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HISTORY OF ASTRONOMY

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A. The IAU Historic Radio Astronomy Working Group. 2: Progress Report

This Progress Report follows the inaugural report of the Working Group (WG), which appeared in the April 2004 *ICHA Newsletter* and was published in the June 2004 issue of the *Journal of Astronomical History and Heritage* (see Orchiston *et al.*, 2004, below).

Role of the WG

This WG was formed at the 2003 General Assembly of the IAU as a joint initiative of Commissions 40 (Radio Astronomy) and 41 (History of Astronomy), in order to:

- assemble a master list of surviving historically-significant radio telescopes and associated instrumentation found worldwide;
- document the technical specifications and scientific achievements of these instruments;
- maintain an on-going bibliography of publications on the history of radio astronomy; and
- monitor other developments relating to the history of radio astronomy (including the deaths of pioneering radio astronomers).

New Committee Members

Since the last report was prepared we have added two further members to the Committee of the WG. As Chair of the WG, I am delighted to offer a warm welcome to Richard Wielebinski from the Max Planck Institute for Radioastronomy, representing Germany, and Jasper Wall (University of British Columbia), who represents Canada.

Further Publications on the History of Radio Astronomy

Balick, B., 2005. The discovery of Sagittarius A*. In Orchiston, 2005b, 183-190.

Beekman, G., 1999. Een verjaardag zonder jarige. *Zenit*, 26(4), 154-157.

Cohen, M., 2005. Dark matter and the Owens Valley Radio Observatory. In Orchiston, 2005b, 169-182.

Davies, R.D., 2003. Fred Hoyle and Manchester. *Astrophysics and Space Science*, 285, 309-319.

Gordon, M.A., 2005. *Recollections of "Tucson Operations"*. *The Millimeter-Wave Observatory of the National Radio Astronomy Observatory*. Dordrecht, Springer. Pp. xvii+221.

Gunn, A., 2005. Jodrell Bank and the meteor velocity controversy. In Orchiston, 2005b, 107-118.

Holpp, W., 2004. The century of radar. From Christian Hülsmeier to Shuttle Radar Topography Mission. See: www.100-jahre-radar.de

Jarrell, R., 2005. "Radio astronomy, whatever that may be." The marginalization of early radio astronomy. In Orchiston, 2005b, 191-202.

- Kellermann, K.I., 2004. Grote Reber (1911-2002). *Publications of the Astronomical Society of the Pacific*, 116, 703-711.
- Kellermann, K.I., 2005. Grote Reber (1911-2002): a radio astronomy pioneer. In Orchiston, 2005b, 43-70.
- Kellermann, K.I., Orchiston, W., and Slee, B., 2005. Gordon James Stanley and the early development of radio astronomy in Australia and the United States. *Publications of the Astronomical Society of Australia*, 22, 1-11.
- Lovell, B., and Davis, J., 2003. Robert Hanbury Brown. *Biographical Memoirs of Fellows of the Royal Society*, 49, 83-106.
- Orchiston, W., 2004. The 1948 solar eclipse and the genesis of radio astronomy in Victoria. *Journal of Astronomical History and Heritage*, 7, 118-121.
- Orchiston, W., 2005a. Dr Elizabeth Alexander: first female radio astronomer. In Orchiston, 2005b, 71-92.
- Orchiston, W. (ed.), 2005b. *The New Astronomy: Opening the Electromagnetic Window and Expanding our View of Planet Earth. A Meeting to Honor Woody Sullivan on His 60th Birthday*. Dordrecht, Springer. Pp. xvi + 328.
- Orchiston, W., and Slee, B., 2005a. The Radiophysics field stations and the early development of radio astronomy. In Orchiston, 2005b, 119-168.
- Orchiston, W., and Slee, B., 2005b. Shame about Shain! Early Australian radio astronomy at Hornsby Valley. *ATNF News*, 55, 14-15.
- Orchiston, W., Davies, R., Denisse, J.-F., Kellermann, K., Morimoto, M., Slysh, S., Swarup, G., and van Woerden, H., 2004. The IAU Historic Radio Astronomy Working Group. 1: Progress report. *Journal of Astronomical History and Heritage*, 7, 53-56.
- Raimond, E., and Genée, R. (eds.), 1996. *The Westerbork Observatory. Continuing Adventure in Radio Astronomy*. Dordrecht, Kluwer Academic Publishers (Astronomy and Space Science Library, Volume 207). Pp. x+266.
- Strom, R., 2005. Radio astronomy in Holland before 1960: just a bit more than HI. In Orchiston, 2005b, 93-106.
- Swarup, G., 1986. The story of the Ooty Radio Telescope. In Cowsik, R. (ed.). *Cosmic Pathways*. New Delhi, Tata McGraw-Hill. Pp. 349-360.
- Van Loon, B., and Hin, A., 2004. Scanning our past from the Netherlands: early Galactic radio astronomy at Kootwijk, and some consequential developments. *Proceedings of the IEEE*, 92, 1004-1006.
- Van Woerden, H., 2000. Vijftig Jaar Toponderzoek. *Zenit*, 27(5), 196-200.
- Wakker, B.P., de Boer, K.S., and Van Woerden, H., 2004. History of HVC research – an overview. In Van Woerden, H., Wakker, B.P., Schwarz, U.J. and de Boer, K.S. (eds.). *High-Velocity Clouds*. Dordrecht, Kluwer Academic Publishers. Pp. 1-24.
- Wielebinski, R., 2003. The new era of large paraboloid antennas: the life of Prof. Otto Hachenberg. *Advances in Radio Science*, 1, 321-324.

Up-Coming Publications

- (1) Conference Proceedings: An interesting new book for historians of radio astronomy is:

Orchiston, W. (ed.), 2005. *The New Astronomy: Opening the Electromagnetic Window and Expanding our View of Planet Earth. A Meeting to Honor Woody Sullivan on His 60th Birthday*. Dordrecht, Springer. Pp. xvi + 328.

This contains papers on the history of radio or radar astronomy by Bruce Balick, Marshall Cohen, Alastair Gunn, Rich Jarrell, Ken Kellermann, Wayne Orchiston, Wayne Orchiston & Bruce Slee, and Richard Strom (see the reference list above), which collectively account for 53% of the text of the book. Other papers in the book relate to astrobiology (2 papers), the history of space astronomy (3), the history of gamma ray astronomy (1), transits of Venus (1), and sundials (2 papers). *The New Astronomy* is in the process of being published, and Springer is offering a special discounted price (which includes postage and packing) to IAU members and others with an interest in the history of radio astronomy. Send a check, bank draft or bank check for US\$40 (payable to the “Center for the Study of the Pacific Northwest”) to Professor Bruce Hevly, University of Washington, PO Box 353560, Seattle, WA 98195, USA. Include your name, postal address and e-mail address. This special offer ends on 30 April 2005.

(2) JAH2: The next three issues of the *Journal of Astronomical History and Heritage* (June 2005, December 2005 and June 2006) will feature a series of research papers on the history of radio astronomy. Altogether, there will be about a dozen different papers, most deriving from the history of radio astronomy sessions at the 2003 IAU General Assembly. Authors of these papers include Ron Bracewell, Bruce McAdam, Doug Milne, John Murray, Wayne Orchiston, Bruce Slee, Richard Strom, Woody Sullivan, Hugo van Woerden and John Whiteoak. For additional details, or offers of further papers, please contact Wayne Orchiston (wo@aaoepp.aao.gov.au).

Recent Meetings

(1) JENAM-2003: From 27 to 30 August 2003 a symposium on “Radio Astronomy at 70: From Karl Jansky to Microjansky” was held in Budapest, Hungary. Although the bulk of the papers were on contemporary radio astronomy, the first session of the conference was devoted to historical issues and three papers were presented:

- Graham-Smith, F. “Early years of radio astronomy in Europe.”
- Burke, B. “Early years of radio astronomy in the US.”
- Gunn, A. “Jodrell Bank and the pursuit of cosmic rays.”

These papers, and others presented at the Conference will appear in the following proceedings, which are currently in press:

Gurvits, L., and Frey, S. (eds.), 2005. *Radio Astronomy at 70: From Karl Jansky MicroJansky*. EDP Sciences, in press.

For further information about this conference, or the proceedings, contact Leonid Gurvits (lgurvits@jive.nl).

(2) Woodfest: In June 2004 a meeting spanning astrobiology, the history of astronomy and sundials was held at the University of Washington, Seattle, to celebrate Woody Sullivan’s 60th birthday. Many of the history of astronomy papers

related to radio and radar astronomy (see those by Balick, Cohen, Gunn, Jarrell, Kellermann, Orchiston, Orchiston & Slee, and Strom in the foregoing list of references). The opportunity to purchase copies of the conference proceedings at a special discounted price is detailed above in “Up-coming Publications”.

(3) ICOA-5: In October 2004 the Fifth International Conference on Oriental Astronomy was held in Chiang Mai, Thailand, and Richard Strom and Richard Stephenson organized a special session on “Supernovae: Historical Records and Observations”. Among the papers presented were

- Dickel, J.R. “Current observations of the remnants of Kepler’s SN of 1604 and other historical supernova remnants.”
- Orchiston, W., and Slee, B. “Early Australian observations of historical supernova remnants at radio wavelengths.”

These papers will appear in the following proceedings, which are currently in preparation:

Chen, K.-Y., Orchiston, W., Soonthornthum, B., and Strom, R. (eds.), 2005.
Proceedings of the Fifth International Conference on Oriental Astronomy.
Chiang Mai, University of Chiang Mai Press.

Up-coming Meetings

(1) Cambridge, England, 2005 (see page 30): The Historical Astronomy Division (HAD) of the American Astronomical Society will meet 4-8 September, 2005 (Sunday-Thursday) at the Umney Theatre, Robinson College, University of Cambridge. This will be a joint meeting with the Division of Planetary Sciences (DPS) of the AAS. The HAD program will include nine, 90-min. sessions of papers. One or two of these sessions will be on the history of radio astronomy, and are being organised by Professor Woody Sullivan.

The deadline for advance registration, reservation of accommodation, and submission of abstracts is 1 July 2005. For general Conference details see the DPS web site or e-mail Peter Abrahams (had2005@europa.com).

If you would like to present a paper on historic radio astronomy, please e-mail Woody Sullivan (woody@astro.washington.edu) as soon as possible for further details. Note that this Conference is open to non-AAS members.

(2) Prague, Czech Republic, 2006: The Twenty-Sixth General Assembly of the IAU will be held in Prague during 14-25 August 2006, and we are hoping to hold between two and four quarter-day meetings of the Historic Radio Astronomy Working Group. These will provide an opportunity for those interested in the history of radio astronomy to discuss their latest research, with emphasis on the development of radio astronomy in Europe, and the status of radio astronomy worldwide fifty years ago when ‘big science’ first began to impact on radio astronomy. For general information about the General Assembly consult the following web site: <http://www.astronomy2006.com>, and further information about the WG meetings contact Wayne Orchiston (wo@aaoepp.aao.gov.au).

Research by Working Group Members

Ron Bracewell (Stanford University) has been researching the history of radio astronomy at Stanford as part of his efforts to ensure the preservation of the early radio telescopes at Site 515 (see below), and he is also preparing a paper for publication in the *Journal of Astronomical History and Heritage*.

Miller Goss (National Radio Astronomy Observatory, USA) and *Dick McGee* (ex-Australia Telescope National Facility) continued their biographical study of Ruby Payne-Scott, one of the world's first female radio astronomers. During WWII, Payne-Scott worked on radar developments whilst employed by the Commonwealth Scientific and Industrial Research Organization's (CSIRO) Division of Radiophysics in Sydney, and following the war carried out pioneering research on solar radio astronomy. She left Radiophysics in 1951 in order to start a family. Following Miller and Dick's paper at the IAU General Assembly in Sydney, the Australian Broadcasting Commission (ABC) took a special interest in Ruby Payne-Scott. She featured in the 'Science Show' on 14 February 2004, which included interviews with both Miller and Dick, and Miller was also interviewed on the ABC television program, 'Rewind Moments', which was screened on 7 February 2005.

Alastair Gunn (Jodrell Bank, University of Manchester) continued his research into the early development of radar (meteor) astronomy and radio astronomy at Jodrell Bank, and he and *Rod Davies* began a review of surviving historically-significant radio telescopes and associated equipment at this site.

Ken Kellermann (National Radio Astronomy Observatory, USA) is editing an English language version of the 1985 book, *History of Radio Astronomy in USSR*, which Denise Gabuzda is currently translating. This new English edition will be published by Springer. *Slava Slysh* (Lebedev Physical Institute, Moscow) says that this book "... contains some less known details of the early days of radio astronomy in USSR ...", and he hopes the new edition will be updated and enlarged.

Ken Kellermann also reports that the National Radio Astronomy Observatory Archives actively seeks out, collects, organizes, and preserves institutional records and personal papers of enduring value which document NRAO's historical development, institutional history, instrument construction, and ongoing activities, including its participation in multi-institutional collaborations. As the national facility for radio astronomy, it also includes materials on the history and development of radio astronomy in the United States, particularly if such materials are in danger of being lost or discarded by other institutions or individuals. During 2004, the Web pages chronicling Nan Dieter Conklin's career as the first woman in US radio astronomy were completed; Grote Reber's correspondence and papers currently at NRAO were indexed and a finding aid was published on the Web; the papers of John Findlay are being indexed; and an inventory of both the Findlay and NRAO Director's Office files was completed. A Web page presenting Doc Ewen's informal recollections of events in US radio astronomy history is in process, while the papers of John Kraus will be sent to the NRAO Archives, where they will be processed and made available to researchers. The NRAO Archives is located at the NRAO headquarters in Charlottesville, Virginia. The web page can be found at

<http://www.nrao.edu/archives/>, and includes links to NRAO Archives resources and to the NRAO Archives Policy.

A biographical study of the late Gordon Stanley—and the key role he played in the early development of radio astronomy in Australia and California—was carried out by *Ken Kellermann*, *Wayne Orchiston* (Anglo-Australian Observatory) and *Bruce Slee* (Australia Telescope National Facility), and was published in an Australian astronomical journal.

Wayne Orchiston (Australia Telescope National Facility), *Woody Sullivan* (University of Washington) and *Jessica Chapman* (Australia Telescope National Facility) have been collaborating on a book titled *The Early Development of Australian Radio Astronomy*, which will be published by Springer (New York) in 2006. This well-illustrated volume makes excellent use of the ATNF's unique collection of historical photographs of Australian radio telescopes and associated equipment, radio astronomers, and field stations. The book focuses on the nine field stations and twenty or so remote sites located in and near Sydney that were maintained by the CSIRO's Division of Radiophysics between 1945 and 1961.

In addition, *Wayne Orchiston* (Anglo-Australian Observatory) and *Bruce Slee* conducted further historical research on the Division of Radiophysics field stations and prepared a major review paper on these and a number of short papers on individual field stations. Wayne also prepared a bibliography on the history of radio astronomy in Australia, and he assembled a national masterlist of surviving historically-significant Australian radio telescopes.

Meanwhile, *Bruce Slee* began reviewing the range of non-solar research carried out between 1968 and 1988 with the Culgoora Circular Array (aka Culgoora Radioheliograph). He also participated in the ABC's television program, 'Rewind Moments', about Ruby Payne-Scott (with whom he used to work back in the 1940s).

Govind Swarup (National Centre for Radio Astronomy, India) reports that Dr Indira Chaudhary, an historian, is recording oral history interviews with radio astronomers at the Centre. "She has already interviewed me five times," he said, "and plans another five sessions. That material may get ... put into a written semi-edited version in a year or so." In the course of the next year Govind plans to begin researching the history of the Giant Metre Wave Radio Telescope near Pune, with a view to writing this up.

Woody Sullivan (University of Washington) reports that he "... remains frustrated that his detailed treatment of the early (through 1953) history of worldwide radio and radar astronomy remains at the 80-90% completion point, where it has been 'stuck' for the past decade. But the good news is that he has a sabbatical year beginning in January 2006, and the first item on the 'to-do' list is to finish this book!" Woody also remarks: "It has been satisfying to see that recent visitors to Seattle have been making good use of his huge archive of materials on early (pre-1965) radio astronomy. These were Ken Kellermann, Miller Goss, and in particular, Wayne Orchiston, who spent two months in late 2003 expressly to study portions of this material, especially dealing with Australia."

Hugo Van Woerden (Kapteyn Astronomical Institute, University of Groningen, The Netherlands) and *Richard Strom* (ASTRON, The Netherlands) have been researching the history of Dutch Wurzburg dishes and the Dwingeloo Radio Telescope. During the 1950s, as many as eight different Wurzburg-Riese radar antennas from WWII were being used in The Netherlands for radio astronomical research. Parts of six of these have survived, and currently two are in museums in Germany, and four are at a museum, a public observatory and a planetarium in The Netherlands. Hugo and Richard are also building up a bibliography on the history of radio astronomy in The Netherlands.

Richard Wielebinski (Max Planck Institute for Radioastronomy, Bonn) has been recording oral history interviews with German radio astronomers, and reviewing archival material on German radio astronomy in various repositories (in the process unearthing some wartime reports on radar by people who later were involved in radio astronomy). He has also begun developing a bibliography on the history of German radio astronomy, and is planning a digital picture gallery of various German radio telescopes.

The Preservation and Destruction of Historically-Significant Radio Telescopes

1) Stanford University: down a dirt road off Highway 280 in California is Site 515, where Ron Bracewell and other scientists from Stanford's Space, Telecommunications and Radioscience Laboratory (STAR Lab) established a major radio astronomy field station in 1956. The first instrument on this site was an array of 32 small parabolic antennas, each 10-ft in diameter, arranged in the form of a cross. From 1961 this array was used to generate daily microwave maps of the Sun, and for the next eleven years (i.e. one complete solar cycle) these were forwarded to the US Air Force and distributed around the world. Subsequently an interferometer comprising five 60-ft antennas was constructed, and this was used to study the angular diameters, temperatures and polarization of radio galaxies. Towards the end of the 1970s the site was abandoned, and the radio telescopes and associated buildings began to deteriorate. In June 2004 Stanford University's fire inspector visited the site, finding weed-choked meadows, dilapidated buildings and rusting instruments. He declared Site 515 a fire hazard, and called for its clean-up.

Professor Channing Robertson, Senior Associate Dean in the School of Engineering subsequently called a halt to demolition of the antennas until 30 June 2005 in order to give the newly-formed Friends of the Bracewell Observatory (FoBO) time to mount a rescue effort. FoBO proposes to save and restore this site at no expense to Stanford University, and to upgrade the existing antennas so they can be used to track Stanford's SSDL CubeSat satellite. Between tracking missions, the facility will:

- Offer hands-on radio telescope facilities for the general public
- Be used for educational programs and mentoring in amateur radio astronomy
- Be available to amateur organizations, schools, and individuals for special projects

FoBO now has more than 60 volunteers, and pledges of funding which will allow the restoration of the first 60-ft antenna, its up-grade to satellite-tracking status, and initiation of the ‘public program’ bullet-pointed above. For further information, and offers of assistance, please contact Dr Bob Lash, Co-organizer Friends of the Bracewell Observatory (bob@bambi.net). See, also, the following web site, which includes some nice colour photographs of the dishes and control room: www.bambi.net/stanford_dishes/rescue.html

2) The Chris Cross: In stark contrast to the promising future for Site 515 in California is the fate of the historic Chris Cross radio telescope in Australia. This antenna comprised 64 parabolic antennas, each 19-ft in diameter, arranged in the form of a cross, and was erected at the Fleurs field station of the CSIRO’s Division of Radiophysics in 1957. Initially, this cross-grating interferometer was used to generate daily solar isophote maps at 1420 MHz, but once the site was taken over by the University of Sydney’s School of Electrical Engineering the array was converted into the Fleurs Synthesis Telescope (FST) with the addition of six 45-ft parabolas. With a 20 arcsecond beam, this array was used to study southern radio galaxies, SNRs and emission nebulae. The FST was closed down in 1988 when the Australia Telescope Compact Array was commissioned, and the Fleurs field station passed to the Engineering Faculty at the University of Western Sydney as a teaching facility. The FST dishes then began to deteriorate, and in 1990 a decision was made to preserve the large dishes and the 12 centrally-located Chris Cross dishes from the solar array. The remaining Chris Cross dishes were then offered to local astronomical societies, four were removed from the site, and the remaining ones were bulldozed. Undergraduate students were involved in cleaning and painting the surviving Chris Cross dishes, and on 22 November 1991 a ceremony was held at the site to commemorate their preservation.

In early 2005, CSIRO staff discovered that these surviving Chris Cross antennas had recently been destroyed. Apparently the dishes were beginning to rust, and a local farmer, concerned that children playing on them could be injured, requested they be bulldozed. The area is part of the University of Sydney’s farm operations, and the site manager simply sanctioned this request—without even bothering to discuss this matter with any of the University’s radio astronomers or other members of the IAU Historic Radio Astronomy WG employed by the Australia Telescope National Facility. As a result of this regrettable action, the world has lost a pioneering radio telescope that for more than three decades made important contributions to solar, Galactic and extragalactic radio astronomy. Currently, the rusting six large antennas remain, and efforts are being made to ensure that two of these are preserved.

Obituaries

Further to the obituaries listed in our initial report, it is with sadness that we announce the deaths of the following colleagues:

- Hendrik Christoffel (Henk) van de Hulst (born 19 November 1918, died 31 July 2000).

Obituaries: Blaauw, A., 2002. *Proceedings of the American Philosophical Society*, 146, 419-423; Habing, H.J., 2001. *Astronomy & Geophysics*, 42(1), 1.33-1.35; Welther, B.L., 2000. *Bulletin of the American Astronomical Society*, 32, 1688-1689.

- Bob Duncan (born 1929, died 19 April 2004).

Obituary: Sim, H., 2004. *ATNF News*, 53, 4-5.

- John D. Kraus (died 18 July 2004, aged 94).

Obituary: see below.

- Brian Robinson (born 4 November 1930, died 22 July 2004).

Obituary: Sim, H., and Orchiston, W., 2005. *ATNF News*, 54, 11-13.

- Christiaan Alexander (Lex) Muller (born 1923, died 8 August 2004).

Obituaries: Van Woerden, H., Hin, A.C., Raimond, E., and Schipper, B.A.P., 2005. *Zenit*, 32(1), 27-28; Van Woerden, H., Hin, A.C., Raimond, E., and Schipper, B.A.P., 2005. *Proceedings of the IEEE*, in press.

- Fred L. Whipple (born 5 November 1906, died 30 August 2004).

Obituary: Yeomans, D.K., and Veverka, J., 2004. *Nature*, 432(7013), 31.

- Vladimir Kotelnikov (died 11 February 2005, aged 96).

Obituary: see below.

Ken Kellermann kindly forwarded the following biographical details about **John Kraus**, which, although from an amateur radio source, do provide some information about his radio astronomical activities.

“Radio astronomer, antenna designer, cosmic explorer and author, John D. Kraus, W8JK, of Delaware, Ohio, died July 18. He was 94. While he enjoyed a worldwide reputation, Kraus is best known in Amateur Radio circles for his bi-directional wire beam antenna—often dubbed the ‘8JK array’. Other important Kraus designs include the corner reflector and helix antennas. The Michigan native was a pioneer of radio telescope design and the father of the ‘Big Ear’ radio telescope ... A graduate of Michigan State University, he joined the faculty of the Ohio State University in 1946, serving as a Professor of Electrical Engineering and Astronomy, and founding and directing the OSU Radio Observatory. In that capacity, Kraus designed and oversaw construction of the ‘Big Ear’ on the campus of nearby Ohio Wesleyan University.

Kraus’ classic textbook, *Antennas*, now in its second edition, has been an engineering school staple for decades and can be found in virtually every antenna engineer’s library. Among his other titles are *Electromagnetics*, *Radio Astronomy*, *Big Ear*, *Big Ear Two* and *Our Cosmic Universe* ...

Kraus was a Fellow of the IEEE and a member of the National Academy of Engineering. In 1966, Dayton Hamvention honored Kraus as the recipient of its Special Achievement Award. In 2001, CQ added Kraus’ name to the inaugural class of its Amateur Radio Hall of Fame.

In 1978, after the ‘Big Ear’ detected the still-unidentified “Wow!” signal that suggested the possibility of intelligent life elsewhere in the Universe, Kraus launched

Cosmic Search, a magazine devoted to the search for extraterrestrial intelligence. The ‘Big Ear’ fell victim to development pressures and was torn down in 1998.”

Nicholai Kardashev and Slava Slysh, kindly sent the following brief report on **Vladimir Kotelnikov**: “With deep regret we inform you that on Friday 11 February 2005, Vladimir Kotelnikov died. He was in his 97th year. Academician Kotelnikov was a creator of the Scientific Radioastronomical Council, one of the pioneers of planetary radar exploration, a founder of the statistical theory of radio reception, and an author of numerous scientific papers and books. He was awarded Lenin and State Prizes, twice obtained the title ‘Hero of Socialist Labour’, was decorated with the order ‘For Merits of the Nation’ of the first grade, and received many other national and foreign awards. He was an Honorary Member of the Scientific Council of Astronomy.”

On behalf of our international colleagues, we express our condolences to the relatives and friends of these distinguished radio astronomers who have recently been taken from us.

Wayne Orchiston, Chair (wo@aoepp.aao.gov.au)

Ron Bracewell (bracewell@star.stanford.edu)

Rod Davies (rdd@jb.man.ac.uk)

Jean-François Denisse (debarbat@danof.obspm.fr)

Miller Goss (mgoss@nrao.edu)

Alastair Gunn (agg@jb.man.ac.uk)

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Dick McGee

Masaki Morimoto (ojisan@memenet.or.jp)

Bruce Slee (Bruce.Slee@csiro.au)

Slava Slysh (vslysh@asc.rssi.ru)

Richard Strom (strom@astro.nl)

Woody Sullivan (woody@astro.washington.edu)

Govind Swarup (swarup@ncra.tifr.res.in)

Hugo Van Woerden (hugo@astro.rug.nl)

Jasper Wall (jvw@astro.ubc.ca)

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B. The IAU Transits of Venus Working Group. 4: Progress Report

This Progress Report follows the previous report of the Working Group, which appeared in the April 2004 *ICHA Newsletter* and was published in the June 2004 issue of the *Journal of Astronomical History and Heritage* (see Orchiston *et al.*, 2004, below).

As we indicated in the 2004 report of the Working Group, various historic re-enactments, lectures, seminars, conferences and museum displays were arranged to link with the June 2004 transit. Sara Schechner’s “Festival of the Transit of Venus”

at Harvard University not only included an observing program and a museum display featuring instruments used by John Winthrop in 1761 and 1769 but also live performances of John Philip Sousa's "Transit of Venus March" by the Harvard Band and "The Venus Waltz" for banjo, by John Huth, Chairman of the Physics Department at Harvard. An exhibition titled "Chasing Venus: Observing the Transits of Venus, 1631–2004" at the National Museum of American History in Washington was mentioned in the previous Report. Associated with it was a series of five lunchtime public lectures spanning the 1639, 1769, 1874 and 1882 transits, presented by Wilbur Applebaum, David DeVorkin, Steven Dick, Richard Fisher and Jay Pasachoff. The 1 June 2004 symposium at the Museum Sterrenwacht Sonnenborgh in Utrecht (The Netherlands) mentioned in the previous Report featured papers by Hilmar Duerbeck, Jessica Ratcliff, Klaus Staubermann, Albert van Helden and Rob van Gent.

In the previous Report we reproduced a list of existing transit of Venus plaques compiled by Peter Broughton and various international colleagues, and reported on new plaques planned to mark observations of the 1761 and 1882 transits from St. John's (Newfoundland) and Wellington (South Africa), respectively. We have also learnt, through Paul Maley (Johnson Space Center Astronomical Society) and Brenda Corbin (U.S. Naval Observatory Library), of an historical marker that was dedicated at San Antonio, Texas, on 3 December 2004 to mark the site where Asaph Hall observed the 1882 transit of Venus. This historical marker was the brainchild of Paul Maley. He researched the 1882 expedition, located the site of the U.S. Naval Observatory transit station within the perimeter of Fort Sam Houston, and successfully lobbied for the military to approve and fund the historical marker. Maley was also successful in convincing the Texas Historical Commission to erect a separate monument 500 metres to the west, in order to commemorate observations of the transit made by the Belgian astronomer, Jean-Charles Houzeau.

Further to the lists of references that appeared in previous Reports of the Working Group, other transit of Venus references we have noted are:

- Aughton, P., 2004. *The Transit of Venus: The Brief Brilliant Life of Jeremiah Horrocks, Father of British Astronomy*. London, Weidenfeld & Nicholson.
- Bònoli, F., 2004. Il passaggio di Venere alla meridiana. *Giornale di Astronomia* 30, 3, 2-3.
- Botez, E., 2004. Maximilian Hell and the northernmost transit of Venus expedition of 1769. *Journal of Astronomical Data*, 10 (7), 165-174.
- Brashear, R., 2005. The transits of Venus and new technologies: a time to reflect. In Orchiston, W. (ed.). *The New Astronomy: Opening the Electromagnetic Window and Expanding our View of Planet Earth*. Dordrecht, Springer. Pp. 251-260.
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In the previous Report we mentioned the transit of Venus web site of the Scientific Instrument Commission (SIC) of the International Union for History and Philosophy of Science (Division of History of Science). In May 2004, Stephen Johnston reported (via HASTRO-L) that this is now up and running and can be accessed via

<http://transits.mhs.ox.ac.uk>

He provides the following information about this web site:

"The core of the site is a browsable database of historical instruments and images from collections around the world. Institutions and individuals are invited to develop the site by contributing their own material.

Currently the site displays material from:

- Museo della Specola, Universita di Bologna
- Collection of Historical Scientific Instruments, Harvard University
- Museum of the History of Science, University of Oxford
- National Museum of American History, Washington
- Mathematisch-Physikalischer Salon, Dresden
- UK Particle Physics and Astronomy Research Council

To take part in this international collaboration, visit the Contributors section of the site. Material is submitted directly online for instant access on the web."

This site was developed for the SIC of the IUHPS/DHS by Stephen Johnston, Sara Schechner and Steven Turner.

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IAU Transits of Venus Working Group Committees

C. The IAU Historical Instruments Working Group. 2. Harvard's Collection of Historical Scientific Instruments and its Astronomical Treasures

Located in the new wing of the Science Center of Harvard University, the Collection of Historical Scientific Instruments contains one of the finest university collections of its kind in the world. With close to 20,000 artifacts dating from the early 15th century to the present, the Collection covers a broad range of disciplines, including astronomy, navigation, horology, surveying, geology, meteorology, mathematics, physics, biology, medicine, chemistry, experimental psychology, and communications. Noteworthy among these are scientific instruments that Harvard purchased in London with the help of Benjamin Franklin in 1764 after a disastrous fire destroyed the college's philosophical apparatus in the old Harvard Hall. The historical value of the instruments is greatly enhanced by original documents preserved in the Harvard University Archives and by over 6,500 books and pamphlets in the Collection's research library that describe the purchase and use of many of the instruments.

Of particular interest to historians of astronomy are instruments used by John Winthrop, Hollis Professor of Mathematics and Natural Philosophy, to observe the Transits of Venus in 1761 from Newfoundland and 1769 from Cambridge. These include clocks, telescopes, heliometers, and astronomical quadrants. These and related instruments were also used by Winthrop's successor, Samuel Williams, to observe the total solar eclipse of 1780 (during which Williams was the first to record Bailey's beads) and to survey the boundaries between New York, Massachusetts, and Canada. The Collection also has two exquisite grand orreries by Benjamin Martin of London and Joseph Pope of Boston, a Martin cometarium, the largest collection of sundials in North America, some early astrolabes and globes, and the earliest Hadley's quadrant known.

The work of the Harvard College Observatory during the 19th century is documented in the Collection by a superb group of astronomical regulators, including many by William Bond and Son that delivered standard time to New England and the railroads. We also have the Observatory's first and second meridian circles by Troughton and Simms; early photometers used by HCO Director Edward C. Pickering; Henry Draper's 28-inch, silver-coated glass mirror used in the early observations of star spectra that culminated in the Henry Draper Catalog of spectral classifications; and the tailpiece of the 24-inch Bruce Doublet telescope used to make the photographic plates of the Great Magellanic Cloud from which Henrietta Leavitt derived the period-luminosity relation of the Cepheids.

Instruments of note from 20th century laboratories at Harvard include the cloud chamber in which Jabez Curry Street discovered the cosmic muon, Theodore Lyman's spectrographs, apparatus used in the Pound-Rebka experiment to measure the gravitational redshift of light, and a spectroheliometer designed for Sky Lab.

Our collections continue to grow!

Although Harvard University has been acquiring scientific instruments for teaching and research for over 300 years, it was not until 1947 that a serious attempt was made to preserve its historical apparatus as a resource for students and faculty. Here credit must go to David P. Wheatland and I. Bernard Cohen. Since the first exhibition of instruments was held in 1959, the Collection has grown rapidly both from within the university and from private donations. The Collection of Historical Scientific Instruments became affiliated with the Department of the History of Science in 1989. Like many other Harvard collections, its primary purpose is teaching and research, providing students and scholars with the opportunity to examine and work with artifacts that have made science possible.

The Collection has two public museum galleries (located in Science Center 136 and 251), a research library and instrument study room (Science Center 250), a conservation laboratory, and classroom. Curatorial offices are located in Science Center 251c. Please call ahead for library and gallery hours, 617-495-2779. We are wheelchair accessible.

For more information, please contact the undersigned.

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D. Congratulations to F. Richard Stephenson

F. Richard Stephenson, the Immediate Past President of C41/ICHA has just been honoured by having asteroid 10979 named after him.

This is a great achievement and we all offer our congratulations to Richard.

Further info at:

http://www.dur.ac.uk/news.service/more.php?item_type=news&itemID=796

I. Chinnici, The ICHA Newsletter Editor

E. Group on Archaeoastronomical research and expeditions at Yuri Gagarin Public Astronomical Observatory in Stara Zagora, Bulgaria – 25 years of activity

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We work on the following projects:

“Observational, prognostic and cult astronomical practices on the territory of rock-cut monuments”

“Methodological and philosophical problems of the archaeoastronomical investigations in Bulgaria”

Project for UNESCO together with the Institute of Thracology:

“Rock-cut sacred Places of the Thracians and of the people of Paleo Balkans and Ancient Anatoliya”

Thracian culture, as most of the world cultures, also integrates celestial objects and phenomena into its own view of the world. We have investigated the archaeoastronomical meaning of rock-cut monuments situated in Mountain Thrace, Bulgaria.

We analyze the structural elements of rock-cut monuments from the Eneolithic and Bronze Age, their orientations towards astronomically significant points from the visible horizon, and the observed phenomena – rise, set or culmination of the observed heavenly object. Very often rock-cut monuments include images of different astronomical objects and phenomena as Sun, Moon, stars, comets, eclipses, on the rock.

According to the situation and the architectural plan, the studied rock-cut monuments show an arrangement of a typical positional system for observations of the sunrises and sunsets (during solstice or equinox), which coincide with characteristic points of the local visible horizon line. Usually, sunrises and sunsets are connected with specific days and festivals from the calendar, agricultural or religious year of the ancient socium.

We can suppose that rock-cut monuments and cave sanctuaries were used for time measuring and they have a complicated ideological content and solar-chthonic semantics.

A typology has been made taking into account the locality of the rock-cut monuments in mountain Thrace, their formal marks, functional astronomical elements, and accuracy of the obtained observational results.

Such archaeoastronomical investigations of archeological sites can contribute to the revealing of their historical evolution and the understanding of Thracian culture.

Mina Stoeva is a doktorant of the Institute of Philosophical Research, Bulgarian Academy of Sciences, Sofia. The theme of research is: Anthropological problems in perception and time measuring.

Prerequisites for appearance of the idea of time and its measuring have been investigated. Man separated himself from nature, consciousness separated from the unconscious. In order to fill the gap appeared, symbols denoting natural phenomena were created. People began farming and stockbreeding. Institutions, relationship of exchange and trade appeared. This supposes knowing numbers and numerical

relations between the exchanged objects, noetic thinking development. Comparison of goods was comparison of time needed for their production. Time measuring was needed – connection between farm development and heavenly cycles. It was also needed to record the piled up experience and time intervals as images and a lot of dots and dashes – like writing, which passing on information between people and generations.

We work together with the Institute of Thracology, New Bulgarian University, Sofia, Bulgarian – Turkish Summer University, give lectures and organize discussions.

F. Journals and Publications

✓ Archaeoastronomy. The Journal of Astronomy in Culture

Vol. XVII, 2002-2003

- **Dennis Tedlock and Barbara Tedlock:** The Sun, Moon, and Venus among the Stars: Methods for Mapping Mayan Sidereal Space
- **Norman Hammond:** Solstice Markers at “House of Two Suns”
- **César Esteban:** Some Notes on Orientations of Prehistoric Stone Monuments in Western Polynesia and Micronesia
- **Patty A. Hardy:** The Cairo Calendar as a Stellar Almanac
- **Joan Relke and Allan Ernest:** Ancient Egyptian Astronomy: Ursa Major--Symbol of Rejuvenation
- **Marcello Ranieri:** Geometry at Stonehenge
- **Ioannis Liritzis and Helen Vassiliou:** Archaeoastronomical Orientation of Seven Significant Ancient Hellenic Temples

BOOK REVIEWS

- **Skywatchers** by Anthony F. Aveni (reviewed by Stanislaw Iwaniszewski)
- **Tombs, Temples and their Orientations** by Michael Hoskin (reviewed by Juan Antonio Belmonte)
- **Angkor Wat: Time, Space, and Kingship** by Eleanor Mannikka (reviewed by John McKim Malville)
- **Il Disegno della luce nell’architettura Cistercense** by Manuela Incerti (reviewed by Lorenzo Baldasso)
- **The Compostion of Kepler’s Astronomia nova** by James R. Voelkel (reviewed by A. E. L. Davis)

FILM REVIEW

- **The Mystery of Chaco Canyon** by Anna Sofaer (reviewed by Ruth Van Dyke)

Vol. XVIII, 2004 (forthcoming)

- **Patrick V. Kirch:** Solstice Observations in Mangareva, French Polynesia: New Perspectives from Archaeology
- **Stephen C. McCluskey:** The Study of Astronomies in Cultures as Reflected in Dissertations and Theses
- **Anthony F. Aveni:** Reassessing Zapotec Astronomy

Society for American Archaeology (SAA) Conference Selections

- **Grant R. Aylesworth:** Introduction
- **Grant R. Aylesworth:** Astronomical Interpretations of Ancient Maya E-Group Architectural Complexes
- **Stanislaw Iwaniszewski:** Glyphs D and E of the Lunar Series at Yaxchilan and Piedras Negras
- **Susan Milbrath:** The Classic Katun Cycle and the Retrograde Periods of Jupiter and Saturn
- **Ivan Šprajc:** Astronomical Alignments in the Rio Bec Architecture

International Astronomical Union (IAU) Conference Selections

- **Keith Snedegar:** Introduction
- **David A. Green and Wayne Orchiston:** In Search of *Mahutonga*: A Possible Supernova Recorded in Maori Astronomical Traditions?
- **Nguyen Mau Tung and Nguyen Thi Vuong:** The Bamboo Stick Calendar of the Muong People in Vietnam

BOOK REVIEWS

- **Cosmovisión, Ritual e Identidad de los Pueblos Indígenas de México**, Johanna Broda and Félix Báez Jorge, editors, and **La Montaña en el Paisaje Ritual**, Johanna Broda, Stanislaw Iwaniszewski and Arturo Montero, editors (reviewed by William Breen Murray)
- **Astronomy and Calendar in Ancient Rome: The Eclipse Festivals** by Leonardo Magini (reviewed by A. Lewis Licht and John T. Ramsey)
- **The Sun in the Church: Cathedrals as Solar Observatories** by J. L. Heilbron (reviewed by Stephen C. McCluskey).

For further information, please consult the website:

<http://www.wam.umd.edu/~tlaloc/archastro/journal.html>

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✓ Culture and Cosmos

Vol. 6, no. 2, Autumn/Winter 2002:

- **Jesse Krai:** *Rheticus' Poem 'Concerning the Beer of Breslau and the Twelve Signs of the Zodiac'*, pp. 3-16.
- **Anna Marie Roos:** *Israel Hiebner's Astrological Amulets and the English Sigil War*, pp. 17-43.
- **Nicholas Campion:** *Surrealist Cosmology: André Breton and Astrology*, pp. 45-56.

Vol. 7 no. 1 Spring/Summer 2003:

- **Nick Kollerstrom:** *Foreword: Galileo as Believer*, pp. 1-4.
- **Nicholas Campion:** *Galileo, Astrologer*, pp. 5-8.
- **Antonio Favaro:** *Galileo, Astrologer* translated by **Julianne Evans**, pp. 9-21.
- **Germana Ernst:** *Astrology and Prophecy in Campanella and Galileo*, pp. 21-36.
- **Nick Kollerstrom:** *Galileo as an Astrologer*, pp. 37-48.
- **Antonino Poppi:** *On Trial for Astral Fatalism: Galileo Faces the Inquisition* translated by **Martin Davies**, pp. 49-58.
- **Giuseppe Righini:** *Galileo's Horoscope for Cosimo II de Medici* translated by **Julianne Evans**, pp. 59-64.
- **Mario Biagioli:** *An Astrologico-Dynastic Encounter*, pp. 65-72.
- *Galileo's Correspondence* translated by **Julianne Evans** with commentary by **Grazia Mirti**, pp. 73-84.
- *Galileo's Letter to Piero Dini, Rome 21 May 1611* translated with commentary by **Michael Edwards**, pp. 85-96.
- *On the Character of Sagredo: Galileo's Judgements upon his Nativity* translated **Julianne Evans**, p. 97-100.
- *Galileo's Horoscopes for his Daughters* commentary by **Grazia Mirti** and **Nick Kollerstrom**, pp. 101-106.
- *Rome 1630* by **William Shea**, comments from **J.B. Scott**, **Darrel Rutkin** and **Germana Ernst**, pp. 107-112.
- **Bernadette Brady:** *Four Galilean Horoscopes: An Analysis of Galileo's Astrological Techniques*, pp. 113-144.
- *A Sonnet by Galileo Galilei* translated and with commentary by **Michael Edwards**, pp. 145-146.

Vol. 7 no. 2, Autumn/Winter 2003

- **Günther Oestmann:** *Tycho Brahe's Geniture*, pp. 3-14.
- **Bernard Eccles:** *Astrological physiognomy from Ptolemy to the present day*, pp. 15-36.

- **James Brockbank:** *Planetary signification from the second century until the present day*, pp. 37-62.
- **Julia Cleve:** *Ficino's Approach to Astrology as Reflected in Book VII of his Letters*, pp. 63-70.

Abstracts of papers up to Vol. 7, no. 2 are on the Web site:

<http://www.CultureAndCosmos.com>

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✓ Journal of Astronomical History and Heritage

Previous Journals

The 2004 issues of JAH2 (Volume 7, Numbers 1 & 2) contained book reviews and the following research papers and IAU Working Group reports:

June 2004

- **Edwards, P.G.** Charles Todd's observations of the transits of Venus. 7(1), 1-7.
- **Duerbeck, H.W.** The German transit of Venus expeditions of 1874 and 1882: organization, methods, stations, results. 7(1), 8-17.
- **Pigatto, L., and Zanini, V.** The 1882 transit of Venus observed in Italian observatories. 7(1), 18-24.
- **Sterken, C., and Duerbeck, H.W.** The 1882 Belgian transit of Venus expeditions to Texas and Chile – a reappraisal. 7(1), 25-33.
- **Orchiston, W., and Buchanan, A.** 'The Grange', Tasmania: survival of a unique suite of 1874 transit of Venus relics. 7(1), 34-43.
- **Clark, B.A.J., and Orchiston, W.** The Melbourne Observatory Dallmeyer photoheliograph and the 1874 transit of Venus. 7(1), 44-49.
- **Orchiston, W., Dick, S.J., Duerbeck, H.W., van Gent, R., Hughes, D., Koorts, W., and Pigatto, L.** The IAU Transits of Venus Working Group. 3: progress report. 7(1), 50-52.
- **Orchiston, W., Davies, R., Denisse, J.-F., Kellermann, K., Morimoto, M., Slysh, S., Swarup, G., and van Woerden, H.** The IAU Historic Radio Astronomy Working Group. 1: progress report. 7(1), 53-56.
- **Orchiston, W., Nha, I.-S., Hamel, J., Johnson, K., Nakamura, T., and Schechner, S.** The IAU Historical Instruments Working Group. 1: progress report. 7(1), 57-58.
- **Schechner, S.** The IAU Historical Instruments Working Group. 2: Harvard's Collection of Historical Scientific Instruments and its astronomical treasures. 7(1), 59-60.

- **Orchiston, W., Corbin, B., Chinnici, I., Débarbat, S., Dick, W., Green, D., and Perkins, A.** The IAU Astronomical Archives Working Group. 2: progress report. 7(1), 61-63.

December 2004

- **Mestel, L.** Arthur Stanley Eddington: pioneer of stellar structure theory. 7(2), 65-73.
- **Pantazis, G., Sinachopoulos, D., Lambrou, E., and Korakitis, R.** Astrogeodetic study of the orientation of ancient and Byzantine monuments: methodology and first results. 7(2), 74-80.
- **de Asúa, M.** The publication of the astronomical observations of Buenventura Suárez SJ (1679–1750) in European scientific journals. 7(2), 81-84.
- **Liebl, D.S., and Fluke, C.** Investigations of the interstellar medium at Washburn Observatory, 1930–1958. 7(2), 85-94.
- **Pettersen, B.R.** A leading nineteenth century instrument-maker in Norway and his astronomical and geodetic instruments. 7(2), 95-102.
- **Hughes, D.W.** Bright stars and the history of stellar astronomy. 7(2), 103-115.
- **Cunningham, C.J.** The discovery of Juno and its effect on Olbers' asteroid explosion hypothesis. 7(2), 116-117.
- **Orchiston, W.** The 1948 solar eclipse and the genesis of radio astronomy in Victoria. 7(2), 118-121.

New Home for the Journal

Illness has forced John Perdrix to relinquish his role as Managing Editor of JAH2, and from 2005 the journal will be published by the Centre for Astronomy at James Cook University, Townsville (Australia). Wayne Orchiston becomes sole Editor of JAH2, and John Perdrix joins the Editorial Board, along with Associate-Professor Graeme White from James Cook University. The revised Editorial Board is:

David Andrews (England), Alan Batten (Canada), Mary Brück (Scotland), Allan Chapman (England), Suzanne Débarbat (France), Steven Dick (USA), Wolfgang Dick (Germany), Bambang Hidayat (Indonesia), Rajesh Kochhar (India), Ci-Yuan Lui (China), Tsuko Nakamura (Japan), Il-Seong Nha, (Korea), Don Osterbrock (USA), John Perdrix (Australia), Richard Stephenson (England), Brian Warner (South Africa) and Graeme White (Australia).

All manuscripts and book reviews should be forwarded to Wayne Orchiston (wo@aaoepp.aao.gov.au) who, for the time being, will remain in Sydney. Meanwhile, a new web site for the Journal is being set up by James Cook University (<http://www.jcu.edu.au/astronomy/JAH2>). Subscriptions for 2005 remain unchanged, and should be sent to the Centre for Astronomy, James Cook University, Townsville, Queensland 4811, Australia. Other enquiries about the Journal should be directed to the undersigned.

*Wayne Orchiston
Editor, JAH2*

Some research papers by C41/ICHA members – 2002/2005

- **Bronshten V. A., Pustyl'nik I.**, 2002. *Ernst Julius Öpik 1893-1985, Scientific biography*, Nauka", Moscow, ed. A. I. Jeremeeva, pp. 1-192 (in Russian).
- **Clark, B.A.J., and Orchiston, W.**, 2004. The Melbourne Observatory Dallmeyer photoheliograph and the 1874 transit of Venus. *Journal of Astronomical History and Heritage*, 7, 44-49.
- **Kellermann, K.I., Orchiston, W., and Slee, B.**, 2005. Gordon James Stanley and the early development of radio astronomy in Australia and California. *Publications of the Astronomical Society of Australia*, 22, 1-11.
- **Mironov A., Pustyl'nik I.**, 2002. "Vitold Ceraski and Vladimir Nikonov - Founders of Stellar Photometry in Russia", *Astronomische Nachrichten*, 323, pp. 562-567.
- **Orchiston, W.**, 2004a. Astronomical results of Cook's voyages. In Robson, J. (ed.). *Captain Cook Encyclopaedia*. London, Chatham Publishing. Pp. 31-35.
- **Orchiston, W.**, 2004b. Highlighting the history of nineteenth century Australian astronomy: the Tebbutt Collection in the Mitchell Library, Sydney. *Journal of Astronomical Data*, 10(7), 77-103.
- **Orchiston, W.**, 2004c. An introduction to the astronomical archives of Australia and New Zealand. *Journal of Astronomical Data*, 10(7), 67-76.
- **Orchiston, W.**, 2004d. John Tebbutt and observational astronomy at Windsor Observatory. *Journal of the British Astronomical Association*, 114, 141-154.
- **Orchiston, W.**, 2004e. New South Wales observations of the 1874 transit of Venus. *AAO Newsletter*, 104, 12-14.
- **Orchiston, W.**, 2004f. The nineteenth century transits of Venus: an Australian and New Zealand overview. *Journal of Astronomical Data*, 10(7), 219-308.
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G. News

/// Doctoral Studies in the History of Astronomy

The Centre for Astronomy at James Cook University in Townsville, Australia, specializes in internet graduate programs in astronomy and astrophysics.

A new initiative from 2005 is to offer Doctor of Astronomy and Ph.D. degrees in the history of astronomy. These can be undertaken off campus on a full-time or a part-time basis. For further details, please refer to our web site:

<http://www.jcu.edu.au/astronomy>

I recently joined the staff in an adjunct capacity, in order to help with this major development and to supervise thesis research projects. After you have reviewed our web site, feel free to e-mail me if you would like to discuss a possible doctoral program. We are interested in accommodating a wide range of research topics.

Wayne Orchiston
James Cook University and Anglo-Australian Observatory
wo@aaoepp.aao.gov.au

/// The New Astronomy: Special Offer

A unique book featuring papers on astrobiology, astronomical history and sundials - and celebrating Woody Sullivan's 60th Birthday - is currently being

published by Springer, who are offering a special discounted price to IAU and ICHA members.

The New Astronomy: Opening the Electromagnetic Window and Expanding our View of Planet Earth is edited by Wayne Orchiston, and contains the following papers from the ‘Woodfest’ Conference which was held in Seattle in June 2004:

Points of View: Shadows, Photons, Planets, and Life (*Woodruff T. Sullivan, III*)

The Biological Universe Revisited (*Steven J. Dick*)

Contingency and the Cosmic Perspective (*Christopher Chyba*)

Grote Reber (1911–2002): A Radio Astronomy Pioneer (*K.I. Kellermann*)

Dr Elizabeth Alexander: First Female Radio Astronomer (*Wayne Orchiston*)

Radio Astronomy in Holland Before 1960: Just a Bit More than HI (*Richard Strom*)

Jodrell Bank and the Meteor Velocity Controversy (*A.G. Gunn*)

The Radiophysics Field Stations and the Early Development of Radio Astronomy (*Wayne Orchiston & Bruce Slee*)

Dark Matter and the Owens Valley Radio Observatory (*Marshall Cohen*)

The Discovery of Sgr A* (*Bruce Balick*)

“Radio Astronomy, Whatever That May Be.” The Marginalization of Early Radio Astronomy (*Richard Jarrell*)

Telescopes Lofted to Space: An Historical Chronology (*Peter Abrahams*)

The History of Space Astronomy: Reflections on the Last Three Decades (*Robert W. Smith*)

SAO During the Whipple Years: The Origins of Project Telescope (*David DeVorkin*)

The Transits of Venus and New Technologies: A Time to Reflect (*Ron Brashear*)

And the Remaining 22 Photons: The Development of Gamma Ray and Gamma Ray Burst Astronomy (*Virginia Trimble*)

Gnōmonikē Technē. The Dialer’s Art and its Meaning for the Ancient World (*James Evans*)

Light Work: Contemporary Artists Consider the Sun (*Rebecca Cummins*)

Introductory pages, biodata on the authors and an index bring the total number of pages in *The New Astronomy* to 344.

This book is currently in press, and copies are available at the special discounted price of US\$40 for orders received by 30 April 2005. This price includes postage and packing. Your personal check or a bank check or bank draft should be made out to the “Center for the Study of the Pacific Northwest”, and sent to:

Professor Bruce Hevly, University of Washington, PO Box 353560, Seattle, WA 98195, USA.

Include your name, full postal address, and your e-mail address. Note that orders received after 30 April will not be eligible for this special price and will be returned to the sender.

Wayne Orchiston
(wo@aaoepp.aao.gov.au)

/// News from the RAS Library

The Royal Astronomical Society Library in London has after many years of wishing to do so acquired a computerised Library Management System. The project started in February and at the time of writing (2004 November) there are about 7,000 records in the system, for all the Journals and the majority of the 'modern' (last 20 years or so) books. It is hoped to press ahead rapidly with the retroconversion and of course the Library has strong holdings in the History of Astronomy. Although books can only be borrowed by Fellows any member of ICHA would be more than welcome to use the Library for reference.

Please visit the RAS OPAC at <http://ras.heritage4.com>

Peter D. Hingley (E-mail: pdh@ras.org.uk)

/// 1655-2005: 350 Years of the Great Meridian Line by G. D. Cassini in the Basilica of St. Petronio in Bologna

The Department of Astronomy of the University of Bologna is organizing some events on the occasion of the 350 years of the Meridian Line in St. Petronio. A complete list of the events in 2005 (Cassinian Year), a webpage (in English) on the Meridian and many links related to famous meridian lines are available at the following address:

<http://www.bo.astro.it/universo/cassini/>

Fabrizio Bònoli (E-mail: fabrizio.bonoli@unibo.it)

/// Third Spring School on History of Science - History of Science and Publicizing: Cinema

Minorca Museum, Maó (Minorca), April 14th - 16th, 2005

Cinema began in the midst of a wealth of technical innovations that, at the end of the 19th Century, modified contemporary society's life and perception of science and technology. In fact, film can be analyzed from different points of view: as a technological development which promptly and efficiently permeated the cultural milieu, as a source of science and technology images and representations, or as a popularization vehicle for science. Accordingly, we think that film constitutes an essential field of study for historians as well as for other professionals such as educators, journalists, filmmakers, scientists, engineers, museum curators and archivists. As in previous occasions, our School is addressed to students, postgraduates and specialists of all these professional backgrounds.

This Third Spring School will delve into:

- 1) Cinema as a technological development: its origins and first stages as a means for research, documentation, artistic unfolding and science popularization;

- 2) The construction of a public image of science and technology in cinematographic fiction;
- 3) Scientific film as a pedagogical tool and as an agency for science popularization;
- 4) Resources and proposals developed in our geographical area in the context of the connections between film theory and practice and the public perception of science and technology.

For further information, please contact:

Spring School on History of Science
 Societat Catalana d'Història de la Ciència i de la Tècnica.
 Institut d'Estudis Catalans
 C/ del Carme, 47. 08001 BARCELONA
 Tel. 933-248-581 ; Email: mcamps@iecat.net

Alfons Zarzoso
 (from: rete@maillist.ox.ac.uk)

/// Inspiration of Astronomical Phenomena, 5th Conference (INSAP V)

Adler Planetarium & Astronomy Museum, Chicago, 26 June - 1 July, 2005
 CALL FOR PAPERS

Proposal Deadline: December 31, 2004

Proposals are invited for conference presentations at the Fifth International Conference on the Inspiration of Astronomical Phenomena (INSAP).

INSAP conferences explore the rich and diverse ways in which people of the past and present incorporate astronomical events into literary, visual, and performance arts. This emphasis distinguishes INSAP from other conferences that focus on archaeoastronomy, ethnoastronomy, or cultural astronomy. INSAP provides a mechanism for a broad sampling of artists, writers, musicians, historians, philosophers, scientists, and others to talk about the diversity of astronomical inspiration. INSAP V will be based at the Adler Planetarium & Astronomy Museum in Chicago from June 26 - July 1, 2005. Mornings and early afternoons are devoted to conference presentations. Afternoons and evenings will include field trips and artistic performances. Venues include the University of Chicago's Oriental Institute, the Art Institute of Chicago, and the Adler Planetarium.

Forms and further information are available on the INSAP website:

www.adlerplanetarium.org/INSAPV

Complete proposals (Cover Sheet, Abstract, CV) must be received by December 31, 2004. Emailed proposals are preferred. Proposals and questions should be sent to [<mailto:jlacy@adlernet.org>] INSAPV@adlernet.org or:

INSAP V, History of Astronomy Department

Adler Planetarium & Astronomy Museum

1300 South Lake Shore Drive, Chicago, Illinois 60605

(from: oldscope@yahoo.com)

/// HAD Meeting in Cambridge

University of Cambridge, England, 4-8 September, 2005

Introduction

The Historical Astronomy Division (HAD) of the American Astronomical Society will meet 4-8 September, 2005 (Sunday-Thursday), at the University of Cambridge, in England. This will be a joint meeting with the Division of Planetary Sciences (DPS) of the AAS. The HAD program will include nine, ninety minute sessions of papers. Four plenary sessions with the DPS will open with invited presentations of a historical nature. A Sunday evening reception will open the meeting; HAD papers will be on Monday, Tuesday, and Wednesday; with the conference DPS/HAD banquet on Wednesday; and on Thursday a final plenary session will be followed by tours of Cambridge sites relevant to our meeting.

The deadline for advance registration, reservation of accommodation, and submission of abstracts, is 1 July 2005. However, it is essential for planning the HAD sessions that speakers inform the papers committee of their proposals at an early date. AAS members will submit their abstracts directly to the AAS website by 1 July (in addition to informing the committee); HAD speakers who are not AAS members will have their abstracts submitted by the papers committee. At the date of this announcement, the registration forms are not yet available.

Call for papers

Proposals for presentations to the sessions are invited. A brief abstract, including duration and media needs, can be emailed to Peter Abrahams at <had2005@europa.com>

Papers will be limited to the subject of the history of astronomy, including the application of historical data to current studies. Papers can be as long as 30 minutes in length, including set up and questions, but we encourage those whose topics can be expressed in less time, to request the appropriate duration. A papers committee, composed of HAD officers, will review proposals for appropriate subject matter, and will assemble papers into thematic sessions. Poster papers are encouraged, and can be on a wider range of topics than spoken presentations.

The program

HAD Papers will be presented in the Umney Theatre, Robinson College, Grange Road.

The schedule for Monday, Tuesday, & Wednesday is as follows:

Joint morning plenary session, 9:00am to 10:30 (Sidgwick Road site).

Paper Session I, 11:00am to 12:30pm.

Paper Session II, 2:00pm to 3:30pm.

Paper Session III, 4:00pm to 5:30pm.

HAD posters will be on display for the entire three days, in the foyer areas near the Umney Theatre.

Two sessions are planned on the history of radio astronomy. At least one session is planned on the history of planetary sciences, and one on cosmology (keynote address by Helge Kragh). Other sessions will be announced.

The four DPS plenary sessions, including historic introductions organized by HAD, are as follows:

- Monday 5 September, DPS session on the Cassini-Huygens Mission, will open with Albert Van Helden, speaking on the Saturn observations of Huygens & Cassini.
- Tuesday 6 September, session on the Mars Explorer Mission, will feature Richard McKim, on observations of Martian dust storms.
- Wednesday 7 September, session on the Deep Impact Mission, opens with Michael Hoskin, speaking on Caroline Herschel's comet observations.
- Thursday 8 September, session on the SMART-1 Mission, will open with Peter Schultz, on impact hypotheses for lunar cratering.

The DPS conference will take place at the Music School and the Law School of the University, Sidgwick Road site.

The DPS conference continues through Friday. HAD attendees can attend a tour on Thursday; possible sites include the Whipple Museum of Scientific Instruments, and the Greenwich Observatory Archives.

Registration fees: \$290, one day \$145, for members of DPS, AAS, or RAS, until June 30, see registration form for non-member & student/emeritus rates and for accommodation fees.

Housing will be at St John's College and Robinson College. Details can be found at the DPS web site, address below.

We invite your participation in the 32nd Meeting of the Historical Astronomy Division.

The HAD Committee: Don Yeomans, Tom Williams, Sara Schechner, Ron Brashear, Dan Green and Peter Abrahams.

Questions can be addressed to: had2005@europa.com

DPS meeting homepage: <http://www-outreach.phy.cam.ac.uk/dps2005/>

The registration form will be available on that page in the near future.

/// ATS Annual Meeting

Cincinnati, Ohio, 7-10 October, 2005

The 14th Annual Convention of the Antique Telescope Society will be held in Cincinnati, Ohio, on Friday 7 October through Sunday 9 October 2005, with a tour of local observatories on Monday 10 October.

For further details refer to the ATS web site:
www.webari.com/oldscope/.
or e-mail the Honorary Secretary, Dr Walter Breyer, on: whbreyer@syclone.net

/// **African Astronomical History Symposium** Cape Town, South Africa, 8-9 November 2005

As one of the events surrounding the dedication of the Southern African Large Telescope (SALT), the Astronomical Society of Southern Africa is organizing a symposium on the history of astronomy in Africa, 8-9 November 2005, in Cape Town.

The symposium will cover all aspects and periods of astronomy in Africa, including ancient Egyptian astronomy, archaeoastronomy and ethnoastronomy, medieval Islamic astronomy, European scientific expeditions, colonial astronomy, and modern astronomical and astrophysical research in Africa.

More information is available at the symposium web site (web address shown below).

Those interested in participating in the symposium should contact:

Dr. Ian S. Glass, South African Astronomical Observatory, PO Box 9,
Observatory 7935, South Africa. Phone: (27) (21) 460-9327 or 447-0025,
FAX: (27) (21) 447-3639; Email: aaahs@sao.ac.za
Visit the website at <http://www.sao.ac.za/assa/aaahs>

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/// **Obituaries**

Dr. **Felix Alexandrovich Tsitsin**, the senior research fellow for the Sternberg Astronomical Institute of Lomonosov Moscow State University prematurely passed away on January 1, 2005. He was born in 1931 in the Yaroslavl province and since his early years had a great interest in astronomy and cosmology. In 1954, he graduated from Moscow University under the supervision of Prof. Parenago, then the leader of the Moscow school of stellar astronomy, and linked his scientific career with the Sternberg Institute. In 1972, he got his Ph.D. with a thesis on actual problems of star dynamics.

Being a person of great soul and broad erudition, Dr. Tsitsin possessed a very special talent for being a generator of non-trivial ideas in astronomy and physics. He

will be well remembered for his in-depth studies in dynamics of star systems and its physical basis. Competence and a broad spectrum of scientific interests were a hallmark of his studies in various areas of astronomy and adjacent fields. He received original results in the problem of SETI and Life in the Universe; in the problem of the comet-asteroid threat; in cosmogony of the Solar system; and many others. Just a few know that he was “five minutes” away from the fractal analysis and bases of synergetics. In the eighties, Tsitsin gave his main attention to research in the field of history both of philosophy of science and cosmogony of the Solar system, in particular developing the novel concept of the origin of comets and still mysterious tektites.

In co-authorship with his wife and collaborator, A.I. Ereemeeva, Tsitsin published the first in Russia (and, so far, the solitary one) university textbook *History of Astronomy: Main Stages of Development of the Astronomical Picture of the World* (Publishing House of the Moscow University, 1989). In 2004, he prepared his last monograph on sources and development of the cosmogonic hypothesis by O. Ju. Schmidt and his school, *Essays of the Modern Cosmogony of the Solar System (Sources, Problems, Horizons)*. All in all, since 1967 he published about 150 scientific contributions.

*Professor Yu. N. Efremov
Sternberg State Astronomical Institute*

CONTACT

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