



IAU COMMISSION C3 NEWSLETTER

HISTORY OF ASTRONOMY

Welcome to the winter solstice edition of the newsletter of IAU Commission C3 (History of Astronomy). This issue features the announcement of a new Project Group and reports of pre-existing Working Groups and Project Groups since the last newsletter in June 2020. It contains news of upcoming conferences, reports of recent meetings, a list of notable publications, and tables of content from a journal devoted to the history of astronomy. The newsletter also contains announcements of research and PhD opportunities in the history of astronomy as well as an introduction to a new Ourania Network. And of course, you will find news from members, announcements of awards, and obituaries.

We are excited to introduce some new sections to the newsletter. The “Making History” section includes reports on the Astronomy Genealogy Project (AstroGen), analysis of the Vatican Observatory’s guest book, and the rescue of a medieval manuscript by Lewis of Caerleon. In the “Oral History” section, there is a first-hand account of the founding of the *Journal of Astronomical History and Heritage*. And in an “Art & Exhibitions” section, you will learn about an avant-garde musical performance inspired by ancient Chinese and Western astronomers and an exhibition on astronomy in colonial South and Central America.

We wish everyone health and happiness in the new year. The next issue of the newsletter will be in June 2021. Please send our Secretary any news you would like us to include.

Sara Schechner, Secretary
Wayne Orchiston, President
Christiaan Sterken, Vice-President

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NEWSLETTER EDITOR

Sara Schechner schechn@fas.harvard.edu

Please email submissions, reports, and news for the next newsletter by June 1, 2021.

IAU Commission C3 Project Group for Historical Instruments, Archives, and Observatories

Sara J. Schechner (chair)

Organizing Committee

John Briggs, Ileana Chinnici, David DeVorkin, Ian Glass, Kim Sang Hyuk
Rajesh Kochhar, Kenneth Launie, Tsuko Nakamura, Wayne Orchiston, Pedro Raposo

Origins

The new Project Group for Historical Instruments, Archives, and Observatories of IAU Commission C3 has its origin in the Historical Instruments Working Group and the Archives Working Group of IAU Commission C41, which were dissolved upon the reorganization of the IAU in 2015. Both were reestablished in 2019, and merged in 2020.

Mission

The Project Group is devoted to promoting the research, documentation, and preservation of historical astronomical and astrophysical instruments and archives, the observing sites in which they were used, and related material culture. These instruments, archival materials, and objects may survive as tangible things in observatories, museums, educational institutions, libraries, and private collections, or they may be known only from early written documents and images. Since observatories incorporate scientific instruments in careful alignments and whose functions complement each other, we view astronomical observatories as scientific instruments in their own right. This Project Group is therefore also concerned with their history, documentation, and preservation (in ways respectful of their ongoing scientific mission). We are also interested in the material culture related to their functioning, which includes archives and books.

As a Project Group, our broad goals are:

1. To promote greater awareness by IAU members of the value of historical scientific instruments, archives, observatories, and material culture in understanding the history of astronomy and astrophysics and communicating this history to the public.
2. To bring together astronomers, historians, museum curators, educators, and other scholars who share an interest in the history of astronomical instruments and archives and to promote dialogue among them.
3. To encourage and support research on historical astronomical and astrophysical instruments, archives, and observatories by C3 members and others who may not be members of the IAU.
4. To encourage C3 members and others to present their research findings at conferences, workshops, and symposia, and in books, journals, websites, and other publications.

5. To liaise closely with other international groups with interests in the history of astronomical instruments, archives, observatories and related physical apparatus. These include but are not limited to the Scientific Instrument Commission (SIC) of the International Union of the History and Philosophy of Science and Technology; the Scientific Instrument Society (SIS); the Antique Telescope Society (ATS); the various sundial societies of North America, Europe, and elsewhere; and the Working Group for the Preservation of Astronomical Heritage (WGPAH) of the American Astronomical Society.
6. To organize or collaborate in organizing national or international conferences, seminars, and workshops on the history of astronomical instruments, archives, and observatories.
7. To encourage and assist in the documentation of collections of historical astronomical instruments, archives, observatories, and related material culture.
8. To collaborate with other like-minded bodies in the establishment of standards for what constitutes an historical object: whether it is representative of a class, or was directly involved in a specific instance of discovery.
9. To encourage and assist in the development of exhibitions or educational materials incorporating historical astronomical instruments and archival materials or related to their use.
10. To encourage and assist in the development of journals, books, and other media devoted to this topic.
11. To promote the protection and preservation of the material heritage of astronomy and astrophysics whether fixed or portable, ground-based or air and space borne.
12. To prepare up-to-date lists of recent publications on historical observatories, astronomical instrumentation, and archives.
13. To publish Progress Reports on the activities and achievements of the PG in the *Journal of Astronomical History and Heritage*.

The Project Group for Historical Instruments, Archives, and Observatories takes a broad view of what is an astronomical instrument and the material culture related to the practice of astronomy and astrophysics. We likewise consider historical astronomical archives to be those archives that are related to observatories, astronomers, instruments, projects, libraries, computers, and whatever can be of astronomical interest.

Astronomical instruments include:

- Instruments used for observing the sky and making measurements on celestial objects:
 - Those serving scientific purposes—e.g., gnomons, quadrants, cross staffs, astronomical rings and equatorial instruments, astrolabes, telescopes, eyepieces, piers, mounts, clock drives, meridian circles, transits, spectroscopes and spectrographs, astrographs, lenses, prisms, diffraction gratings, detectors (photographic, photoelectric, electronographic and solid state), radio astronomy facilities, astronomical regulators, chronographs, and so forth.

- Those primarily serving non-astronomers in their daily lives—e.g., sundials, nocturnals, perpetual calendars, and other time-finding and timekeeping instruments.
- Navigational and geodetic instruments such as backstaffs, octants, sextants, transits, chronometers, repeating and reflecting circles, azimuth compasses, and solar compasses.
- Observatories, their integrated physical and chemical laboratories, and the analytical equipment involved.
- Gnomons and meridian lines built into churches and other architecture.
- Mathematical instruments and computers used for analyzing data or solving astronomical problems mechanically, graphically, digitally, or electronically—e.g., dividers, sectors, Gunter's scales, slide rules, Millionaire calculating machines, digital and analog computers both for computation and control.
- Scientific models and teaching apparatus—e.g., celestial and terrestrial globes, armillary spheres, planetariums, orreries, and cometariums.
- Charts and records of astronomical positions, spectra, and photometry:
 - Celestial maps, globes, star finders
 - Tables, ephemerides, almanacs
 - Astronomical photographs and spectrograms on glass plates
 - Devices like fly spankers, photometers, blink comparators, and both position and photometric measuring engines used to study celestial objects of all types.
 - India ink and pens to write on them.
- Observatory equipment:
 - Observing chairs, ladders, red lanterns, logbooks, filters, telescope control consoles and paddles, signage.
 - Meteorological instruments
 - Geomagnetic and seismic instruments.
 - Darkroom equipment and supplies.
 - Physical and chemical laboratory equipment.
 - Optical workshop instruments.
- Indeed, any material thing used for an astronomical or astrophysical purpose can be considered within the purview of the Project Group as an astronomical instrument, even when it may have other non-astronomical functions. A pencil is to be taken seriously.

Astronomical archival materials include:

- Handwritten or typewritten texts on paper, papyrus, silk, parchment, clay tablets, or other support—e.g., manuscripts, documents, certificates, notes, letters, minutes, reports, administrative papers, invoices, logbooks, and engineering drawings.
- Drawings, sketches, printing plates, and artistic reproductions of whatever technique.
- Recording and computing materials—e.g., recorded data rolls and punched cards.
- Photographs.
- Non-paper materials, such as photographic plates, camera film, and audio tapes.
- Multi-media materials (audios, videos, etc.).
- Collections of signatures, coins, stamps, and so forth related to the history of astronomy.

Material culture related to the practice of astronomy may include:

- Objects that honor the observatory, the instruments, and the astronomers—e.g., souvenirs, postage stamps, toy models, paintings, and statues.
- Things that tell us something about the life of the observatory worker or astronomer—e.g., awards and medals, specialized clothing, crockery, an ID tag.
- Workshop tools used in the design, fabrication, and repair of astronomical and astrophysical instruments.



If you would like to join this Project Group, please contact Sara Schechner (schechn@fas.harvard.edu). We hope to make this a functional Working Group in the next Triennial.

Telescope John Winthrop of Harvard College used to observe the Transit of Venus from Newfoundland in 1761.

IAU Division C Inter-Commission C1-C3-C4
Working Group for Archaeoastronomy and Astronomy in Culture
2020 Update

Steven Gullberg (Chair)
Javier Mejuto (Co-chair)

WORKING GROUP MEMBERS (56)

Alves Brito, Alan	Antonello, Elio	Babu, G.S.D.
Badolati, Ennio	Belmonte Avilés, Juan Antonio	CAI, Kai
Corbin, Brenda	Dimitrijevic, Milan	Durst, Steve
Folgueira, Marta	Galindo-Trejo, Jesus	Gangui, Alejandro
García, Beatriz	Gautschy, Rita	González-García, A. César
Gullberg, Steven	Hamacher, Duane	Hayli, Abraham
Herrmann, Dieter	Hidayat, Bambang	Hockey, Thomas
Hoffmann, Susanne	Holbrook, Jarita	Hopkins, Andrew
Katsanikas, Matthaios	Krupp, Edwin	Liller, William
Liritzis, Ioannis	Lopez, Alejandro	Mallamaci, Claudio
Malville, I.	Mejuto Gonzalez, Javier	Mickaelian, Areg
Milone, Eugene	Mitton, Simon	Munro, Andrew
Norris, Raymond	Orchiston, Wayne	Preston, Robert
Rappenglück, Michael	Ros, Rosa	Ruggles, Clive
Simonia, Irakli	Stavinschi, Magda	Sterken, Christiaan
Strubbe, Linda	Sullivan, III, Woodruff	Trimble, Virginia
Ulla Miguel, Ana	Urama, Johnson	Valls-Gabaud, David
Vavilova, Iryna	Venturi, Tiziana	Verma, Murli
Wolfschmidt, Gudrun	Zotti, Georg	

WORKING GROUP ASSOCIATES (30)

Bates, Bryan	Bustamante, Patricio	Campioin, Nicholas
Davis, Margaret	Davis, Brian	Farmanyan, Sona
Frank, Roslyn	Fuller, Robert	Gomez, Cecilia
Goto, Akira	Henty, Liz	Iwaniszewski, Stanislaw
Kretzer, Olaf	Leaman, Trevor	Lima, Flavia
Martinez-Borravo, Monica	Mudrik, Armando	Munson, Gregory
Negru, Cristina	Pankenier, David	Parracho Silva, Fabio
Pasztor, Emilia	Pérez-Gutiérrez, Manuel	Rodas Quito, Eduardo
Romain, William	Saul, John	Šprajc, Ivan
Vickers, Doris	Wolf, Alexander	Ziółkowski, Mariusz

Our work that was outlined in the previous newsletter continues to progress well. We have had good thought, discussion, and advancement.

Committee 1 - to develop a comprehensive book regarding a survey of astronomy in culture. This will be similar in concept to the IAU's "Big Ideas in Astronomy" and is to be posted/published on the IAU website and made readily available to the public.

Committee 2 - to develop initiatives for public outreach regarding astronomy in culture.

Committee 3 - to develop initiatives for educators and others regarding examples of cultural astronomy found in literature, poetry, music, films, etc. As part of our affiliation with Commission C1 we work to develop a robust compilation of such cultural information regarding this aspect of astronomy.

Committee 4 - to develop initiatives to gather knowledge regarding astronomy in culture in developing nations, especially where such has not yet been fully explored. Much has been learned about archaeoastronomy in many parts of the world, but there still are geographical gaps in the collective knowledge of the field.

Committee 5 - to develop initiatives for the advancement and promotion of strong cultural astronomy research, publication, and collaboration among scholars throughout the world. This also is meant to attract those in other fields (such as archaeology, anthropology, and Native American studies) who explore ancient culture and inspire them to include astronomy in their research and assessments.

Significantly, we now have formed a 6th committee.

The IAU has tasked the WGAAC with leading a joint collaborative initiative with the Royal Astronomical Society of the United Kingdom. The initiative is in its formative stages and will address cultural sensitivities at world astronomical sites. Goals of the effort include developing a program to better educate astronomers as to Indigenous concerns and also provide insightful information to the public. We are just getting started, and I will look forward to updating you in the future about this important project.

Publications

My book, *Astronomy of the Inca Empire* by Steven R. Gullberg, briefly mentioned before, was published in August. I have attached the front cover. I've also included the text from the back cover here in case it could be useful:

Astronomy in the Inca Empire was a robust and fundamental practice. The subsequent Spanish conquest of the Andes region disrupted much of this indigenous culture and resulted in a significant loss of information about its rich history. Through modern archaeoastronomy, this book helps recover and interpret some of these elements of Inca civilization.

Astronomy was intricately woven into the very fabric of Andean existence and daily life. Accordingly, the text takes a holistic approach to its research, considering first and foremost the cultural context of each astronomy-related site. The chapters necessarily start with a history of the Incas from the beginning of their empire through the completion of the conquest by Spain before diving into an astronomical and cultural analysis of many of the huacas found in the heart of the Inca Empire.

Over 300 images—with more than 260 in color—are included throughout the book. They feature original artwork and photos captured during the author's extensive field research in Machu Picchu, the Sacred Valley, Cusco, and elsewhere, adding visual insight to a rigorous examination of Inca astronomical sites and history.

Ed Krupp wrote a very nice foreword.

Since the start of the triennium, publications by members of the Working Group fill 28 pages! Here is a small sample of these recent publications:

Juan Belmonte

- J. A. Belmonte, Essay review on *Land of the Shamans: Archaeology, Cosmology and Landscape*, ed. Dragos Gheorgiu et al., *Journal for the History of Astronomy* 50 (2019): 482-483.

Nick Campion

- Nicholas Campion, *The Archaeology of Cultural Astronomy: Material Culture, Astronomy and Power* (Oxford: British Archaeology Reports 2020).

Milan S. Dimitrijević

- Milan S. Dimitrijević, "Milutin Milanković and the Reform of Julian Calendar on Ecumenical Congress in Constantinople in 1923," pp. 87-92 in *The Life and Work of Milutin Milanković: Past, Present, Future*, Proceedings of an International Conference, 19-21 July 2019, Belgrade, ed. Slavko Maksimović (2019).

Roslyn Frank

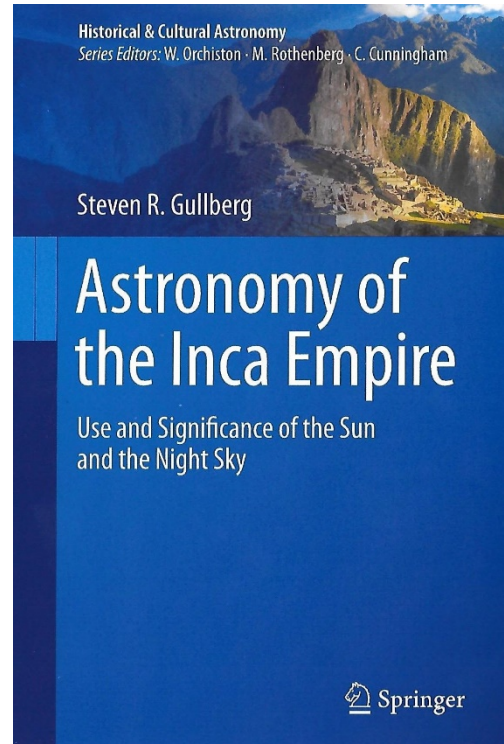
- R. M. Frank, "Collective social memory as manifest in skyscape narratives," *Journal of Skyscape Archaeology* 4, no. 1 (2018): 124-128.

Rita Gautschy

- R. Gautschy, "The Karnak Clepsydra: Votive Gift or Utilitarian Object?", pp. 171-183 in *Text-Bild-Objekte im archäologischen Kontext. Festschrift für Susanne Bickel*, ed. K. Gabler, R. Gautschy, H. Jenni, C. Reymond, and L. Bohnenkämper, *Lingua Aegyptia – Studia Monographica* (Hamburg: Widmaier Verlag, 2020).

Antonio Cesar Gonzalez Garcia

- A.C. González García and D. Fishwick, "Precinct, Temple and Altar in Roman Spain: Studies on the Imperial Monuments at Mérida and Tarragona," *Ancient West & East* 18 (2019): 61-63.



Akira Goto

- Goto, “House and Burial Orientations of the Hokkaido Ainu, Indigenous Hunter-Gatherers of Northern Japan,” *Mediterranean Archaeology and Archaeometry* 18 no. 4 (2018): 173-180.

Steven Gullberg

- S. Gullberg, “Cosmology of the Incas: Effects of Light and Shadow,” *Astronomische Nachrichten*, 340 nos. 1-3 (2019): 23-29.

Liz Henty

- Liz Henty, “Skyscape Archaeology: The Place of the Sky in the Academy,” chapter 1 in *Visualising Skyscapes: Material Forms of Cultural Engagement with the Heavens*, ed. Liz Henty and Daniel Brown (Oxford: Routledge, 2020).

Dieter Herrmann

- D. B. Herrmann, *Atlas astronomischer Traumorte: Entdeckungsreisen auf den Spuren der Sternkunde* (Stuttgart, Germany: Franckh-Kosmos, 2019).

Thomas Hockey

- T. Hockey, “Archaeoastronomy Sites of the USA: Likelihood of Preservation,” *Bulletin of the American Astronomical Society*, LII, 2020.

Susanne Hoffmann

- Susanne M. Hoffmann and Nikolaus Vogt, “Cataclysmic variables as possible counterparts of ancient Far Eastern guest stars,” *MNRAS* 494(2020): 5775-5786.

Jarita Holbrook

- Jarita Holbrook, “The Square Kilometre Array Art Exhibition,” in *Visualising Skyscapes: Material Forms of Cultural Engagement with the Heavens*, ed. Liz Henty and Daniel Brown (Oxford: Routledge, 2020).

Ioannis Liritzis

- Liritzis, N. Laskaris, A. Vafiadou, I. Karapanagiotis, P. Volonakis, C. Papageorgopoulou, and M. Bratitsi, “Archaeometry: An Overview,” *Scientific Culture* 6, no. 1 (2020): 49-98. DOI: 10.5281/zenodo.3625220

E. C. Krupp

- E. C. Krupp, “The Moon and Planets in Indigenous California,” *Oxford Research Encyclopedia of Planetary Science*, online publication April, 2019.
<<https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-52?rskey=txFCS3&result=1>>

Trevor Leaman

- T. M. Leaman and D. W. Hamacher, “Baiami and the Emu Chase: An Astronomical Interpretation of a Wiradjuri Dreaming Associated with the Burbung (Baiami-bu dhinawan yanhamanha: Gibbirgirraang

winhanga-durin-ya Wiradjuri Yarrudhumarra-bu Burbung),” *Journal of Astronomical History and Heritage* 22, no. 2 (2019): 225–237.

Alejandro Martín López

- Alejandro M. López, “Cultural Astronomy Perspectives on ‘Development,’” pp. 580-581 in *Astronomy in Focus – XXX*, Proceedings of the International Astronomical Union, 14, Symposium A30, ed. M. T. Lago (Cambridge: Cambridge University Press, 2020).

Javier Mejuto

- J. Mejuto and E. Rodas-Quito, “Etnoastronomía en Honduras: Retos y desafíos,” p. 29 in *Libro de resúmenes del I Congreso de Investigación en Ciencias Espaciales* (Tegucigalpa, Honduras: UNAH, 2019).

Armando Mudrik

- Armando Mudrik, “Luna e identidad entre migrantes europeos y sus descendientes en el sur de la región chaqueña argentina,” *Avá*, no 35 (in press, 2020).

Areg Mickaelian

- M. Mickaelian and S. V. Farmanyan, “Armenian Archaeoastronomy and Astronomy in Culture,” pp. 3- 13 in *Astronomical Heritage of the Middle East*, Astronomical Society of the Pacific Conference Series, 520 (Orem Utah, ASP, 2019).

Andy Munro

- A.M. Munro, “The Archeological Pertinence of Archaeoastronomy: Lessons Learned from Collaboration,” paper presented at the joint 2019 European Association of Archaeologists (EAA) and European Society for Astronomy in Culture (SEAC) conference in Bern, Switzerland.

Greg Munson

- Gregory E. Munson, Ray A. Williamson, and Bryan C. Bates, eds. *Before Borders: Revealing the Greater Southwest’s Ancestral Cultural Landscape*, Occasional Papers on Cultural Astronomy, 1 (Dolores, CO: SCAAS Multimedia Publications, 2020).

Wayne Orchiston

- W. Orchiston and M. Vahia, eds., *Exploring the History of Southeast Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities* (Cham, Switzerland: Springer International Publishers, forthcoming 2021).

David Pankenier

- D. W. Pankenier, “Parallel Planetary Astrologies in Medieval China and Inner Asia,” *International Journal of Divination and Prognostication* 1, no. 2 (2020): 157-203.

Emilia Pásztor

- E. Pásztor, “Visualisation of the Sky in Traditional Cultures of Eurasia and Its Ancient Representations,” in *Visualising Skyscapes: Material Forms of Cultural Engagement with the Heavens*, ed. Liz Henty and Daniel Brown (Oxford: Routledge, 2020).

Manuel Pérez

- Alonso Rodríguez Díaz, Manuel Pérez Gutiérrez, and David M. Duque Espino, “‘Estrechando el círculo’ de la *Fornacis* de Ptolomeo: El *oppidum* de Hornachuelos (Ribera del Fresno, Badajoz)” (‘Narrowing the Circle Down’ of Ptolemy’s *Fornacis*: The *oppidum* of Hornachuelos (Ribera del Fresno, Badajoz)), *Conimbriga Revista de Arqueología*, 58 (2019): 47-99.

Michael Rappenglück

- Michael A. Rappenglück, “Capturing Heaven and Earth by Counting, Measuring and Constructing: The Prehistory of Mathematics, Metrology and Astronomy in the Paleolithic,” pp. 88-126 in *Maß und Mythos, Zahl und Zauber - Die Vermessung von Himmel und Erde. Tagung der Gesellschaft für Archäoastronomie in Dortmund 2018*, ed. by Gudrun Wolfschmidt, 88-126, Nuncius Hamburgensis - Beiträge zur Geschichte der Naturwissenschaften, 48 (Hamburg, 2020).

William Romain

- W. Romain, “Subduing the Demons of Tibet: Geomantic Magic during the Yarlung Dynasty: A Landscape Archaeology Assessment,” *Time and Mind: The Journal of Archaeology, Consciousness and Culture*, forthcoming 2020.

John Saul

- John M. Saul, “Comment la mythologie permet de dater la préhistoire,” *Bulletin trimestriel du Group Ile-de-France de Mythologie Française*, lettre 114 (June 2020): 9-15.

Fabio Silva

- F. Silva, “A probabilistic framework and significance test for the analysis of structural orientations in skyscape archaeology,” *Journal of Archaeological Science* 118 (2020): article 105138.
DOI: <https://doi.org/10.1016/j.jas.2020.105138>

Irakli Simonia

- Irakli Simonia, “Ancient Astronomical Knowledge: The Unity of Diversity,” pp. 59-70 in *Astronomical Heritage of the Middle East*, ASP Conference Series, 520 (San Francisco: Astronomical Society of the Pacific, 2019).

Ivan Šprajc

- Ivan Šprajc, “Lunar orientations in the Maya architecture, pp. 27-44 in *Maya Cosmology: Terrestrial and Celestial Landscapes*, ed. Milan Kováč, Harri Kettunen, and Guido Krempel, Acta Mesoamericana, 29 (Munich: A. Saurwein, 2019).

Ana Ulla

- E. Pérez-Fernández, B. Martínez García, F. Braña-Rey, and A. Ulla-Miguel, “O ceo na pedra. Un proxecto de innovación educativa para o Ensino Secundario, no eido da astronomía cultural,” *III Xornadas de Educación Patrimonial de Galicia*.

David Valls-Gabaud

- C. Sterken, J. Hearnshaw, and D. Valls-Gabaud, eds., *Under One Sky: the IAU Centenary Symposium*, IAU Symposium 349 (Cambridge: Cambridge University Press, 2019).

Irina Vavilova

- V. S. Savchuk, N. M. Kushlakova, and I. B. Vavilova, “Nikolai Kibalchich in the History of World Rocket-Space Technics: Discussion Questions of Domestic and World Historiography,” *Space Science and Technology* 25, no. 6 (2019): 70-83. <https://doi.org/10.15407/knit2019.06.070>

Gudrun Wolfschmidt

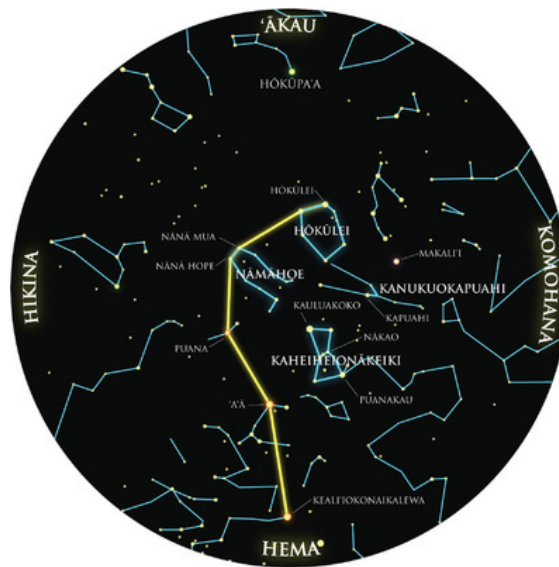
- Gudrun Wolfschmidt, ed. *Maß und Mythos, Zahl und Zauber: Die Vermessung von Himmel und Erde*. (Measure and Myth, Number and Magic: Measuring Heaven and Earth), Proceedings der Tagung der Gesellschaft für Archäoastronomie in Dortmund 2018, Nuncius Hamburgensis - Beiträge zur Geschichte der Naturwissenschaften, 48 (Hamburg: Tredition, 2020).

Mariusz Ziółkowski

- Mariusz Ziółkowski, “The Moon and Planets among the Inca and Other Pre-Hispanic Andean Peoples,” in *The Oxford Research Encyclopedia of Planetary Science* (Oxford: Oxford University Press, 2020). doi: 10.1093/acrefore/9780190647926.013.83

Georg Zotti

- Georg Zotti and S. Mohammad Muzaffari, “New Light on the Main Instrument of the Samarqand Observatory,” *Journal for the History of Astronomy* 51 no. (2020): 255–271.



Hawaiian star map

Status Report on the *Biographical Encyclopedia of Astronomers* 3rd Edition

The *Biographical Encyclopedia of Astronomers* is pleased to announce the Editorial Board for the third edition, including 6 IAU C3 members (indicated by *):

EDITORS-IN-CHIEF

Philip Nicholson, Department of Astronomy, Cornell University, Ithaca, NY, USA
Jennifer Bartlett,* Fellow, American Astronomical Society, USA

SECTION EDITORS

BEAII revisions—Virginia Trimble,* University of California, Irvine School of Physical Sciences, Irvine, CA, USA
Pre-20th century—Jordan Marché II, Department of Astronomy, University of Wisconsin-Madison, Madison, WI, USA
Radio—Wayne Orchiston,* University of Southern Queensland, Toowoomba, Queensland, Australia
Infrared—Robert “Bob” Gehrz, Department of Astronomy, University of Minnesota, Minneapolis MN, USA
Planetary—Joseph “Joe” Veverka, Department of Astronomy, Cornell University, Ithaca NY, USA (ret'd)
Optical—Gerry Gilmore,* Professor of Experimental Philosophy, Institute of Astronomy, University of Cambridge, Cambridge, United Kingdom
Theory—Marc Lachièze-Rey, University of Paris Diderot, CEA Saclay Service, Gif-sur-Yvette Cedex, France
High-Energy—Ralph Wijers,* Director, Anton Pannekoek Institute for Astronomy, University of Amsterdam, The Netherlands

CONSULTING EDITOR

Thomas A. Hockey,* Department of Earth Science, University of Northern Iowa, Cedar Falls, IA, USA; Editor-in-Chief of BEA I and BEA II.

BEA III Project Group

In addition, an IAU C3 **Project Group on the *Biographical Encyclopedia of Astronomers*** is forming. Its mission will be to advise the editorial board for the 3rd edition by

- reviewing existing biographies and proposed biographies, as requested
- identifying biographies that need revision or replacement
- proposing additional astronomers for inclusion
- recommending authors for specific assignments
- suggesting guidelines for inclusion and completeness

so that the history-of-astronomy community will have an authoritative, comprehensive, and unprejudiced source of essential biographical information.

So far, the Project Group consists of:

Chair	Thomas Hockey, USA
Vice Chair	Jennifer Bartlett, USA
IAU C3 President	Wayne Orchiston, Australia
Members	Wolfgang Dick, Germany Iryna Vavilova, Ukraine Bjørn Pettersen, Denmark Milan Dimitrijevic, Serbia Javier Mejuto Gonzalez, Honduras Rajesh Kochhar, India Mohammad Mozaffari, Iran Tsuko Nakamura, Japan Christian Nitschelm, Chile Johnson Urama, Nigeria Endre Zsoldos, Hungary Petr Hadrava, Czech Republic

If you are interested in serving in this capacity, please contact chair, Thomas Hockey.

With the editorial board complete and the project group in formation, the editors are soliciting articles for inclusion. If you are aware of a 20th century astronomer who should be included in this work or a pre-20th century astronomer who was missed in earlier editions, please complete the Google Form available at <https://forms.gle/WaxoYGfoMrkDx1B27>.

Your favorite astronomer will be added to the list of potential articles to be written; the appropriate section editor will make the final decision for inclusion. For BEAIII, subjects of new articles must be deceased at the time of publication; otherwise the publication and its potential subjects will become completely unmanageable. The editors anticipate finishing the list of proposed articles by February 2021. Writing will continue throughout the year.

The editorial board looks forward to seeing your submissions.

Respectfully,
Jennifer Lynn Bartlett, co-Editor-in-Chief
Biographical Encyclopedia of Astronomers
jennifer@bartlettastro.com
1 December 2020

The Astronomy Genealogy Project

Joseph S. Tenn (Director)

The Astronomy Genealogy Project (AstroGen) was launched at <https://astrogen.aas.org/> on 25 July 2020, the 159th anniversary of the award of the first three Ph.D. degrees in the United States, one of them astronomy-related. The launch was a major step in the progress of the project, which I began working on in January 2013, immediately after its approval as a project of the AAS Historical Astronomy Division (HAD). Many others have helped, especially Associate Director Arnold H. Rots.

1. What is AstroGen?

In academic genealogy, your parent is your thesis advisor. There are other such projects, most notably the Mathematics Genealogy Project (MGP), which served as our role model. We have tried to take advantage of our much later start (the MGP dates back to 1996 and was well underway before it migrated to the web) to provide more services. Also, our scope is more tightly defined.

AstroGen is built around the doctoral thesis (dissertation). Currently, only those who completed an astronomy-related thesis or who supervised one are included. A person's web page gives a link to a home page or obituary of the person, the degree, university, and year of the degree, and the name(s) of the advisor(s) and mentor(s) of the thesis research. We define a mentor as someone who was an unofficial or de facto advisor to the doctoral research. For those who are in AstroGen because they supervised an astronomy-related thesis, but did not complete one themselves, we list only the highest degree, university, year, and major subject. The largest group in this category earned doctorates in physics, but there are also many with degrees in geology, mathematics, atmospheric science, computer science, chemistry, and other fields. As we go back further in time, we find an increasing number who did not earn doctorates in any subject. Examples include pioneer radio astronomers Martin Ryle and John Bolton, whose highest earned degrees were bachelor's degrees, and F. W. Bessel, who earned no degree but is in AstroGen because he supervised Argelander's Ph.D.

We have had to make many decisions, of which the most difficult was the question of what constitutes an "astronomy-related" thesis. See the FAQs on the website for how we handled these. See also [Tenn, J.S., 2016. Introducing AstroGen: the Astronomy Genealogy Project. *Journal of Astronomical History and Heritage*, 19\(3\), 298-304.](#)

2. What have we accomplished?

As of early December 2020, there are 34,348 "astronomers" in the database. This number includes 57 who earned two highest degrees, at the doctoral, master's, or bachelor's level, and another 88 who earned *cotuitelles*, doctorates awarded jointly by two universities for one thesis. With just a small number of volunteers gathering data, nearly all of it online, we began by concentrating on the countries that were easiest to work with. These are primarily countries where most theses are in English or at least in western languages. At this time we believe that our list is "nearly complete" for 27 polities, although some have not been updated for a year or two.

Highest degrees

Astronomy-related doctorates	29,489
Other doctorates	879
Master's	29
Bachelor's	21
No degree	3
Not yet determined	3,927
Total	34,348

Some of those who earned two doctorates earned a first or second one in a field far removed from astronomy—in theology, medicine, or law, for example. The famous Belgian/Dutch astronomer M. G. J. Minnaert earned his first doctorate in biology before switching to astronomy. One person who received a Ph.D. in astronomy in 2009 earned a second one in accounting in 2015. Since we are not interested in these other degrees, we restrict much of our data collection to those who earned astronomy-related doctorates. Here are the current numbers by location of the degree-awarding university, together with the number of degrees awarded per million population. This table includes only astronomy-related doctorates in the 27 polities for which we believe we have “nearly complete” coverage.

	Astr-related doctorates	Deg/million
United Kingdom	4,580	67.5
Netherlands	1,152	65.8
United States	15,641	47.3
Sweden	423	41.1
Finland	208	37.8
Australia	944	36.7
Canada	982	25.7
Spain	1,189	25.4
Ireland	125	25.5
Denmark	140	24.1
Greece	254	23.7
New Zealand	108	21.2
Estonia	24	18.5
Israel	172	18.5
Norway	83	15.4
Serbia	66	9.6
Iceland	2	5.0
Argentina	251	5.6
Mauritius	5	3.8
Chile	52	3.0
South Africa	153	2.6
Hong Kong	13	1.7
Iran	30	0.4
Colombia	6	0.1
Pakistan	15	0.1
Nigeria	10	0.0
Ethiopia	4	0.0

Unsurprisingly, the countries producing the most degrees relative to their populations are those whose universities attract a lot of international students. We also have more than 2200 astronomy-related doctorates from Germany in AstroGen, more than 300 from India, and smaller numbers from several other countries that are not “nearly complete”. Obviously, we need more help to expand to the rest of the world. We especially need volunteers with some knowledge of the languages and academic cultures of Russia, Brazil, Mexico, and most of the countries of Asia. We have gathered nearly all of our data online, but that has been facilitated by our ability to negotiate the websites of libraries and national databases. France is a special case. We have compiled data from more than 2500 French theses, but we have not yet entered them into the online database because of our difficulties deciding how to handle the many recent mergers of the French universities. We are now getting some help from French astronomers, and we expect to be able to enter the theses soon.

One of the features of AstroGen is that we provide some information about the universities. Each astronomer web page has the name (in English) of the university at the time the degree was awarded, but this name is a link to a university page that provides the names of the university over time in both English and the local language(s) and also a link to the latest successor university's home page.

From the list of 27 polities in the table above, most of which have all or most of their theses in English, the table below shows the universities that have provided the most astronomy-related doctorates. In each case, the modern university total includes degrees granted by its predecessors. Although Germany is not yet complete, one German university, which is “nearly complete” makes the top ten:

1	University of California, Berkeley	758
2	California Institute of Technology	722
3	University of Cambridge	653
4	Heidelberg University	631
5	University of Arizona	598
6	Harvard University	573
7	University of Chicago	496
8	University of Manchester	477
9	UCL	461
10	University of Maryland, College Park	446

Please keep in mind that this ranking is restricted to the 27 countries listed above, plus most of Germany. If our French colleagues tell us that all of the universities in Paris should now be considered one university, then it may rank first. We have no idea how many astronomy-related doctorates have been produced by the largest universities in China or Russia.

3. Where do we go from here?

By now it should be clear that, aside from keeping things up-to-date, our main goal is to add the graduates of many more universities and countries to our database. Please consider volunteering or suggesting to your colleagues that they do so. We currently have one volunteer, Tsuko Nakamura, collecting data on Japanese theses, but he could use some help. We have no one working on other Asian countries at present.

Our second goal is to improve the website. The American Astronomical Society has funded the project until now, and it has spent a substantial sum on the three generations of programmers who built the site. The AAS also provides web hosting. As soon as we can raise funding for more programming time, we intend to greatly improve the “family trees” on the site and also provide live access to the kind of statistics compiled laboriously for the tables above.

We welcome your additions, updates, and comments. Please send them to astrogendirector@aas.org.

Medieval Astronomical Manuscript “Saved” by the British Library

Seb Falk

A stunning fifteenth-century scientific book, made by the Welsh astronomer-physician Lewis of Caerleon, has just been purchased – and fully digitised – by the British Library after its export into private hands was blocked by the UK government.

Lewis of Caerleon (d. c. 1495) studied medicine at Cambridge University, and possibly also at Padua. He was a sought-after physician in the 1480s and 1490s, serving both the warring royal families of York and Lancaster; he probably helped to broker the marriage of Henry VII and Elizabeth of York, which ended the Wars of the Roses. During the tumultuous reign of Richard III (1483-5) he was imprisoned in the Tower of London. Even there, though, he continued making astronomical observations and calculations. In later life he assembled several books of astronomical texts and tables, some for presentation to Oxford and Cambridge colleges. His own personal note/reference book also survives at Cambridge University.

The newly purchased manuscript (now British Library [Additional MS 89442](#)) was a presentation copy for an institution or patron, perhaps even a member of the royal family. It was owned by the Earls of Macclesfield from the eighteenth century until its sale to a private dealer in or shortly after 2004. When it was sold in 2019, the owner applied for an export licence. According to the UK *Export of Objects of Cultural Interest (Control) Order 2003*, the export of any cultural item produced at least 50 years before the date of export requires such a licence. The licence may be refused where an item is considered to be of national importance. In each case, the Export Licensing Unit notifies a group of expert advisers (normally directors or curators of national collections), giving them an opportunity to object to the item’s export. If an objection is raised, the item is considered by a [Reviewing Committee](#) consisting of a permanent panel of eight art experts and antiquaries. For each item the Committee considers, they seek the opinion of three independent assessors. I was one such assessor in this case.

Export may be blocked on one (or more) of three criteria, known as the “Waverley criteria” after Lord Waverley, who set up the Reviewing Committee in 1952:

1. *Is the item so closely connected with our history and national life that its departure would be a misfortune?*
2. *Is it of outstanding aesthetic importance?*
3. *Is it of outstanding significance for the study of some particular branch of art, learning or history?*

The decision whether to block an export may not be influenced by any other factors, such as the knowledge that a UK institution is interested in acquiring the item, the intended export destination of the item, or the conditions under which it might be kept there.

If the Committee recommends that export should be blocked, they state a fair price for the item, usually matching the offer made by the foreign buyer. They specify a deferral length, normally two to six months, for a UK institution to make a bid for the item. This deferral may be extended to allow an interested institution to mount a fundraising campaign. The process is designed to balance the protection of UK cultural heritage against the legitimate commercial interests of private individuals and dealers. How well it functions is debatable: Even when the Reviewing Committee does impose an export deferral, most items do ultimately end up being exported, because no institution expressed a serious interest, or because an interested institution could not raise sufficient funds.

In the case of the Lewis of Caerleon manuscript, the Committee agreed that it met both the first and third Waverley criteria: It is of national importance, and it is of outstanding significance for the history of science. On 13 March 2020 the Culture Minister issued a [temporary export bar](#), with a price of £300,000. Despite the administrative and financial difficulties that 2020 has presented, the British Library was able to purchase the manuscript, [with assistance from a number of donors](#). It was catalogued, digitised, and [made available online](#) in November.

The manuscript is truly a prize piece. Although other books by Lewis of Caerleon do survive, none are anything like as impressive as this one. It is still in its original embossed leather binding, is richly embellished with decorated initials in blue and red ink, and incorporates many carefully drawn diagrams (Figures 1 and 2). Perhaps more importantly, it contains a number of texts and tables that do not exist anywhere else. Taken together, they show Lewis to have been an enthusiastic observer, computer and collector of his predecessors' works. For example, the book opens with Simon Bredon's (trigonometrical) table of arcs and chords, produced around 1340, which had been thought lost. Many of Lewis's notes compare the results of earlier astronomers, such as al-Battānī, Jean de Lignières or John Holbroke.

As with no other medieval astronomer, the manuscript allows us to see the progression of Lewis of Caerleon's work. He marked new and improved works, different versions of tables and instructions for their use. He did not copy them himself, but personally signed them off. The book also shows the development of his interest in lunar parallax and eclipses, with new methods for computing their magnitude and multi-layer interpolation tables. We can follow his calculations step by step as, for example, he computed an eclipse on the afternoon of 16 March 1485, using the parameters of Richard of Wallingford. He marked some of his tables as having been drawn up during his confinement in the Tower of London.

This manuscript promises to be able to tell us much about the state of astral sciences in late medieval England: the importance of astrology at the early Tudor court; networks of scientific practitioners; and shifts in methods of astronomical calculation in the century before Copernicus. Now that it is online, it is available for historians anywhere in the world to study. [One project](#) based in Cambridge is already underway. Hopefully we will hear much more about Lewis of Caerleon in the not-too-distant future.

[Seb Falk](#) is a historian at Cambridge University. His first book, *The Light Ages*, which tells the story of medieval astronomy through the life of a fourteenth-century monk, was published in 2020 by Allen Lane (UK) and W.W. Norton (USA).



Figure 1. Binding of the work by Welsh astronomer Lewis of Caerleon. British Library Add MS 89442.

Learn more via Zoom on 3 March 2021, 1-2 Pm GMT

In the MEDIEVAL ENCOUNTERS SEMINAR

LAURE MIOLO (Cambridge)

“An astronomer at work: Lewis of Caerleon (d. c. 1495)
and his personal notebook”

<https://www.hist.cam.ac.uk/event-series/medieval-encounters>

Next page

Figure 2. A view inside the rescued work by Welsh astronomer Lewis of Caerleon. British Library Add MS 89442.

Vatican Observatory Guest Book

Robert J. Macke SJ
Curator of Meteorites
Vatican Observatory

In a display cabinet in the corridor outside my office lies a book. This book contains signatures of the hundreds of people who have made a visit to the Vatican Observatory over the years. (Figure 1) A quick perusal of the book reveals several notable figures in the history of astronomy, the Catholic Church, popular culture, and more. I would often spot one of these names and show it to Br. Guy Consolmagno, the director of the Vatican Observatory. "This looks like Arthur C. Clarke. I wonder what prompted his visit?" (It turns out that Sir Arthur was a friend of Fr. George Coyne, former director of the Observatory, and would often visit when he was in Rome.) He suggested that I write about my findings in the *Sacred Space Astronomy* blog sponsored by the Vatican Observatory Foundation. Thus began the weekly [Specola Guestbook column](#) and my project of systematically cataloging the signatures in the book.



Figure 1. The Vatican Observatory guest book in its display case. Visible on this page are the signatures of Luigi Volta (astronomer and great-grandson of the physicist Alessandro Volta), Dorothea Klumpke Roberts (astronomer and first woman to receive a PhD in the sciences), Herbert H. Turner (astronomer and seismologist who discovered deep-focus earthquakes), George E. Hale (astronomer who spearheaded construction of several major observatories), and Eduard Study (mathematician for whom Study quaternions are named).

Even the first page contains such people as Hendrik Lorentz (Nobel laureate; visited April 6, 1908) and Elis Strömngren (April 24, 1908; father of the astronomer Bengt Strömngren). Even apart from names found in textbooks, a surprising number of the other visitors are identifiable through simple internet searches. Of the 230 signatures between 1907 and 1925, I found at least basic biographical information for 83 percent of them. (Even though the Observatory has existed since 1891, the guest book begins with 1907. If there is an earlier book, I have not been able to locate it.) Given historic gender disparity, there are few names of women in the early pages of the book, but they are not absent. One such example is Dorothea Klumpke Roberts (Dec 8, 1908), the first woman to receive a Ph.D. in the sciences.

The highest concentration of noteworthy visitors tends to be in association with events. The first such event in the book is the first IAU General Assembly (May 1922). This event was also concurrent with the general assembly of the International Union of Geodesy and Geophysics (IUGG), and attendees from both meetings visited the Vatican Observatory together. Signatures from the two events span four pages in the guest book, and include such figures as Ejnar Hertzsprung, Henry Norris Russell, Harlow Shapley, Heber Doust Curtis, Benjamin Baillaud, and more. The Eighth IAU General Assembly in 1952 also took place in Rome, adding names such as Jan Oort, Gerard Kuiper, Bengt Strömngren, and Henrietta Swope.

In May of 1957, the Pontifical Academy of Sciences held a meeting on stellar populations. In association with this event, our guest book includes the signatures of Lyman Spitzer, William Fowler, Fred Hoyle, Georges Lemaître, Edwin Salpeter, and others. Lemaître and Hoyle, who were scientific rivals, then took a traveling vacation together.

Occasionally one comes across an unusual concentration of names. One example is the visit on May 31, 1937 of Georges Lemaître, Peter Debye, Hugh Stott Taylor, and others. Upon sharing this finding with Dominique Lambert (Lemaître's biographer), I learned that the following day (June 1) was the formal inauguration of the Pontifical Academy of the Sciences. These visitors were members of the Academy and were present for the ceremony.

Sometimes one finds an individual whose visit coincides with some identifiable part of their biography. William Wallace Campbell's visit in July of 1914, was made en-route to Russia, where he planned to observe a solar eclipse to test



Figure 2. Astronaut Frank Borman signing the guest book on February 15, 1969. Fr. Daniel O'Connell SJ (director of the observatory) observes.

Einstein's general theory of relativity. (Due to confiscated equipment and bad weather, the experiment was a failure.) Walter G. Cady, the inventor of the first quartz crystal oscillator, visited in 1923. That year, he was traveling throughout Europe to perform an international comparison of frequency standards. The astronaut Frank Borman and his family visited on February 15, 1969, just two months after his historic orbit of the Moon in December 1968. (Figure 2) This was during a European goodwill tour in celebration of the accomplishment.

Being the Vatican Observatory, the institution has also hosted several significant Catholic figures. These include Agostino Bea SJ (May 9, 1935) and Alfredo Ottaviani (April 13, 1936), both of whom later became cardinals and made important contributions to the Second Vatican Council. There is a separate parchment that Popes sign during their official first visit to the Specola. (Figure 3) This has been signed by every Pope since Pius XI in 1935, when the tradition began (except for John Paul I who did not live long enough to schedule a visit).

The information that is collected for this project will eventually be accessible to historians who wish to search for particular individuals in their research. In the meantime, those with casual interest can follow the weekly posts on the *Sacred Space Astronomy* blog, at <https://www.vofoundation.org/blog/series/specola-guestbook/>. Names associated with the First General Assembly of the IAU occupied twelve separate posts.

I would also appreciate help in completing this project. There are a number of names yet to be identified, for some of whom I have already found brief references (such as authorship of a paper) but no actual information. Anyone interested in perusing the portion of the guest book that has already been catalogued, who might help fill out missing information, or who has further inquiries is invited to contact me at rmacke@specola.va.



Figure 3. Pope Francis signing the parchment during his visit on July 14, 2013.

The Founding of *JAHH*

Wayne Orchiston

Recently, a colleague asked Cliff Cunningham, one of the four Associate Editors of the *Journal of Astronomical History and Heritage (JAHH)*, about the founding of the journal back in 1998. Here is his question to Cliff and my response.

"I would like to know what were the reasons behind the founding of a new periodical (JAHH) beside JHA (then already active), and what are the main differences between them."

Obviously, Cliff could not answer your query as his involvement in *JAHH* came many years after it was founded, and I never discussed this matter with him or the other Associate Editors. However, some members of the Editorial Board are aware of the circumstances as I sounded them out beforehand, and they were present at the 1997 IAU General Assembly where I presented the *JAHH* concept to Commission 41 (History of Astronomy) and received their blessing and support -- so much so that the then-President of the Commission (Dr Steven Dick, USA) agreed to write the lead-off paper for the first issue.

I first came up with the idea of a new international history of astronomy journal in 1997. For some years, a number of us had trouble getting our research papers into the *Journal for the History of Astronomy*, which was the only professional history of astronomy journal in existence at that time, not because our papers were sub-standard but because they were not on topics favoured by that journal. So never mind, we published our papers in other outlets, but mainly (1) *Quarterly Journal of the Royal Astronomical Society (QJRAS)*, and *Vistas in Astronomy (VA)*, both of which published papers across the full spectrum of astronomical research.

Then two things happened almost simultaneously that created a crisis for us: the Royal Astronomical Society decided to close down the *QJRAS*, and *VA* was sold by the owners (who were astronomers) to Elsevier, and this commercial company decided to no longer publish history of astronomy papers. So where could we publish our research?

At that time an Australian amateur astronomer and professional geochemist named John Perdrix (who, by the way, was also an IAU member and member of Commission C41) ran a journal of his own called the *Australian Journal of Astronomy (AJA)*, and published this as a hard copy journal (with annual subscriptions) through his own publishing company, Astral Press. Both amateur and professional astronomers, mainly from Australia and New Zealand, published in the *AJA*, but I was the only professional astronomer on the Editorial Board. John and I had similar interests in history of astronomy, so we published papers on this topic in the *AJA*.

In 1997 the IAU General Assembly was held in Kyoto, Japan, and John and I flew together on the long flight from Australia to Osaka. On the flight we started by discussing the crisis that had emerged with the *QJRAS* and *VA*, and by the time the aeroplane landed in Osaka we had decided to close down the *AJA* and replace it with the *JAHH* (I came up with the journal name, and the initial Editorial Board). John would be Managing Editor and I the Papers Editor, and the journal would be published twice-yearly by Astral Press as a hard-copy journal, accessed by subscriptions. We decided that our aim would be to support the publication of papers on astronomical history and heritage from throughout the world, not just the 'glamour nations', England, the USA, and those in Europe. So we would aim to encourage history of astronomy research internationally. John and I put together a proposal paper which we discussed with various colleagues at that General Assembly, then the idea was discussed and approved at a business meeting of Commission 41. The rest is history -- as they say.

So *JAHH* started off as a private venture, legally owned by John but run by the two of us, and supported by a powerful group of international professional astronomers. Eventually we were receiving too much copy so we went from 2 to 3 issues per year. Then John developed terminal cancer, but before he died he passed ownership of *JAHH* over to me, and James Cook University in Townsville, Australia (where I worked at the time) became the publisher. After John died we (the Editorial Board) decided to make *JAHH* an exclusively e-journal, and to give it a 'make-over', so we

drastically increased the size of the pages so as to use larger A4 pages (this benefitted many of the images authors wanted to include in their papers), to introduce coloured photographs, and use of colour in page design and layout (for headers, headings, figure captions, tables, etc.). The aim was to make *JAHH* more visually appealing and modern-looking, but without threatening in any way the academic integrity of the research papers.

So that's the story about the formation and early history of *JAHH*. We aim to foster history of astronomy worldwide, and even if a research paper only deals with local (as opposed to national or international) astronomical history, so long as that history can be presented in a national or international context and/or addresses a theoretical issue of interest to historians of astronomy then it is usually suitable for publication in *JAHH*. We have also moved to specialise, so now accept many papers in ethnoastronomy, and we are the leading journal in the world for papers on the history of radio astronomy (both research areas that I just happen to be very active in).

Now we find that history is repeating itself, and from 2021 we will move to 4 issues per year instead of the current 3.

Meanwhile, a number of commercial publishers have approached me about buying *JAHH* but I have always resisted, after seeing what Elsevier did to *V&A*. One of the things that infuriates me as a research astronomer is to be told I must pay to access research papers (even some of my own papers) in journals that are now owned by commercial publishers. It is OK for those astronomers on big salaries and with large research budgets, but for those of us on modest or pathetic salaries, with limited financial support, this is a tremendous dis-service to international research. Consequently, I am determined, as long as I live, to make sure that *JAHH* is an open access e-journal that is free of charge to everyone.

I hope this answers your question. Best ...

Wayne

Professor Wayne Orchiston
National Astronomical Research Institute of Thailand, and Centre for
Astrophysics, University of Southern Queensland (Australia)
President, IAU Commission C3 (History of Astronomy)
Co-founder and Editor, *Journal of Astronomical History and Heritage*
Co-editor, Springer's Series on Historical and Cultural Astronomy

The Moon's Silence: Music and Word under the Chinese Sky

*Avant-garde performance imagining a dialogue on historical ideas
between scientists in ancient China and the West*

Rubén García Benito

[The Moon's Silence: Music and Word under the Chinese Sky](#) offers us an avant-garde vision of China's past poetic, musical and scientific production, in which melodies from medieval Europe are combined with the sound of the Altai mountains, celestial poems from more than 2000 years ago or the Tao of the zither, ending with music and texts from the 20th century: 2500 years of science, literature, philosophy and music.

[Todos los Tonos y Ayres](#) articulates this performance around a chronological selection of scientific texts whose authorship ranges from the earliest philosophers of nature to contemporary science fiction writers, including both male voices and works in which Chinese women astronomers, poets and painters of the past reflect on gender issues around art, science and the roles of women in the society they inhabited. The appearances of scientific texts of Western origin recreate a sort of imaginary dialogue between philosophers of the nature of both traditions through time and space, discovering some concepts that were enunciated in the East centuries before being formulated in the West.

The reading of the texts goes hand in hand with the interpretation of Chinese music that includes both ancient works (contemporary to our medieval, renaissance and baroque production) and classical and contemporary pieces, interpreted with Chinese instruments and, as in the readings, with interventions by Western voices that constitute a meeting point between China and Europe.

In support of the entire soundscape, the show is accompanied by the projection of images that will provide the ideal visual content to serve as a framework for the rest: Chinese pictorial and calligraphic works, as well as facsimiles of scientific documents in Chinese, including the oldest extant star map in the world.

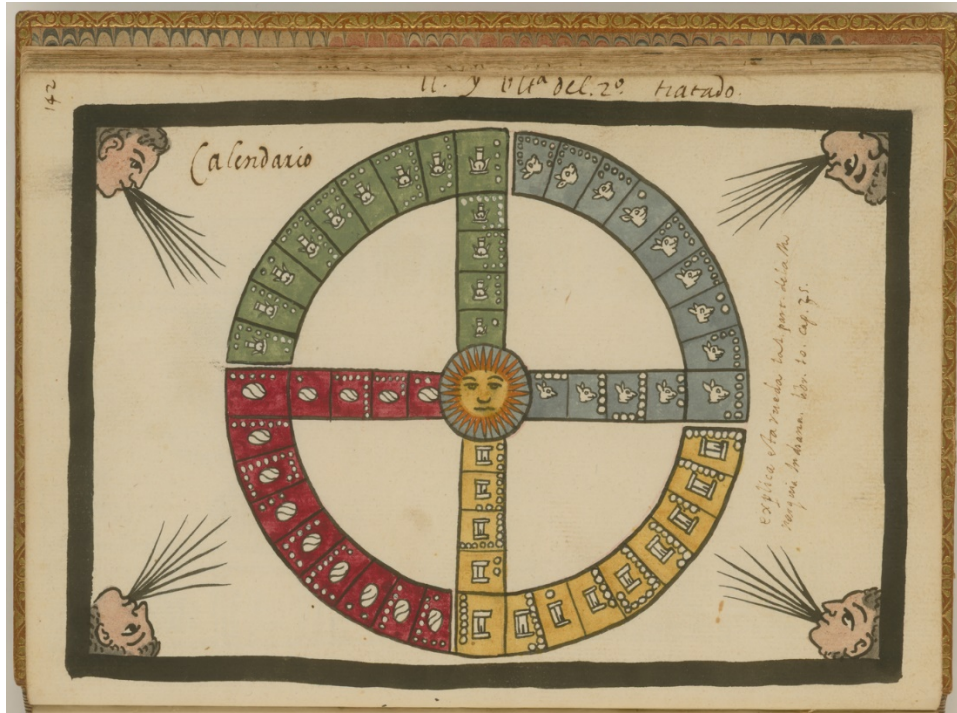
The Moon's Silence: Music and Word under the Chinese Sky puts voice, music and image to authors such as Qu Yuan 屈原 (4th century BCE), Wang Bi 王弼 (3rd century), Zhang Zai 张载 (11th century), Hildegard von Bingen (12th century), Galileo Galilei (17th century), and Wang Zhenyi 王贞仪 (18th century).

Through a threefold musical, poetic and visual narrative, this performative show aims to open new paths towards understanding the study of nature by showing a history of science independent of Western science, thus broadening the horizons of the form and methods of the human exploration of the phenomena of the world around us.



Abigail Horro and Rubén García Benito are founders of *Todos los Tonos y Ayres* (诸宫调, *All Keys and Airs*), the first Spanish ensemble to specialize in the research and interpretation of early Chinese music. The ensemble focuses its efforts on making known the historical and musical relations that took place in the past between Europe and Asia, as well as the presence of European music beyond its own borders, always with the utmost respect and historically informed rigour towards the musical manifestations of all the cultural contexts they work in.

They have carried out various artistic and research projects in collaboration with organisations such as the Confucius Institute, the City of Arts and Sciences or the Cervantes Institute. Their proposals have led them to work on the development of [major projects on the interculturality of early universal music](#), for which they invite prestigious collaborators to participate. Their interest in the dialogue between artistic expression and new sounds have lead them also to participate in avant-garde and highly transversal festivals, such as the International Festival of Sound Art and Electro-acoustic Music. In 2018 they made their international debut in China with their intercultural early music project [The Emperor's Harpsichord: after the legacy of Diego de Pantoja](#), tour organized by the Cervantes Institute and the Spanish Embassy. This program will be recorded in early 2021 under IBS Classical label.



CONSTELLATIONS

Reimagining Celestial Histories in the Early Americas

Virtual Exhibition at the John Carter Brown Library

<https://jcblibrary.org/exhibitions/constellations>

Winter 2020-2021

Sara J. Schechner

Nearly ninety rare books, maps, and prints from the collections of the John Carter Brown Library in Providence, Rhode Island are presented to the public in a remarkable exhibition entitled, *Constellations: Reimagining Celestial Histories in the Early Americas*. The exhibition, which is guest curated by Thomás Haddad (Universidade de São Paulo-Brazil) and Nydia Pineda (University of California, San Diego), focuses on the different roles of astronomy in the colonial experience, especially in the Spanish and Portuguese Americas. All materials shown were known to have been held in colonial libraries, and many were published in Mexico City, Lima, Buenos Aires, and other colonial cities as early as the 16th and 17th centuries. Indigenous creations and missionaries's reports are not overlooked. Taken together, these works show how astronomy and its scientific instruments were not only tools of discovery, time measuring, and scholarship, but also of memory, legitimacy, control, religion, and imperialism.

The exhibition opens with this epigram quoting John Berger (1926-2017), the award-winning novelist and art critic:

Those who first invented and then named the constellations were storytellers. Tracing an imaginary line between a cluster of stars gave them an image and an identity. The stars threaded on that line were like events threaded on a narrative. Imagining the constellations did not of course change the stars, nor did it change the black emptiness that surrounds them. What it changed was the way people read the night sky.

The exhibition can be viewed in two different formats that let the visitor follow different storylines among clusters of stars, which stand for different books and documents. You may scroll down the [home page](#) to see the exhibition in a traditional format divided into thematic sections with introductory labels followed by assorted books, maps, and drawings related to that topic. However, this version of the exhibition is not complete. I highly recommend the second format—a digital, immersive experience in which the visitor creates their own path. You start by clicking [here](#) and follow the link to "[Explore the Connections between Books](#)." A menu offers different constellations to explore: Flight, Fantasy, and Knowledge; Learning to Navigate the Skies; Instruments of Conversion; Prognostications in Print; Instrumental Pursuits; Graphical Inventions; Imperial Projections; Matters of Dispute; Writing History; and Fear and Hope. Click on one of these topics and a constellation appears with an introduction to the theme. When you select a "celestial object" to look at, a digital version pops up and you can turn pages and learn how the book, map, or print supports the theme. You may also create your own constellations by grouping materials of your choosing.

The exhibition is thought provoking and well worth spending an hour exploring.



At top of previous page, Juan de Tovar, SJ, Tovar Codex, showing the Aztec Tonalpohualli Calendar.

Here at bottom, Pedro Nunes, Tratado da sphaera (Lisbon, 1537), first Portuguese translation of Sacrobosco.

ANNOUNCEMENTS

Ourania**Network for Astronomical Cultures in the Ancient and Premodern Worlds**

We are a new interdisciplinary research network dedicated to studying astronomical cultures of the ancient and premodern world.

Study of the night sky was pervasive throughout the premodern era, yielding astronomy as a technical science; but it was equally germane to myth, art, and highly imaginative literature. Viewed both as an archive of past events and a conduit to knowledge of the future, the stars were also vectors for the transmission of inter-cultural influences and provided a forum for interdisciplinary and experimental thought.

The Ourania Network brings together scholars of the pre-modern world to explore technical, cultural and historical aspects of engagement with the night sky. Our aim is to build a fuller understanding of astronomy itself as a culturally embedded discourse and practice in the ancient and premodern world. We begin on Thurs. 28th January 2020 with a series of monthly exploratory Zoom sessions on 'The Astronomer in Action,' each session consisting of one or two short presentation(s) followed by discussion and finishing up tidily within one hour. The aim is to start to explore and map out connections within our group in an informal and collaborative atmosphere.

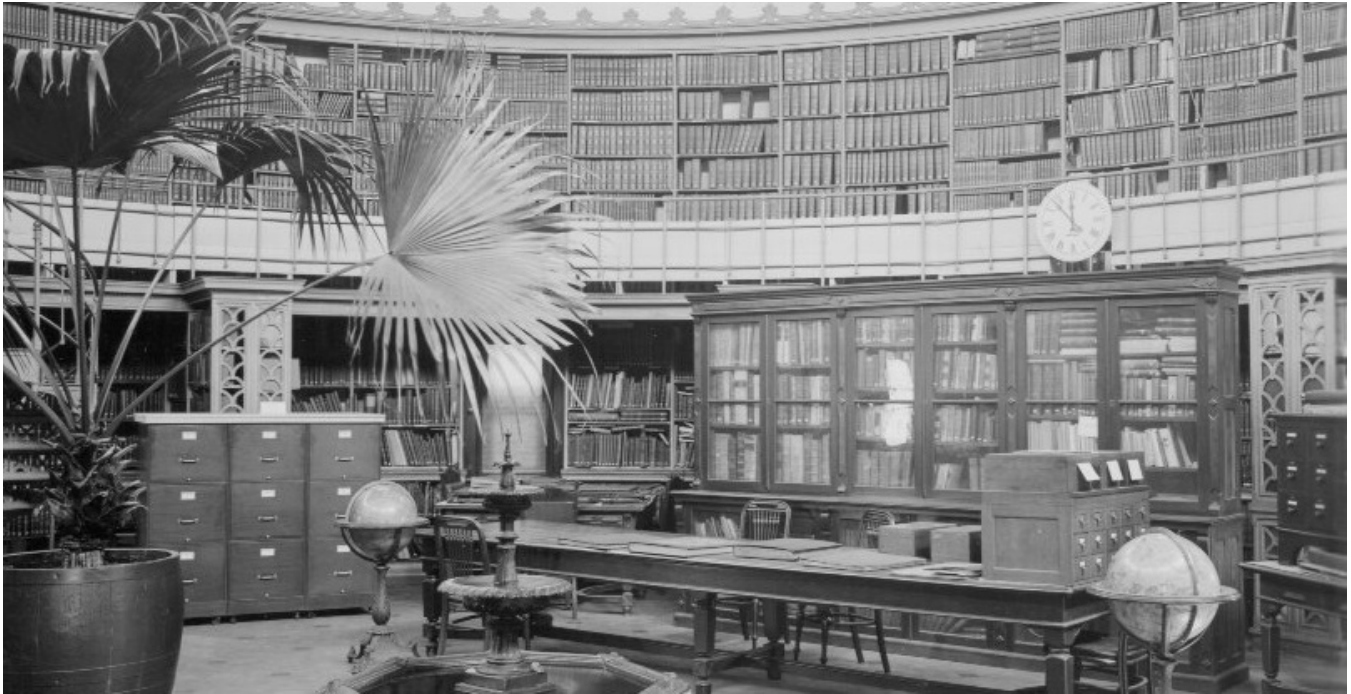
If you would like to join us and/or find out more, you are most welcome to drop us a line at the following email address: networkourania@gmail.com

We wish all IAU newsletter readers a healthy and happy New Year!

Karen ní Mheallaigh and Jessica Lightfoot



John Gower, *Confessio Amantis* (Bk. vii, ll. 1309-18). Morgan Ms M 126, f. 158 v, showing Aldebaran over the city.



US Naval Observatory Collections Available

The US Naval Observatory (USNO) Library staff, with support from colleagues across the astronomical community, are working to make USNO collections more broadly accessible. A refreshed Urania, USNO's online library catalog, is now publicly accessible! Any user can access Urania at <http://1535.sydneyplus.com/genieplus/final/portal.aspx?lang=en-US> on any browser, with more faceted searching newly available. Though log-in is required to access full-text options, searching the catalog is unrestricted. The catalog link may also be found on USNO's new landing page: <https://www.cnmoc.usff.navy.mil/Organization/United-States-Naval-Observatory/The-James-M-Gilliss-Library/>.

We are also working to ensure the scientific work performed at USNO during the 20th century is preserved for future research at the National Archives (NARA). In the spring, we began a major effort to transfer historic collections of paper-based scientific collections to NARA, ahead of their December 31, 2022 deadline; after which NARA will only accept electronic records. Hundreds of boxes of scientific papers have been inventoried and prepared for shipment ahead of that deadline.

At the same time, we're ensuring archival materials in USNO's own collection are accessible to all. While USNO's participation in historic astronomical events such as the 19th century Transits of Venus are well-known, the unique materials in our collection relating to these efforts are perhaps less so. Over 300 items related to the 1874 and 1882 Transits of Venus, including observation notebooks, correspondence, photographs, drawings, and readouts from scientific instruments at expedition stations near and far, are now fully inventoried. While full archival processing and description is still in progress, we are excited to make this historic collection available for researchers in the near future. An inventory of a collection of USNO-based observation notebooks dating from the 1840s will be complete shortly.

As a new member for the Consortium for the History of Science, Technology, and Medicine (CHSTM), USNO is re-committing to becoming a destination for scholarly research in the history of science. Scholars may apply through the CHSTM for support for short research trips to use member collections. Of course, anyone can write directly to the USNO Library and request an appointment to study materials in the USNO collection. For circulating items, USNO

participates in interlibrary loan and can scan or loan materials as requested. Questions may be directed to Morgan Aronson, Librarian.

Morgan Aronson, Librarian
morgan.aronson@navy.mil
 Mike O'Connor, Archivist
michael.b.oconnor.ctr@navy.mil

Part-Time History of Astronomy Doctoral Degrees from the University of Southern Queensland, Australia

Wayne Orchiston

The University of Southern Queensland (USQ) in Toowoomba, near the state capital of Brisbane, began a vibrant part-time off-campus PhD program in Astrophysics and in History of Astronomy in January 2013 when it inherited the distance learning PhD programs (and also the Master of Astronomy) degree from James Cook University (JCU) when that University closed down all of its Astronomy programs.

Five of my students transferred from JCU to USQ, and all have now graduated. Over the years I have successfully supervised the following JCU and USQ students (listed here with their nationality, the thesis title, the degree awarded and university, and the year of graduation):

- Jenny Andropoulos (Australia, *The Published Astronomical Output of Melbourne Observatory: A Critical Evaluation*, PhD, JCU, 2013)
- Stella Cottam (USA, *The Popularization of Astronomy in the United States of America Subsequent to the Transits of Venus of 1874 and 1882 and the Total Solar Eclipses of 1868, 1869 and 1878*, PhD, JCU, 2011)
- Glen Cozens (Australia, *Nicolas-Louis de La Caille, James Dunlop, and John Herschel. An Analysis of the First Three Catalogues of Southern Star Clusters and Nebulae*, PhD, JCU, 2008)
- Clifford Cunningham (USA, *The First Four Asteroids: A History of their Impact on English Astronomy in the Early Nineteenth Century*, PhD, USQ, 2014)
- William Dorsey (USA, *Kepler's "War on Mars" and the Usurpation of Seventeenth Century Astronomy*, DAstr, JCU, 2011)
- Jana Ruth Ford (USA, *The Tennessee Meteorite Impact Sites and Changing Views on Impact Cratering*, PhD, USQ, 2015)
- Martin George (Australia, *Very Low Frequency Radio Astronomy in Tasmania to 1985: A Historical Perspective*, PhD, USQ, 2019)
- Steve Gullberg (USA, *The Cosmology of the Inca Huacas*, PhD, JCU, 2009)
- Ihsan Hafez (Lebanon, *Abd al-Rahmān al-Ṣūfī and His Book of the Fixed Stars: A Journey of Re-discovery*, PhD, JCU, 2010)
- Andy Munro (USA, *The Astronomical Context of the Archaeology and Architecture of the Chacoan Culture*, PhD, JCU, 2011)

John Pearson (USA, *The Role of the 40 Foot Schaeberle Camera in the Lick Observatory Investigations of the Solar Corona*, PhD, JCU, 2009)

Peter Robertson (Australia, *John Bolton and the Nature of Discrete Sources*, PhD, USQ, 2016)

Jefferson Sauter (USA, *All the Heavens Just and True: Cultural and Historical Astronomy in the Manuscript Collections from Georgia*, PhD, USQ, 2019)

Ronald Stewart (Australia, *The Contribution of the CSIRO Division of Radiophysics Penrith and Dapto Field Stations to International Radio Astronomy*, PhD, JCU, 2009)

Edward Waluska (USA, *Quasi-Stellar Objects, the Owens Valley Radio Observatory, and the Changing Nature of the Caltech-Carnegie Nexus*, [2010])—Thesis completed but not yet revised before the student died from cancer.

Harry Wendt (Australia, *The Contribution of the CSIRO Division of Radiophysics Potts Hill and Murraybank Field Stations to International Radio Astronomy*, PhD, JCU, 2008)

All of these former students have published research papers based on their thesis work (in some cases many papers), and Stella Cottam, Cliff Cunningham, Steve Gullberg, Peter Robertson, and Harry Wendt have books in print or in press, while Jana Ruth Ford and Ihsan Hafez have books in preparation. All of these astronomers also presented papers and/or displayed poster papers at national and/or international conferences (including IAU General Assemblies) while engaged in their doctoral studies.

Now that all of the students in the initial batch have graduated, I am recruiting a new group of part-time off-campus doctoral students, and in conjunction with other USQ Adjunct staff we can accept a wide range of thesis topics. From a personal viewpoint, in addition to theses on the history of radio astronomy, or on cometary astronomy, solar eclipses and the development of solar physics, historic telescopes and observatories, and transits of Venus, I'm particularly keen to supervise theses in ethnoastronomy and in the history of meteoritics (however, in order to cater for a much wider range of research topics than I can address, the University of Southern Queensland can appoint further adjunct staff with other areas of expertise).

The first student in my new batch of USQ PhD students is John Drummond, who is the Immediate Past-President of the Royal Astronomical Society of New Zealand and the current Secretary of the Society. John is a secondary school science teacher with a MSc (Astronomy), and back in January 2020 he began researching the history of New Zealand cometary astronomy for his PhD. Since the USQ PhD in History of Astronomy is an Astronomy qualification (through the Faculty of Health, Engineering and Science) specializing in History of Astronomy (not a History PhD specializing in Astronomy), all of my USQ PhD students must already have a Masters in Astronomy, or an equivalent qualification, and/or a record of employment in professional astronomy.

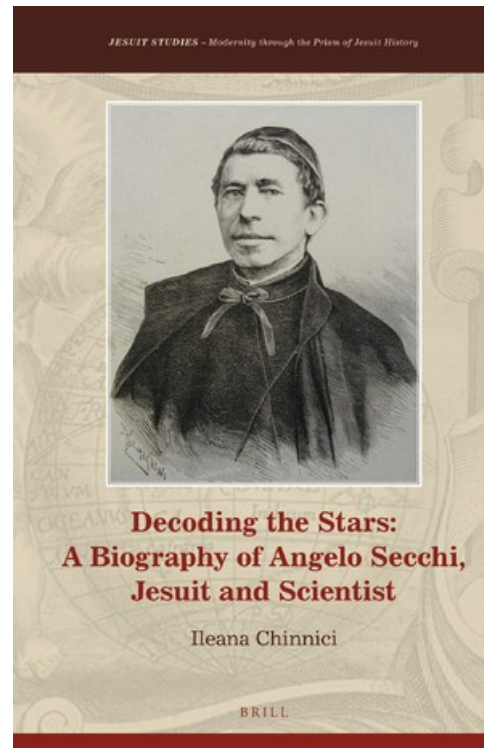
If you are interested in discussing a USQ part-time History of Astronomy or Ethnoastronomy PhD please email me.

Professor Wayne Orchiston
Centre for Astrophysics, University of Southern Queensland, Australia
wayne.orchiston@gmail.com

CONGRATULATIONS!

Ileana Chinnici received the 2021 Donald E. Osterbrock Book Prize for Historical Astronomy for her book, *Decoding the Stars: A Biography of Angelo Secchi, Jesuit and Scientist* (Brill, 2019). The Prize is awarded biennially by the Historical Astronomy Division of the American Astronomical Society for a recent book judged to advance or promote the field of history of astronomy. The award announcement reads:

“This is the first full-length biography of Italian astronomer Angelo Secchi (1818-1878) in English and will become the definitive work on this important figure in the history of astrophysics. Secchi became well known as part of the transition from classical positional astronomy to astrophysics. He was a pioneer of spectroscopy and its application to stellar classification and solar physics. At the 25th anniversary of Secchi’s death, George Ellery Hale praised his contributions “to the present widespread interest in Astro-physical research.” Chinnici’s book covers not only the research that Secchi is remembered for, but also the broader environment in which he worked. Based on extensive research in Italian and Vatican archives, it is richly illustrated with many color and black-and-white photographs.”



NEWS FROM MEMBERS

CLIFFORD J. CUNNINGHAM

University of Southern Queensland Astrophysics Group,
residing in Tuscon, Arizona, USA

I have published two papers this year, each of which was the result of a 5-year research project: “Herschel’s Spurious Moons of Uranus: Their Impact on Satellite Orbital Theory, Celestial Cartography and Literature,” *Journal of Astronomical History & Heritage* 23(1) (2020) 119-162; and “‘Dark Stars’ and a New Interpretation of the Ancient Greek Stellar Magnitude System,” *Journal of Astronomical History & Heritage* 23(2) (2020) 231-256.

I was a contributing author to the *Britannica Kids’ Encyclopedia*, which was published in late 2020.

The proofs for my next book have been completed. *Asteroids*, for Reaktion press, will be published in May 2021. It is my seventh book on asteroids, a world record for any author on the topic of asteroids. I am editor of Vol. 4 of Bloomsbury’s Cultural History of the Universe. My volume deals with the Enlightenment period; most of the contributed chapters have been completed. As a Series Editor for Springer’s Astronomical & Cultural History books, I am involved in several book projects.

I continue to write the history of astronomy column for *Mercury* magazine (Astronomical Society of the Pacific), as I have done for every issue since 2002. A total of 90 columns to date. Here are 4 columns I wrote for this year: “The ‘Black Death Scapegoat’ Conjunction of 1345” (vol 49, no. 1); “Was There a Comet in 17 BCE?” (vol. 49, no. 2); “A Trip Through the Solar System in 1460” (vol. 49, no. 3); and “Cicero and the Great Year” (vol. 49, no. 4).

STEVEN R. GULLBERG

Program for Archaeoastronomy and Astronomy in Culture,
College of Professional and Continuing Studies, University
of Oklahoma

Since the last newsletter I was asked to speak about archaeoastronomy five times between August and October. I spoke to the International Association of Physics Students (IAPS), at the International Workshop for Astronomy and Relativistic

Astrophysics (IWARA), at the XIX Meeting of Physics (Lima, Peru), at the meeting of the History of Science Society (HSS), and to the Pre-Columbian Society of the Penn Museum, University of Pennsylvania.

HAROLD A. MCALISTER

Center for High Angular Resolution Astronomy (CHARA),
Georgia State University

I published *Seeing the Unseen: Mount Wilson’s Role in High Angular Resolution Astronomy* as part of the AAS/IOP Astronomy Series. The book is a history of stellar interferometry as carried out from MWO since 1919 with considerable background of the field going back to Thomas Young’s famous double slit experiment. It is being released to coincide with the centennial of the resolution of Betelgeuse by Francis Pease and John Anderson using the 20-ft Michelson-Pease Interferometer at the 100-inch on the evening of December 13, 1920.

TSUKO NAKAMURA

Information Sciences, Teikyo-Heisei University, Toshima,
Tokyo

As many know, the AAS launched the Astronomy Genealogy Project (AstroGen) around 2013, and by 2016, it had already collected data of more than 20 thousand astronomers from 10 countries. Last summer Prof. Tenn requested us, Japan, also to participate in the AstroGen, so I am organizing data collection from the Japanese astronomical community.

My book-- *Deciphering the ancient starry sky from the Kitora tumulus star map --- A history of star maps and catalogues in Asia* (in Japanese)—was published by the University of Tokyo Press in 2018. Two other recent articles are “Japanese lunar drawings, maps and photographs before the 1870s,” in *Selene’s Two Faces* (Brill, 2018) and “History of Japanese asteroid studies --- A hundred years since discovery of Hirayama families (in Japanese, with English abstract), published in *Tenmon Geppou* (The Astronomical Herald) in 2019. [Details are in the Notable Publications section of this newsletter.]

I have also submitted an article on “Unified dating analysis of star maps and catalogues in Asia” to *JAHH*.

SARA J. SCHECHNER

Collection of Historical Scientific Instruments and Department of the History of Science, Harvard University

With everything going virtual because of the pandemic, I have had more time to pursue curatorial projects and create online media.

This fall I worked with two students to catalogue a collection of engineering drawings and blueprints rescued from Harvard’s Oak Ridge Observatory. They have been conserved, digitized, and are now part of the Collection of Historical Scientific Instruments (CHSI). The blueprints feature the telescopes and observatory buildings used by the Harvard College Observatory at its many observing stations around the world.

With two more students, I documented part of CHSI’s extensive sundial collection as I worked on the second volume of the Adler Planetarium’s sundial collection. This group included many Japanese and Chinese, and a few Korean, portable sundials. I learned enough Chinese characters to be able to read the hours, points of the compass, Feng shui directions, and the traditional 24 seasons!

With staff from the Harvard Museums of Science and Culture, I worked on HMSC Connects!, a weekly feature that showcased extraordinary things from each museum every week on a different theme, along with related hands-on activities. These included Beauty and the Beholder; Healing Hands; Home Sweet Home; *Women’s Work; *Big Cats, Little Cats; Top Dogs; World in Color; *E Pluribus Unum--Out of Many, One; and *Summer Solstice. The topics with a * introduced a different astronomical instrument in the Collection of Historical Scientific Instruments for each episode. These included a grand orrery, an octant, the Bruce astrograph, and a sundial. You can find them at <https://hmsc.harvard.edu/extraordinary-things>. I also did a podcast for HMSC Connects! on “Historic Challenges for Harvard Women of Science,” which talked extensively about the women computers of the Harvard College Observatory as well as my own experiences at Harvard-Radcliffe in the 1970s. The podcast is online [here](#) with a transcript.

Another digital production was a live stream video with curator Pedro Raposo of the Adler Planetarium. It was part of the museum’s series Adler Astronomy Live and featured the remarkable collection of sundials as well as my recent book, *Time of Our Lives: Sundials of the Adler Planetarium* (available for purchase at the [museum shop](#)). The recording can be watched on the Adler’s YouTube channel [here](#).

This coming spring I will again teach my seminar “Starstruck! The History, Culture, and Politics of American Astronomy.” Among the guests, Jay Pasachoff will share his Operation Moonwatch experiences and Paul Horowitz his SETI research.

PIETER C. VAN DER KRUIT

Kapteyn Astronomical Institute, University of Groningen

Just before the end of 2020, I was notified by Springer that my two wider-audience biographies of Kapteyn and Oort have appeared. They are much more affordable than the academic versions. They are offered as a set with a discount also. You can find them at this site for [Springer Biographies](#). [Details are given in the Notable Publications section of this newsletter.]





JAMES CAPLAN

1942-8 May 2020

It is with great sadness that we learned of the death of our colleague James Caplan, astronomer emeritus at the Marseille Astrophysics Laboratory, on Friday May 8, 2020 in Marseille, in his 78th year.

James Caplan was born in Chicago in 1942. He completed a PhD in Astronomy at Northwestern University. He arrived in France in 1970, at the invitation of Georges Courtes, director of the Laboratoire d'Astronomie Spatiale in Marseilles, and he had remained there since. He had American and French dual citizenship.

His areas of interest have been instrumentation (in particular Fabry-Pérot), the interstellar medium (in particular the regions of ionized hydrogen around massive stars - or HII regions), and very generally photometry. In the 1980s he developed a piezoelectric scanning Fabry-Pérot interferometer, which was integrated into a nebular spectrograph. This original instrument made it possible to measure the intensity of various lines emitted by the HII regions. Two series of studies (very frequently cited) were carried out using this instrument:

- 1- a study of reddening and extinction by interstellar dust (in the HII regions of the Magellanic Clouds and the Galaxy).
- 2 - a study of the abundance gradients of oxygen and helium in galactic HII regions.

At the same time, James discussed methods of reducing observational data made with Fabry-Pérot interferometers.

Later, he became interested in the formation of massive stars in the vicinity of the HII regions. These studies use stellar photometry in the visible and near IR. They also use IR data obtained with the APEX and Herschel satellites.

James has also always been interested in the history of science, in particular the history of the Marseille Observatory (from its beginnings in the late 17th century until circa 1970), and older instruments. He had the scientific archives digitized and cataloged the historical instruments. For example, he prepared the reassembly of the Observatory's Large Meridian Telescope; and he took numerous photos of all the instruments already in the Observatory's museum and created an excellent catalogue, which is still regularly distributed at LAM. James directed the great "Telescopium" exhibition at the Palais Longchamp. The Large Meridian Telescope was one of the highlights of this exhibition.

James, who often came across as a low-key man, actually had an open and warm personality. He was very attentive to others and his interest was genuine. His original personality left no one indifferent and he was endowed with an insatiable intellectual curiosity that commanded admiration. He really enjoyed passing on his knowledge, but with all the humility that was his. His very Anglo-Saxon humor was more than appreciated, as was his generosity, always very discreet, but very real.

Lise Deharveng, Françoise Maxant,
Georges Comte, and Gérard Lemaître
Excerpt from the IAU Membership Directory

Translation from the French by the Newsletter Editor

A. E. L. DAVIS

**7 December 1928 (UK)–23 November 2020
(Canberra, Australia)**

Dr Davis was educated at Badminton School, Bristol (UK), and at St Anne's College, Oxford. After a period teaching mathematics, in a school and in numeracy classes organised by local education authorities, Davis's interest in the history of the subject led to registration as a Research Student at Imperial College, London, under the supervision of Prof A. R. Hall.

The subject of Davis's doctoral thesis, and indeed all the research on Kepler that followed from it, was 'A mathematical elucidation of the bases of Kepler's

laws'. The thesis was accepted by the university of London in 1981. The external examiner was Prof D. T. Whiteside (Cambridge). Working with two distinguished Newton scholars in this way gave Dr Davis a lifelong determination to distinguish sharply between the approaches adopted by Kepler and by Newton.

Dr Davis, who was also an active member of the British Society for the History of Mathematics and of the Fawcett Society, was the author of articles about various aspects of Kepler's astronomy in *Centaurus*, *Archive for History of Exact Sciences*, *Journal for the History of Astronomy* and elsewhere.

Dr Davis served as Co-vice Chair of the IAU's Johannes Kepler working Group set up in 2009. It was largely thanks to the efforts of Dr Davis that the text of the modern edition of Kepler's Complete Works, published under the auspices of the Bavarian Academy of Sciences (Beck, Munich, 1938-2010), are now available online.

Dr Davis will be much missed as an active member of the history of science community and specifically as one who had the mathematical skills required to follow up historical insights concerning astronomy.

J. V. Field



TIBERIU OPROIU

1939 – 22 May 2020

On May 22nd 2020 passed away our dear and esteemed colleague, Senior Researcher Dr. Tiberiu Oproiu, from the Astronomical Observatory of Cluj-

Napoca - Astronomical Institute of the Romanian Academy.

He turned 80 on September 22nd 2019 and for over 50 years, his professional competence, generosity and dedication have inspired and shaped many generations of students, teachers, researchers and astronomers. After 1990 he was the Ph.D. advisor of six researchers from the Astronomical Institute, who obtained their doctoral degrees in Astronomy.

Dr. Oproiu pioneered optical observations on artificial satellites of the Earth, he developed computer programs for processing observational data and studied the dynamics of artificial satellites and Near-Earth Objects under various perturbations. In addition, he worked on space dynamics problems, navigation with solar sails, as well as several theoretical topics from Celestial Mechanics. Over the years, Dr. Oproiu collaborated with many researchers and he got involved in a number of interdisciplinary projects; one such example is revealed by his interest in Archaeoastronomy, where he focused on the Dacian sanctuaries from Sarmizegetusa Regia, Romania.

From 1990 until his retirement in 2013, Dr. Oproiu was the Head of the Research Group of the Astronomical Observatory from Cluj-Napoca. In this capacity he cultivated a stress-free atmosphere based on mutual respect, support, collaboration and flexibility, while fostering a professional and productive environment, conducive to scientific research.

The memory of his bright personality will always be in our thoughts.

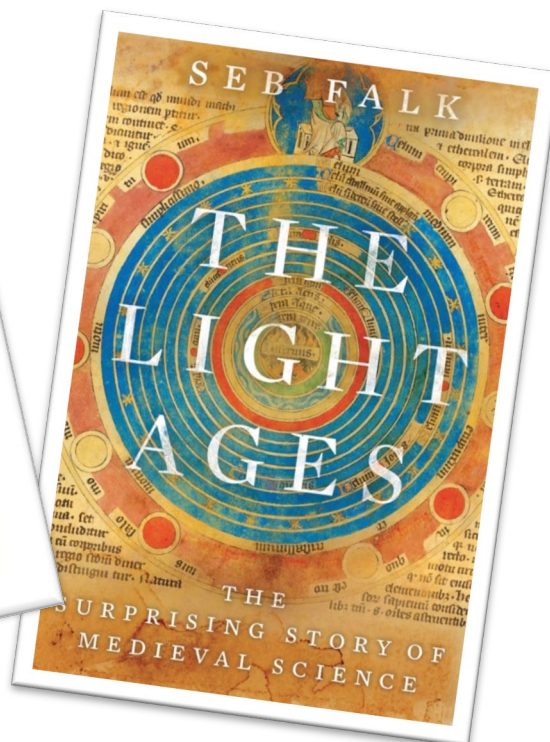
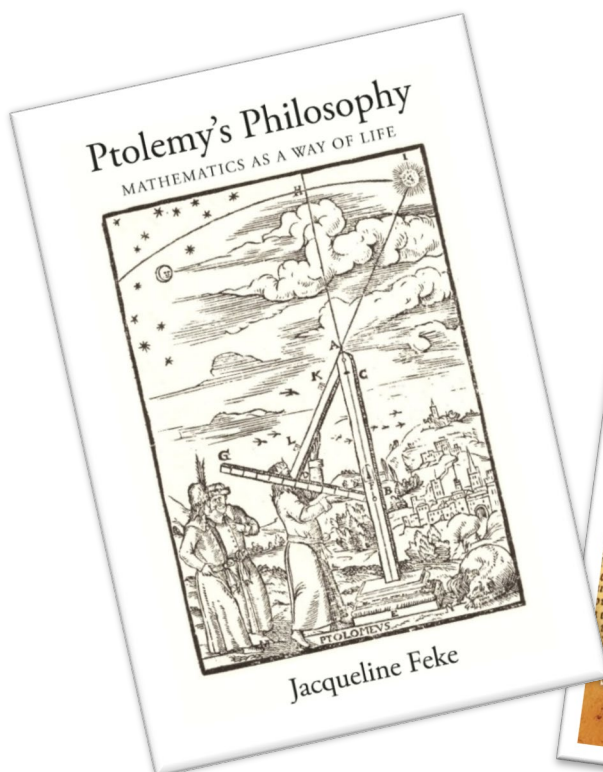
A more detailed presentation of Dr Tiberiu Oproiu's work and personality can be found in the *Romanian Astronomical Journal* article http://www.astro.ro/~roaj/29_2/09-apop_TO80_1920.pdf.

Excerpt from the IAU Membership Directory

NOTABLE PUBLICATIONS

- Boner, Patrick J., ed. *Kepler's New Star (1604): Context and Controversy*. Leiden: Brill, 2020.
- Bowen, Alan C. and Francesca Rochberg, eds. *Hellenistic Astronomy: The Science in Its Contexts*. Leiden: Brill, 2020.
- Chinnici, Ileana. *Decoding the Stars: A Biography of Angelo Secchi, Jesuit and Scientist*. Jesuit Studies, 16. Leiden: Brill, 2019.
- Cunningham, Clifford J. "‘Dark Stars’ and a New Interpretation of the Ancient Greek Stellar Magnitude System." *Journal of Astronomical History and Heritage* 23, no. 2 (2020): 231-256.
- Cunningham, Clifford J. "Herschel's Spurious Moons of Uranus: Their Impact on Satellite Orbital Theory, Celestial Cartography and Literature." *Journal of Astronomical History and Heritage* 23, no. 1 (2020): 119-162.
- De Grijs, Richard. *Time and Time Again: Determination of Longitude at Sea in the 17th Century*. Bristol, UK: Institute of Physics Publishing, 2017.
- Dunn, Richard, Silke Ackermann and Giorgio Strano, eds. *Heaven and Earth United: Instruments in Astrological Contexts*. Leiden: Brill, 2018.
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- Feke, Jacqueline. *Ptolemy's Philosophy: Mathematics as a Way of Life*. Princeton: Princeton University Press, 2018.
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<https://doi.org/10.1098/rsnr.2020.0040>
- González, Carmen Pérez, ed. *Selene's Two Faces: From 17th Century Drawings to Spacecraft Imaging*. Nuncius, 3. Leiden: Brill, 2018.
- Haddad, Thomás A. S. *Maps of the Moon: Lunar Cartography from the Seventeenth Century to the Space Age*. Brill Research Perspectives in Map History. Leiden: Brill, 2019.
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- Kellermann, Kenneth I., Ellen N. Bouton, and Sierra S. Brandt. *Open Skies: The National Radio Astronomy Observatory and Its Impact on US Radio Astronomy*. Cham, Switzerland: Springer International Publishing, 2020.
- Leonzio Meccanico, *Trattato della sfera celeste: Sulla costruzione di una sfera Aratea*. Introduzione, testo critico, traduzione e commento di Fabio Guidetti. Il mito: Testi e saggi, 8. Pisa: Edizioni ETS, 2020. A new critical edition and commentary by Fabio Guidetti of the 7th century treatise of Leontius Mechanicus, *Construction of the Sphere of Aratus*.
- McAlister, Harold A. *Seeing the Unseen: Mount Wilson's Role in High Angular Resolution Astronomy*. AAS – IOP Astronomy. Bristol, UK: Institute of Physics Publishing, 2020.
- Morrison, Leslie V., F. Richard Stephenson, and Catherine Y. Hohenkerk. "Fotheringham's 1920 Accelerations of the Sun and Moon Revisited." *Journal for the History of Astronomy* 51 (2020): 209-224
- Nakamura, Tsuko. "History of Japanese Asteroid Studies: A Hundred Years since Discovery of Hirayama Families." *The Astronomical Herald* (Tenmon Geppou) 112, no. 10 (2019): 689-700. (in Japanese with English abstract)
- Nakamura, Tsuko. "Unified Dating Analysis of Star Maps and Catalogues in Asia." *Journal of Astronomical History and Heritage*, submitted October 2020.

- Nakamura, Tsuko. *Deciphering the Ancient Starry Sky from the Kitora Tumulus Star Map: A History of Star Maps and Catalogues in Asia*. Tokyo: University of Tokyo Press, 2018. (in Japanese)
- Nakamura, Tsuko. "Japanese Lunar Drawings, Maps and Photographs before the 1870s." Pp. 95-113 in *Selene's Two Faces: From 17th Century Drawings to Spacecraft Imaging*. Ed. Carmen Pérez Gonzáles. Nuncius, 3. Leiden: Brill, 2018.
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- Sterken, Christiaan, and Amy Abercrombie King. *Jean-Charles Houzeau's Escape from Texas: A Belgian Astronomer Caught in the American Civil War*. Springer Biographies. Cham, Switzerland: Springer Nature, 2020.
- Sterken, Christiaan. "Bruegel's Winter Landscapes: Some Reflections on Climate Change." *Archives et Bibliothèques de Belgique* 90 (2020): 63-89.
- Van der Kruit, Pieter C. *Pioneer and Master of Galactic Astronomy: Biographies of Jacobus C. Kapteyn and Jan Hendrik Oort*. Cham, Switzerland: Springer International Publishing, 2021.



JOURNAL CONTENTS

Journal of Astronomical History and Heritage

Volume 23, 2020

Wayne Orchiston, Co-founder and Editor

Following is a list of review papers, research papers and book reviews published in the *Journal of Astronomical History and Heritage (JAHH)* in 2020.

All back issues of the *JAHH*, from Volume 1 (1998) through to the present day (Volume 22, 2019) are available via <https://www.jahh.org>. This web site also includes a 'Guide for Authors'. All *JAHH* papers also can be downloaded from the NASA/Smithsonian ADS site.

The April 2020 Issue

Vol. 23, No. 1

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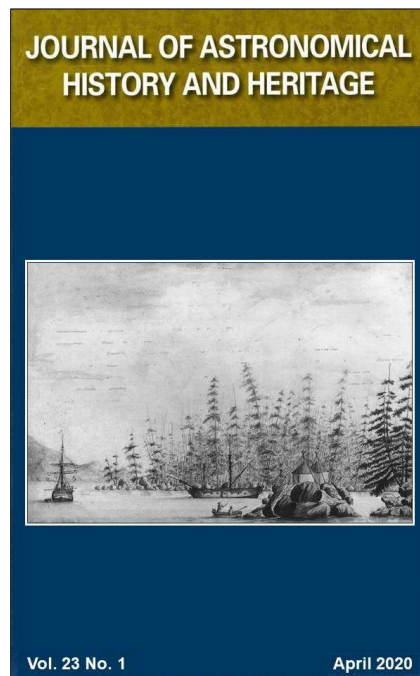


Figure 1

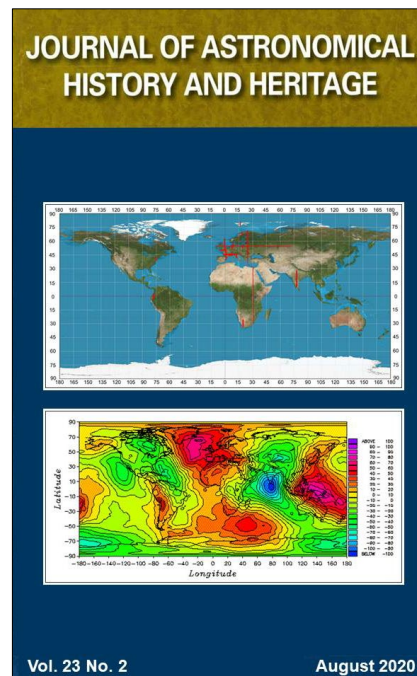


Figure 2

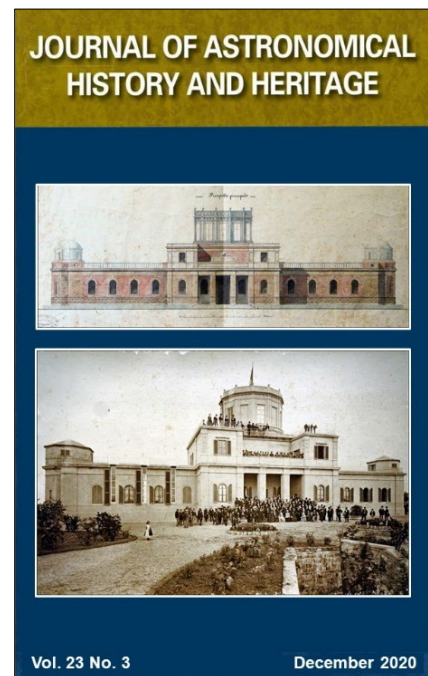


Figure 3

UPCOMING MEETINGS & CALLS FOR PAPERS

**OBSERVING, SENSING, DETECTING**

**Toward a multi-layered picture of the Universe
from historical and epistemological perspectives**

On-line Workshop –4-5 February 2021

Organized by the
Italian Society for the History of Physics and Astronomy (SISFA)
with the endorsement of
IAU Commission C3 (History of Astronomy)
and the *History of Physics Group of the European Physical Society*

During the twentieth century, the opening of new observational windows has unveiled a broad range of astrophysical sources, environments and phenomena, also probing the earliest moments of our Universe and its dark side. The brand-new field of gravitational-wave astronomy—together with electromagnetic telescopes, and neutrino and cosmic-ray detectors—are now offering the opportunity to explore the Universe through multiple kinds of messengers, allowing to address a number of fundamental questions and to peer further in its origin, evolution and future.

The ushering of this new era brings to the fore the need for a wide-ranging historical and epistemological analysis on the birth and development of multi-wavelength astronomy, up to the inauguration of multi-messenger observation of the cosmos. The processes that have shaped the new astronomies have seen the emergence of new fields of research and new forms of scientific collaboration, often at the interface of different disciplines and skills. Although several

historians of science and scientists have provided historical analyses and reviews concerning various aspects of these processes, a coordinated study is now desirable that puts the global evolution of new astronomies in a general and long-term perspective.

The workshop *Observing, sensing, detecting: Toward a multi-layered picture of the Universe from historical and epistemological perspectives* addresses this goal by bringing together a broad range of topics related to the history and epistemology of the new astronomies, stimulating a dialogue about their changing material cultures and about the impact of the increasingly composite and multifaceted picture of the cosmos on science and scientific imageries.

Topics of the workshop will include:

- How research traditions reinvented themselves in developing new astronomies
- Evolution of the concept and of the material culture of ‘observatory’
- The development of new epistemological questions
- Mutual influence of new scientific questions and development of cutting-edge technologies
- The rise of international and multilateral collaborations
- The transformation of cosmology from a largely speculative science into an observational science.

Confirmed participants:

- David Baneke, Utrecht University
- Luisa Bonolis, Max Planck Institute for the History of Science
- David DeVorkin, Smithsonian Institution
- Connemara Doran, Harvard University
- Martin Harwit, Cornell University
- Daniel Kennefick, University of Arkansas
- Adele La Rana, University of California Riverside, University of Verona
- Juan-Andres León, Max Planck Institute for the History of Science
- Emilie Skulberg, Cambridge University
- Virginia Trimble, University of California Irvine

The workshop will end with a round table discussion between Barry Barish, Reinhard Genzel, Christian Spiering, and Alan Watson.

It will be possible to follow the workshop as auditors. Detailed instructions will be given after the definition of the program, on the webpage: <http://www.sisfa.org/observing-sensing-detecting/> .

Further information can be requested by writing to: lbbonolis@mpiwg-berlin.mpg.de, Adele.LaRana@roma.infn.it, and rlalli@mpiwg-berlin.mpg.de

Organizing committee:

Luisa Bonolis, Max Planck Institute for the History of Science
 Roberto Lalli, Max Planck Institute for the History of Science
 Adele La Rana, University of California Riverside, University of Verona



ART, IMAGE, AND ASTRONOMICAL KNOWLEDGE

Organized by the
Inter-Union Commission of History of Astronomy
for the 26th International Congress of History of Science and Technology
virtually in Prague, 25-31 July 2021

The 26th International Congress of History of Science and Technology (26th ICHST) will be held 25-31 July 2021 (now virtually) in Prague, Czech Republic. The Congress is organized by the International Union of History and Philosophy of Science and Technology (IUHPST)/ Division of History of Science and Technology. The program and registration instructions will be found at <https://www.ichst2021.org/>.

The IUHPST has numerous [Commissions and Scientific Sessions](#), and they are encouraged to organize symposia as part of the larger meeting. There will be many papers in these symposia and throughout the weeklong meeting that will interest historians of astronomy. Those interested in the history of astronomy should check out, in particular, the presentations of the Scientific Instrument Commission (SIC), the Commission on the History of Ancient and Medieval Astronomy (CHAMA), the Commission on the History of Science and Technology in Islamic Societies (CHOSTIS), the Commission on Science and Literature, and, last but not least, the Inter-Union Commission of History of Astronomy (ICHA). ICHA is an official liaison between the IUHPST and the IAU, and its constituent base within the IAU resides in Commission C3 (History of Astronomy).

No formal membership is required to attend the Prague Congress or most of the subsidiary meetings.

Although the full program of sessions has not yet been published for the Prague Congress, we want to feature here the ICHA symposium, which was organized by three members of Commission C3 (Christiaan Sterken, Sara Schechner, and Shi Yunli). They also solicited the co-sponsorship of CHAMA. The theme is *Art, Image, and Astronomical Knowledge*, and the program will include 20 research papers. Details are given below.

Grants for Junior Scholars

The ICHA is pleased to announce that it has secured modest funds to help defray meeting costs for junior scholars wishing to attend the Prague Congress or other relevant meetings. Preference will be given to those presenting a paper or poster at the meeting. The application process will be announced later this spring 2021 and will be managed by the Organizing Committee of IAU Commission C3.

Art, Image, and Astronomical Knowledge

ABSTRACT

The symposium will address the question whether stand-alone images found in art (paintings, drawings, woodcuts, etchings, rock art, etc.) can serve as reliable and quantifiable evidence for explicating past observations of natural phenomena such as sunspots, solar eclipses, aurorae, comets, constellations, and crucial aspects of the Earth's past climate. Speakers will compare knowledge acquired by images (paintings, rock art) with knowledge acquired by words (descriptions, reports), by empirical methods (experiment, measurement, observation) and by formulas (theory, computer models). Examples will range from the ancient and medieval world up to modern times and represent many cultures and geographic places. The sessions will also consider how, beginning in the early modern period and later, the mass reproduction of artworks and technical drawings via engraving and lithographic techniques, as well photomechanical printing processes, led to images of astronomical knowledge that are a blend of artistic skill and scientific rigor.

MOTIVATION

Examples abound of interpretations of ancient and early modern skyscape art in terms of measurable quantities (in the Western sense). In doing so, it is often overlooked that the source culture – for example the culture of the cave-dwellers – is entirely different from our modern spectator culture, so that there always is a risk of reading our present-day concepts in the images of the past. This is especially true when original artworks are not available for analysis so that reproductions (manually made copies, but also machine-made duplicates) are used. Part of the problem is due to the researcher's unfamiliarity with the changes of information content in the process of copying and duplicating artwork.

We bring together astronomical elements in technical and creative artwork spanning several millennia. The speakers span all parts of the globe and come from many cultures and are specialized in different time periods.

ORGANIZERS

Sara J. Schechner
Department of History of Science, Harvard University

Shi Yunli
University of Science and Technology of China

SESSIONS

I. Transients and Comets

- Richard G. Strom (ASTRON & University of Amsterdam), “What can Neolithic imagery convey about bright stellar transients?”
- Anna Jerratsch (Max Planck Institute for History of Science), “The Many Face(t)s of Comets in Early Modernity.”
- Dagmar L. Neuhäuser, Ralph Neuhäuser, Markus Mugrauer, Amir Harrak, Jesse Chapman (Independent scholar / University Jena / Univ Toronto / UC Berkeley), “A Finding Chart of Comet Halley in AD 760? The Syriac *Chronicle of Zuqnin* with Complementary Text and Drawing.”
- John Drummond and Wayne Orchiston (University of Southern Queensland), “Mount Taranaki, the Great Comet of 1882, and the Genesis of Cometary Photography in New Zealand.”

II. Constellations

- Katie Boyce-Jacino (Arizona State University), “Star Atlas: Ancient Astronomy in the Planetarium.”
- Christiaan Sterken (University of Brussels), “Some Thoughts on Stellar Constellations in Rock Art.”
- Susanne M. Hoffman (Independent scholar), “Reconstruction of Historical Constellations.”
- Stamatina Mastorakou (University of Zurich), “The Hellenistic constellations through Words and Images.”

III. Art in General

- David DeVorkin (Smithsonian Institution), “Martian Romances.”
- Donald Olson (Texas State University), “Celestial Sleuthing and Art.”
- Huichih Chuang (Jiangsu Normal University), “Re-discussion about the Two Celestial Images Unearthed in Nara, Japan.”
- Rosalind Park (Independent scholar), “Art and Astronomical Knowledge at Dendera in the 1st Century BCE.”

IV. Related to Horoscopes or Astrology

- Michelle McCoy (University of Pittsburgh), “Planetary Position, Pictorial Composition: Visual Knowledge and the Eastern Eurasian Horoscope.”
- Elizabeth Minor and Robert Minor (Wellesley College / UC Berkeley), “An Early Representation of a Star Pattern on an Ancient Egyptian Coffin of the First Intermediate Period (2181-2040 BCE).”
- Mathieu Ossendrijver (Free University of Berlin), “Iconography and the Cross-Cultural Transformation of Zodiacal Astral Science in Antiquity.”
- John Steele (Brown University), “Images in Babylonian Astronomical and Astrological Texts.”

V. Culture at Large

- Sonje Brentjes (Max Planck Institute for History of Science), “Knowledge, Art and Politics in Copies of 'Abd al-Rahman al-Sufi's Book of the Star Constellations.”
- Yunli Shi (University of Science and Technology of China), “Charting the Chinese Sky with Western Observations: The Star Maps Made by Jesuit Astronomers in the Late Ming Dynasty Revisited.”
- B. S. Shylaja (Jawaharlal Nehru Planetarium, Bengaluru, India), “Search for Astronomical Records in Unconventional Sources.”
- Irina Vavilova (Main Astronomical Observatory of the NAS of Ukraine), “Archaeoastronomical Culture of the Ancestors Dated to the Paleolithic Times at the Territory of Modern Ukraine.”



2nd International Conference on Global Issues on Environment and Culture

Details to be announced*

Time:
September 2021

Place:
Mycenae or Delphi

For more information and to find out about our measures related to COVID, go to:
(<http://huaxiahellas.com/conference-2021/>)

Or contact us at:
shap@henu.edu.cn

The 2nd International Conference is a follow-up after the success of the 1st Sino-Hellenic International conference in Kaifeng, Henan University in 2019 (<http://huaxiahellas.com/1st-international-sino-hellenic-conference/>). The theme of Global Issues of Environment & Culture encompasses a broad field concerning the interaction of human development over millennia with the environmental factor. The non-linear trend of evolution of ancient cultures is decisively affected by climatic change, seismic and volcanic

destructions, terrestrial but astronomical impacts too, pandemics and more. At the same time natural sciences applied to material culture and delving into the stratigraphic record reveal and document buried antiquities, past destructions and past daily life. Literature sources and scientific tools are used to study ancient societies, their rise and decline, trade and diffusion of ideas, arts & culture. Modern humanity's task is to preserve the memories of the past.

This event is organised by Henan University and the University of the Aegean

Accepting proposals on topics including but not limited to:

- *Enviro-cultural reports from ancient literature sources*
- *Enviro-cultural issues in ancient societies*
- *Cultural management, innovation technologies & sustainability*
- *Climate change & ancient cultures*
- *Disaster archaeology*
- *Silk Road: operational sequences of artefacts & diffusion of ideas*
- *Geoarchaeological issues*
- *Sacred landscapes & religious aspects*
- *Archaeological sciences - archaeometry*
- *3D Reconstructions*
- *Remote sensing applications*
- *Predictive modelling of archaeological sites*
- *Archaeological parks*
- *Geoarchaeological Parks*
- *Skyscape Impact on Cultural Development*
- *Miscellaneous*

OFFICIALLY ENDORSED BY:



International Astronomical Union XXXI General Assembly **BUSAN 2022**

August 1 (Mon) - 11 (Thu), 2022
BEXCO, Busan, Rep. of Korea

Because of the COVID-19 pandemic, the IAU has postponed the XXXI General Assembly to August 2022. The meeting, which was originally scheduled for 16–27 August 2021, will take place in Busan, South Korea on 1-11 August 2022.

Elections for the next triennial will take place in 2021 as virtual meetings.

More details to follow.



CONFERENCE REPORTS

SPACES FOR INSTRUMENTS XXXIX Scientific Instrument Symposium

Royal Museums Greenwich and the Science Museum, London
14-18 September 2020 online

Sara J. Schechner

The Scientific Instrument Commission (SIC) of the International Union for the History and Philosophy of Science and Technology holds an annual symposium somewhere in the world. In 2020, the meeting was to be held in London at the Royal Museums Greenwich and the Science Museum, but the pandemic forced the meeting to be entirely moved to online. The theme of the symposium was Spaces for Instruments. Papers were encouraged on the production and use of scientific instruments in various physical and intellectual spaces, including the princely court, the astronomical observatory, museums, and private home.

Many talks were devoted to astronomical instruments and observatories from diverse time periods, places, and cultures. Samuel Gessner of Portugal described complex early modern armillary spheres that reproduced motions of the eight sphere in order to demonstrate the precession of the equinoxes. Examples survive in collections in Schweinfurt, Kassel, Augsburg, and Greenwich. Michael Korey, curator of the Mathematisch-Physikalischer Salon in Dresden, and Giorgio Strano, curator of the Museo Galileo, both described remarkable 16th-century planetary clocks, which told not only the time but also the positions of the planets according to Ptolemaic theory. Ottoman and Islamic astronomical instruments were not overlooked. Gaye Danişan discussed a 15th century treatise--the *Rūznāma-i Shaikh Wafā'*--and a lunar and solar volvelle found in a 17th century copy; and Taha Yasin Arsian looked at the office of the mosque timekeeper in the 13th to 16th century Islamic world. Medieval Arabic and Latin astrolabes were the subject of papers by John Davis and Pouyan Rezvani.

Daneil Belteki considered the roles of workers versus instruments in the production and distribution of Greenwich Time between 1850 and 1900. Julien Gressot and Romain Jeanneret examined the Ertel Meridian Circle (1858-1912) of the Neuchâtel Observatory from the perspective of the culture of precision. Loïc Jeanson, Jean Davoigneau, and Françoise Le Guet Tully puzzled over how dissimilar the shelters were for similar meridian instruments at observatories in France. Michael Burton, director of the Armagh Observatory, reported on the challenges of conserving the historical telescopes of the Armagh Observatory while maintaining it as an active scientific research institution. Lee Macdonald spoke about proposals to relocate the Royal Observatory of Greenwich to a darker site in 1836-1944, and why it took so long for the move to be approved. Instruments of the Royal Navy Observatory of San Fernando (Cádiz) were the subject of Yolanda Muñoz Rey's talk.

I organized a session on failed scientific instruments, which included talks by Johan Kärnfelt on the failed mount of a Herschel telescope of the Royal Swedish Academy of Sciences; George N. Vlahakis and Panagiotis Lazos on the Newall Telescope's many changes of fortune; and Luis Tirapicos on the failed schemes for angular scales invented by Petrus Nonius, Tycho Brahe, and Orazio Borgondio.

The next symposium of the SIC will be at the Congress held every four years by the International Union. It was scheduled to be in Prague next summer, but it has already been moved online because of the pandemic. Everyone is welcome to attend. IAU Commission C3 and the Inter-Union Commission of History of Astronomy have organized a symposium as part of this meeting as well. Please see the description in the future-meetings section of this newsletter.

2020 ANTIQUE TELESCOPE SOCIETY VIRTUAL CONVENTION

14-15 and 21-22 November 2020

Wayne Orchiston and Sara J. Schechner

The Antique Telescope Society held an extremely successful virtual conference on two successive weekends in November—November 14-15 and 21-22, 2020—involving presented papers, breakout discussion sessions, social events, and virtual tours of observatories in Austria, Canada, England, Italy, South Africa, and the USA.

The IAU was well represented with the following individuals presenting papers or giving tours (in alphabetical order with abstracts):

Ileana Chinnici (Palermo Observatory, and C3 OC member) and her colleagues took us on an entertaining tour of Palermo Observatory.

Palermo Observatory is well-known for being the site from where the first asteroid, Ceres - now classified as dwarf planet - was discovered in 1801 and where early solar physics studies were conducted in the last quarter of the 19th century. Today the Observatory is renowned for research in X-ray astronomy and exoplanets. The establishment of the Palermo Astronomical Observatory dates back to the end of the 18th century and the Observatory still preserves many instruments of its original equipment. They are on display in the original rooms of the Observatory, that are presently preserved as a Museum. The Museum is located inside the Observatory itself, so that modern research and ancient heritage coexist, with mutual benefit. During the tour, the virtual visitors will be accompanied at the Museum to visit the collections of those instruments that formed the typical equipment of 18th- and 19th-century observatories. The video will be about 15 minutes long; after a short welcome, a voice will explain what the visitors are seeing. The texts are by Ileana Chinnici, the shooting by Laura Leonardi, the voice of Salvatore Orlando; other collaborators are Salvatore Speziale, Donatella Randazzo, Manuela Coniglio, Martina Sanzeri, Maria Rosalia Carotenuto, Laura Daricello. All team is permanent or temporary staff of INAF-Palermo Astronomical Observatory.

Ian Glass (SAAO) teamed with Auke Slotegraaf to show us the Cape Observatory in Cape Town, now home to the South African Astronomical Observatory.

We will present an illustrated tour of the South African Astronomical Observatory (SAAO) Cape Town site, formerly the Royal Observatory, Cape of Good Hope, South Africa. The Royal Observatory was the first permanent observatory in the southern hemisphere, and it celebrated its 200th birthday on 20 October 2020. Our tour will focus on the historic telescopes and buildings on site and mention some interesting discoveries and people associated with the Observatory.

Wayne Orchiston (National Astronomical Research Institute of Thailand, University of Southern Queensland, Australia, and C3 President) on “An Update on Carkeek Observatory, New Zealand’s Oldest Surviving Astronomical Observatory.”

In the 1860s Stephen Carkeek was the Collector of Customs in Wellington, and he played a key role in founding New Zealand's first professional observatory, the Colonial Observatory, on the Wellington waterfront. After his retirement in 1867 he moved to Featherstone in the nearby Wairarapa, where he was able to combine farming with his passion for astronomy. Accordingly, he built a commodious wooden observatory with a hexagonal dome room and an adjacent transit room and office. This observatory, which still exists in a dilapidated condition and is currently the oldest surviving example of an astronomical observatory in New Zealand, was described in a paper that was published in the *JATS* in 2001.

During the last two decades Carkeek Observatory has continued to deteriorate, but in 2020, after a review, it was listed by Heritage New Zealand as an important component of the nation’s scientific

heritage. Research by Heritage New Zealand historians also revealed that this may be the last surviving example in the world of a Romsey-style observatory.

In this paper I will report on the current status of Carkeek Observatory, and assess its international significance. I will also discuss the major lessons we have learnt as astronomers in delaying a formal heritage listing of Carkeek Observatory for so long.

Jay Pasachoff (Williams College and C3 OC member) was the Keynote Speaker. He discussed the history of the Hopkins Observatory at Williams College.

Horace A. Smith (Michigan State University) on “Before it Came to Delphos: Leslie Peltier’s 12-inch Telescope at Wesleyan University.” This paper was co-authored by Roy E. Kilgard from Wesleyan University.

Readers of Leslie Peltier's book ‘Starlight Nights’ will know that later in his life he acquired a 12-inch refracting telescope manufactured in the 19th century by Alvan Clark and Sons. That telescope was originally built in 1868 for Wesleyan University in Middletown, Connecticut, where it went into operation in 1869. Drawing upon material in the Wesleyan University archives, we will describe how Wesleyan University obtained the telescope, how it was used during its half century at Wesleyan, and how it was eventually sold. The correspondence from Alvan Clark and Sons during the purchase and construction of the telescope reveals the way in which Wesleyan's intention to site the telescope in a tower influenced the Clark firm's plans for the telescope.

Leif Svalgaard (Stanford University) on “Sunspots with Ancient Telescopes for SC25.”

At the 2015 Convention at Lick Obs. I proposed to build replicas of 18th century telescopes and observe the Sun to count sunspots. This resulted in three people doing that and so began an observing program that has caught professional solar observers' interest and has given us an important means of calibration of 18th century observations. With the death of sunspot cycle 24, the spots disappeared and so did also the observer's interest and observations stopped. Now that a new cycle (#25) has begun, it would be important to revive the program [perhaps even inducing some new observers]. The talk is an attempt to rekindle the interest and restart the observing program.

Tom Williams (Rice University) on “John Edward Mellish – A Family Perspective.”

Though he never succeeded as a professional astronomer, and achieved only a mixed reputation as a telescope maker, a surprising level of interest in John E. Mellish remains among the community of amateur astronomers, telescope makers and members of the Antique Telescope Society. Part of that interest may be attributed to the widely varying attitudes about the quality of Mellish optics, though few published records exist. Published commentary about some of Mellish’s astronomical observations no doubt adds to the air of uncertainty about Mellish. However, enduring rumors involving details of the collapse of his marriage and subsequent jailing in 1931 constitute the most persistent, indeed pernicious, source of uncertainty about Mellish’s character. This paper will discuss Mellish’s personal life, mainly from 1915 through 1950, as described in interviews with surviving family members in the mid-1990s, with additional comments from correspondence and interviews of other individuals who knew this enigmatic individual personally.

Many other interesting papers included:

- Trudy Bell (Sky & Telescope contributing editor), “Two Obscure (but Prolific) 19th-Century U.S. Midwest Telescope Makers: R. Brown Gans and Hiram G. Sedgwick”
- Randall A. Rosenfeld (RASC Archivist, Director of the Dornfield Telescope Museum, Toronto), “Sure it’s a telescope, but what’s it doing there?": images of telescopes in unfamiliar places—can they be used for history?”
- John W. Briggs (Director, The Astronomical Lyceum), “A Brief Report on the Status of Yerkes Observatory with some Highlights from the Inventory of 2018.”
- Duncan Agnew (University of California San Diego), “American Optical Glass: World War I and Beyond.”

- Bart Fried (ATS founder, past president), “William & David Mogy: New Jersey’s Fine Telescope Makers.”

There were also virtual tours and histories of the University of Illinois Observatory, Norman Lockyer Observatory, Chabot Observatory, Cambridge Observatory, Georgetown University Observatory, University of Mississippi Observatory, Kuffner Observatory, Boyden Observatory, and Hume Cronyn Memorial Observatory. Various speakers described their careful restoration of historical telescopes by Brashear, Warner & Swasey, Zeiss, and a Hale-style spectroheliometer.

From a personal perspective, Wayne remarks:

This conference was an enjoyable first for me. It was my very first exclusively e-conference, and while I had previously presented ppt presentations and spoken to each of the slides using Zoom, to prepare a stand-alone ppt presentation complete with audio was a new experience. To my joy, I mastered this, proving that “You can teach an old dog new tricks”!

One of the surprises at this conference was the Breakout Room discussions. At the time I was very busy trying to finish off the record-size (282-page) December issue of the *Journal of Astronomical History and Heritage*, but was surprised to discover that I was listed as the host of one of these discussions on the night I gave my Carkeek Observatory paper ... so I decided to stay on (and am glad that I did). It was a treat, for example, to have C3 Secretary Sara Schechner and Brad Schaefer in our discussion group, plus other astronomers from the USA, Australia and South Africa, and we ranged widely in our discussion topics.

Some of the conference presentations and tours have been put online with the permission of the speakers. To learn which ones are available, please contact Ken Launie (launiek@alum.mit.edu), the organizer of the paper sessions. If you would like a personal digital copy of Wayne’s “Carkeek Observatory” paper, he can send it to you by WeTransfer (it is too large a file for an email attachment).

The success of the ATS virtual convention brought home to us how beneficial these Zoom events can be, and how much they allow for a greater international participation than an in-person, live conference. The Antique Telescope Society is considering making future conferences hybrids of live and virtual events after the COVID-19 pandemic is over. This is an excellent idea, especially for those of us in far off lands who often face travel restrictions (because of age, sickness, or lack of funding). We believe that Commission C3 should consider a hybrid model for some of its future meetings.

A final word: The 2020 ATS virtual conference was excellent, and the ATS is to be congratulated on arranging this landmark event. We encourage more C3 members to join the Society and participate actively in its future conferences, as they supplement admirably what we are trying to achieve in our IAU Commission and compensate somewhat for our inability to arrange history of astronomy sessions at all IAU General Assemblies. Information about the ATS is available on their web site: www.oldscope.org or from the Secretary of the Society, Walter Breyer (whbreyer@gmail.com).

SOLAR ECLIPSES AND MEASUREMENT OF THE SOLAR DIAMETER

14 December 2020, ICRANet Pescara

Costantino Sigismondi

The International Center for Relativistic Astrophysics Network (ICRANet), based in Pescara, Italy, held a virtual meeting on 14 December 2020 with the title, *L’eclissi di Sole e la misura del diametro solare: Cacciatori di eclissi dal 1500 a oggi Cristoforo Clavio, Halley, padre Secchi, Eddington e lo stato dell’arte oggi* (The solar eclipse and the measurement of the solar

diameter: Eclipse hunters from 1500 until today, Christoph Clavius, Halley, Father Secchi, Eddington, and the state of the this work today). The meeting was organized by Costantino Sigismondi in connection with the South American observatories. Speakers included Alessandro Bemporad, Francesco Berrilli, Andrea Raponi, Jay Pasachoff, Paolo Ochner, Cosimo Palagiano, Giuseppe Massara, and Remo Ruffini.

Professor Alessandro Bemporad, INAF-Osservatorio Astrofisica di Torino delivered a paper, “Eclissi e Fisica Solare a Torino” (Eclipses and solar physics in Turin). Professor Francesco Berrilli, Dipartimento di Fisica, Università di Roma Tor Vergata, and Accademia Nazionale dei Lincei, spoke on “Il lascito di Angelo Secchi: Studio della connessione Sole-Terra” (The legacy of Angelo Secchi: A study of the Sun-Earth connection). And Professors Andrea Raponi, INAF IAPS, and Costantino Sigismondi gave a paper on “The diameter of the Sun measured by eclipse observations.” Links to these presentations and a video can be found on the ICRA Network website http://www.icranet.org/index.php?option=com_content&task=view&id=1348.



Blue Bailey's bead seen on 19 November 2020 in Ostia.

CELESTIAL MECHANICS IN LIGHT OF CONJUNCTIONS AND SOLSTICE

21 December 2020, ICRANet Pescara

Costantino Sigismondi

In recognition of the Great Conjunction of Jupiter and Saturn on the Winter Solstice, ICRANet held a virtual meeting on 21 December 2020 with the title *Congiunzione e Solstizio tra Storia e Meccanica Celeste* (Conjunction and solstice between history and celestial mechanics). The meeting was organized by Costantino Sigismondi, who gave this rationale on the website: The great conjunction of Jupiter and Saturn on 21 December 2020 was an opportunity to reflect on the importance of planetary conjunctions in the history of astronomy. For ancient humans until after the Enlightenment, planetary conjunctions were opportunities to validate their planetary theories. In astronomy, what mattered about the planets was not their physical nature, but rather their motions and the possibilities of predicting them. Ptolemy tried to solve this problem in his *Almagest*, but over time discrepancies were noticed. In 1563, after observing a great conjunction, Tycho Brahe recognized that the best ephemeris was wrong by a whole month. His efforts to rectify this included creation of the first modern research institution with a dedicated staff, among whom was Kepler, and many new instruments for observing systematically. Kepler not only produced his three famous laws, but after observing the triple conjunction of Jupiter, Saturn, and Mars in 1604 along with the nova, he became interested in this mechanism to explain the Star of Bethlehem.

The meeting was endorsed by IAU Commission C3 (History of Astronomy). The program and associated materials can be found on the ICRANet website http://www.icranet.org/index.php?option=com_content&task=view&id=1351.