UK
Tel (0)117 929 1303, E Mail: ncampion@caol.demon.co.uk

Books 2001/2002

- **Aaboe A.,** 2001. *Episodes from the Early History of Astronomy*, London, Springer.
- **Bruck M.**, 2002. *Agnes Mary Clerke and the Rise of Astrophysics*, Cambridge, Cambridge University Press.
- **Brunier S. and Luminet J.-P.,** 2000. *Glorious Eclipses: Their Past, Present and Future*, Cambridge, Cambridge University Press.
- **Dick S.**, 2002. *Sky and Ocean Joined. The U.S. Naval Observatory, 1830-2000,* Cambridge, Cambridge University Press.
- **Fernie D.,** 2002. *Setting Sail for the Universe: Astronomers and their Discoveries,* New Brunswick, Rutgers University Press.
- **Hirshfeld, A. W.**, 2002. *Parallax: The Race to Measure the Cosmos*, Owl Books.
- **Hoskin M.,** 2001. *Tombs, Temples and their Orientations. A NewPerspective on Mediterranean Prehistory*, Bognor Regis, Ocarina Books.
- **Martinez V. J., Trimble V., and Pons-Borderia M. J. (eds.),** 2001. *Historical Development of Modern Cosmology*, San Francisco, Astronomical Society of the Pacific (ASP Conference Series, Volume 252).
- **Osterbrock D. E.,** 2001. *Walter Baade. A Life in Astrophysics*, Princeton, Princeton University Press.
- **Steel D**., 2001. *Eclipse,* Joseph Henry Press.
- **Stephenson F. R. and Green D. A**., 2002. *Historical Supernovae and their Remnants*, Oxford, Oxford University Press.

Some research papers by C41/ICHA members - 2001/2002

- **Beech M.,** 2002. “The mechanics of cometaria”, *Journal of Astronomical History and Heritage* **5**, 155-163.
- **Bracewell R.,** 2002. “The discovery of strong extragalactic polarizaton using the Parkes Radio Telescope”, *Journal of Astronomical History and Heritage* **5**, 107-114.
- **Brosche P. and Kokott W.**, 2001. "Mondrichtungen statt Monddistanzen? Eine Vermutung über alte Navigationspraktiken", *Florilegium Astronomicum*, Algorismus 37, 101-105.
- **Christianson G. E.**, 2001. "Edwin Hubble: reluctant cosmologist". In Martinez et al.: 145-156.
- **Hoskin M.,** 2001. "Gravity and light in the Newtonian Universe of stars". In Martinez et al.: 11-19.
- **Liu Ci-yuan**, 2002. “Analysis of dates and lunar phases in *Wucheng*”, *Journal of Astronomical History and Heritage* **5**, 115-121.
- **Orchiston W**., 2002. "Joseph Ward: pioneer New Zealand telescope-maker", *Southern Stars* **41**(2), 13-21.
- **Orchiston W. and Slee B**., 2002. "The Australasian discovery of solar radio emission", *AAO Newsletter* **101**, 25-27.
- **Orchiston W. and Slee B.,** 2002. "The flowering of Fleurs: an interesting interlude in Australian radio astronomy", *ATNF News* **47**, 12-15.
- **Pettersen B.,** 2002. “Christopher Hansteen and the first observatory at the University of Oslo, 1815-28”, *Journal of Astronomical History and Heritage* **5**, 123-134.
- **Pigatto L. and Zanini V.,** 2001. "Lunar maps of the 17th and 18th centuries. Tobias Mayer's map and its 19th-century edition" in *Earth-Moon Relationships*, Proceedings (Padova, 8/10 November 2000) (Barbieri C. and Rampazzi F. eds.), Kluwer Academic Publisher, 365-377.
- **Pigatto L**., 2002. "Tycho Brahe and the Republic of Venice: a failed project", in *Tycho Brahe and Prague: Crossroads of European Science*, Proceedings of the International Symposium on the History of Science in Rudolphine period (Prague, 22-25 October 2001), (Christianson J. R., Hadravova A, Hadrava P. and Solc M. eds.), Dick W. R. and Hamel J. General Eds., Acta Astronomica Vol. 15, Verlag Harri Deutsch, 187-202.
- **Pigatto L. and Zanini V.,** 2002. “The 1900-1 opposition of 433 Eros, the solar parallax, and the contribution of Padova Observatory”, *Journal of Astronomical History and Heritage* **5**, 141-153.
- **Proverbio E**., 2000. "La stazione astronomica di Carloforte e lo sviluppo del Servizio Internazionale delle Latitudini dal 1906 al 1915" in *Storia del Servizio Internazionale delle Latitudini e delle imprese di cooperazione nternazionale* (Calledda G. and Proverbio E. eds.), Cagliari, 40-92.
- **Proverbio E.,** 2001. La nascita della fisica solare ed il contributo di Pietro Tacchini allo sviluppo delle ricerche di astronomia solare in Italia", *Atti della Fondazione Giorgio Ronchi*, Anno LVI, 6, 1165-1228.

- **Proverbio E**., 2001. "Ipotesi ed evidenze sull'esistenza di conoscenze astronomiche nelle comunità preistoriche dell'area europea" in *Atti del III Convegno internazionale di Archeologia e Astronomia. L'uomo antico e il cosmo*, Roma, Accademia Nazionale dei Lincei, 49-72.
- **Shankland P. and Orchiston W**., 2002. "Nineteenth century astronomy at the U.S. Naval Academy", *Journal of Astronomical History and Heritage* **5**, 165-179.
- **Sterken C. and Hearnshaw, J. (eds.),** 2001. *100 Years of Observational Astronomy and Astrophysics. Homage to Miklos Konkoly Thege (1842-1916)*. Brussels, VUB.
- **Theodossiou E., Niarchos P., Manimanis V. and Orchiston W.,** 2002. "The fall of a meteorite stone at Aegos Potami in 467/466 BC", *Journal of Astronomical History and Heritage* **5**, 135-140.
- **Trimble V.**, 2001. "The quest for the edge of the Universe". In Martinez et al.: 375-383.
- **Wilkins G. A.**, 2000. "The astronomical millennium revisited", *Astron. Geophys.* 41, 1.8

O. News

Sixth Biennial History of Astronomy Workshop, Call for Papers

Notre Dame, USA, 19-22 June 2003

The Sixth Biennial History of Astronomy Workshop will be held at the University of Notre Dame on 19-22 June 2003. The Biennial History of Astronomy Workshops typically attract about 60-65 scholars interested in the history of astronomy. Comfortable and economical accomodation is available in the dormitories of Notre Dame, and provide an intimate setting for a weekend devoted to scholarship. This year's invited speaker will be Harry Collins, from the Centre for the Study of Knowledge Expertise and Science at Cardiff University. One change in the typical schedule for the workshops is that Prof. Collins will give an opening address on Thursday evening, which will be followed by breakout sessions on Friday morning.

The program co-chairs of the workshop issue a call for proposals for work-in-progress papers, poster papers, and organized sessions.

Work-in-progress papers must address a topic in the history of astronomy, but a wide variety of time periods and approaches will be acceptable. Due to time constraints, we shall judge proposals on a more competitive basis than in previous years. Graduate students reporting on their dissertation projects and speakers who did not present a paper at the last workshop will receive preference. Papers will be selected in order to present a balanced schedule, with coverage of different chronological periods and historiographical approaches. Presentations will be strictly limited to twenty minutes.

It is suggested that oral presentations should take ten to fifteen minutes, which will leave some time for questions and discussion.

Those who wish to present work-in progress papers should submit an abstract of not more than 250 words which states clearly the topic to be covered, the current state of scholarship on the subject, and the author's own approach.

Rather than presenting a paper orally, a poster paper may be constructed for display throughout the workshop. Please note that poster papers should take advantage of the poster format, and should be visually appealing and convey information to the viewer through images (photos, diagrams, tables, etc.) and succinct text. Poster paper proposals should not be more than 250 words and should state clearly the topic to be covered and the current state of scholarship on the subject.

They should also include a statement regarding how the topic benefits from a visual presentation.

Session proposals should state the theme of the session, as well as who has been contacted regarding participation in the session. The time for sessions will be limited, and a significant portion of each session should be devoted to discussion.

Sessions can last between 1 and 2.5 hours; please indicate in the proposal how long the session will need to be.

Abstracts will be posted on the workshop web page prior to the meeting. Full papers may also be posted by arrangement; if presenters choose to post their paper on the web, they are encouraged to modify their presentation so that it is not simply a recitation of the posted paper.

All speakers are expected to register for the conference and pay the registration fee. We cannot offer travel grants of any kind.

Proposals for sessions and work-in-progress papers are due by 1 February 2003. Proposals for poster papers are due by 1 April 2003.

Proposals should be sent to each of the program co-chairs, preferably by e-mail, but hard copy is acceptable. Send abstracts to:

Marc Rothenberg
8533 Milford Ave.
Silver Spring, MD 20910
E-mail: Josephhenr@aol.com

and

David DeVorkin
9611 West Bexhill Drive
Kensington MD 20895
E-mail: David.DeVorkin@nasm.si.edu

and

Rudi Paul Lindner
Department of History
1029 Tisch Hall
The University of Michigan
Ann Arbor, MI 48109-1003

E-mail: rpl@umich.edu

Please note that no person may submit more than one proposal for a work-in-progress paper, but that the same person may submit a proposal for both a work-in-progress and a poster paper.

For more information on the workshop, see the web page at http://www.nd.edu/~histast4.

Matthew F. Dowd
Doctoral Candidate
Hist. & Phil. of Science
346 O'Shaughnessy, Univ. of Notre Dame
Notre Dame, IN 46556

Astrology and the Academy, Call for Papers

Bath Spa University College (UK), June 14-15, 2003

The Centre for the Study of Cultural Astronomy and Astrology at Bath Spa University College, UK, is holding a weekend conference entitled Astrology and the Academy, between 14-15 June 2003, with a speakers' roundtable symposium on Friday the 13th of June 2003.

Abstracts are invited for this interdisciplinary conference examining the role of astrology in history, politics, culture and the arts.

The deadline for submissions is 30 January 2003.

For further details or to submit abstracts, please contact:

Alice Ekrek, Sophia Centre
Bath Spa University College
Newton Park, Newton St. Loe
Bath BA2 9BN (UK)
Tel: +44 (0) 1225 876147
Fax: +44 (0) 1225 876230
a.ekrek@bathspa.ac.uk

First IAU Photographic Plates Newsletter

The IAU Task Force for the Preservation and Digitization of Photographic Plates (PDPP) has recently issued its first Newsletter. The document can be accessed as a pdf file at

http://www.inasan.rssi.ru/iau/iau5/tgpdpp.html

Stephen McCluskey
Department of History
West Virginia University

Morgantown, WV 26506-6303
scmcc@wvu.edu

History of Astronomy Displays and Exhibitions

Léon Foucault - Le miroir et le pendule

Paris Observatory, 16 October - 15 December 2002

The exhibition was held in the entrance hall on the ground floor, in the large staircase of the *Bâtiment Perrault,* as it is called, and in the *Salle Cassini* named after the Cassinis. Several sequences were shown to the visitors, all of them related to Foucault's specific fields of research: photography, optics, velocity of light, "the" pendulum and the gyroscope, electricity, Foucault's telescope, regulator, etc. Besides the exhibition of historical instruments and apparatus from the Collections of the *Observatoire de Paris* and of the *Musée du Conservatoire national des Arts et Métiers*, many experiments were illustrated recalling major Foucault's discoveries concerning optics, Foucault's currents, velocity of light, vibrating rule, gyroscope, Foucault's knife, etc. In the center of the room, were he made his second experiment with the pendulum, was installed a Foucault's pendulum whose length was about eleven meters. His first experiment was made in the basement of his house (which was located in rue d'Assas, near the Observatory) and the third one (the most known) in the Panthéon. All three were made between January and March 1851.

At the opening of the exhibition were available (in French): a brochure (16 pages, 28 pictures, in color) with the title of the exhibition, an educational booklet (16 pages, 35 figures, black and white) and an important book (354 pages, more than 250 ilustrations in black and white plus 22 in color) "Léon Foucault", undertitled "Le miroir et le pendule", written by the specialist of Foucault William Tobin, adapted in French by J. Lequeux and published by *EDP Sciences*, 2002 (ISBN 2-86883-615-1). The "commissaires" of the exhibition were Laurence Bobis, Curator and director of the Library of the Paris Observatory, and James Lequeux, astronomer of the Paris Observatory in collaboration with William Tobin from the University of Canterbury (New Zealand). On the occasion of the one-hundred and fifty years of the pendulum demonstration of the rotation of the Earth, a call on the subject was launched (in the magazine *l'Astronomie*) in December 2001, reproduced in different languages and other magazines, in order to detect other places all over the world where the same experiment was made.

Suzanne Débarbat
Observatoire de Paris/DANOF
61, av. de l'Observatoire - 75014 Paris (France)
E-mail: debarbat@danof.obspm.fr

Obituaries

Kazimir Kleofasovich LAVRINOVICH, professor of mathematics at the Kaliningrad University, Russia, untimely passed away on February 21, 2002 at the age of 61. He was born on March 23, 1941 to a family of Polish descent.

Professor Lavrinovich was an outstanding historian of science in general and astronomy in particular. His writings include a book about Friedrich Wilhelm Bessel that is considered widely to be the best one on the subject. Published in Russia in 1989, the book about one of the leaders of world astronomy in the first half of the 19th century, the German astronomer Bessel, was in 1995 translated into German. Although, as reviewers stated, the translation somewhat suffered as far as scientific terminology was concerned, this accomplishment received wide acclaim due to the use of a broad scope of unknown archival materials in various languages. Along with this accomplishment, Lavrinovich also conducted well thought-out research on the early history of the Pulkovo Observatory and the fate of science in the university where he taught. (The university is located in the former German city of Königsberg, which, as a result of World War II, became a Russian territory.) Remembering his Polish roots, Lavrinovich was an active member of the Polish diaspora in Kaliningrad and successfully combined his regular work with teaching in Poland.

In hearts of his colleagues, students, and all those who knew him, Kazimir Kleofasovich will remain a man of exceptional integrity, with a sharp vivid mind and a soft humor; a person of ready sympathy and benevolence. He was one of the few in Russia who devoted his second dissertation (Doctor of Science, which follows the Candidate of Science) to history of science; despite objections against its historical core, it was triumphantly defended in the Leningrad University. With his decease, history of astronomy lost an eager and honest devotee.

A. Gurshtein

Pyotr (Petr) Vladimirovich SHCHEGLOV, a renowned Russian astrophysicist and a historian of astronomy, passed away prematurely on December 19, 2001 at the age of 69. He was a long-tenured researcher at the Shternberg State Astronomical Institute (ShAI) in Moscow and a member of the IAU from 1961.

P. V. Shcheglov was born on September 4, 1932 in Tashkent (Republic of Uzbekistan) to a Russian family with a long record of cultural and scientific accomplishments. His grandfather taught classic languages in the city of Jaroslavl' in Russia. His father was a prominent astronomer – an employee, and, later, the director of the Tashkent Astronomical Observatory; an academician, Vladimir P. Shcheglov was among the leaders of the Uzbek Academy of Sciences. His son Pyotr was very well educated, exhibiting fluency in three foreign languages and having a broad and deep knowledge in the fields of science fiction literature, painting, music, mythology, and history of science.

Shcheglov Jr., still in Tashkent, graduated from high school with a golden medal in 1949, and in 1954 graduated with honor from Moscow State University (MSU). His post-graduate education was in astrophysics at the Astronomical Department of the Mechanics-Mathematical faculty of MSU (1954-1957). In 1958, he defended his candidate thesis and became one of the first three employees of the Department of Radio Astronomy, created in the ShAI thanks to an initiative of the eminent Soviet astrophysicist I.S. Shklovsky. A good organizer, young P.V. actively served on the local Organizing Committee for the 10th IAU Congress in Moscow (1958).

The focus of Shcheglov's subsequent scientific activity was the creation of new astrophysical instruments, the development of methods for increasing the efficiency of astronomical observations, and the study of astronomical climate for the selection of sites for new observatories. The new detectors designed by Shcheglov using electron-image tubes in combination with the *Fabry–Perot* interferometer magnified a received signal from feeble space objects hundreds of times. Pyotr Shcheglov was among the pioneers of the application of electron-image devices in astrophysics and has made with their help a series of important discoveries.

P.V.'S contribution to the study of astronomical climate was a photoelectric instrument that obtained quantitative characteristics of atmospheric disturbances. Shcheglov was also the first scholar to prove the ineffectiveness of high astronomical towers. Under his management, in 1967-1971 two unique isolated summits with ideal astronomical climate were explored - Sanglok and Minchukur, both in the Republic of Tajikistan. On a number of occasions, Shcheglov Jr. also participated in expeditions to observe solar eclipses.

In 1970, P.V. got the Dr.Sc. degree. Starting in 1992, he became a professor of astrophysics at MSU. For several years, he was the chief of a new laboratory that studied scientific photo and photoelectric receivers. P.V. Shcheglov authored 120 scientific papers and 2 monographs. One of them, «Electronic telescopy» (1963), became a classic in its field and was translated into English (1966) and French.

Throughout his entire life, P.V. Shcheglov demonstrated a profound and multifarious interest in the history of astronomy. His first publication in this area was an informative review of the history of domestic astronomical instrument making. In subsequent years, P.V., together with his father, wrote the large foreword of remake of the famous Hevelius stellar atlas (XVII century) in 1978. Later on, P.V. wrote a meaningful book, "The myths of the Earth reflected in the sky"; the third edition was reprinted in Moscow in 1996. He was also actively involved in studies dedicated to Russian astronomy of the 18th century. Under Shcheglov's guidance, a ShAI group for the study of the history of Astronomical Observatory in Moscow and ShAI was organized; this group completed the creation of a Museum in the older building of the Astronomical Observatory of Moscow University.

The memory of P. V. Shcheglov will continue to live in the minds of all who knew him and his work.

A. I. Eremeeva

CONTACT

Contributions to the Newsletter can be sent to:

Dr. Ileana Chinnici
c/o Osservatorio Astronomico di Palermo G. S. Vaiana
Piazza del Parlamento, 1
90134 Palermo (ITALY)

tel. 39091233443, fax 39091233444
E-mail: chinnici@oapa.astropa.unipa.it
