

HPS&ST Note

April 2016

Introduction

This HPS&ST monthly note is sent direct to about 6,600 individuals who directly or indirectly have an interest in the connections of history and philosophy of science with theoretical, curricular and pedagogical issues in science teaching, and/or interests in the promotion of innovative and more engaging and effective teaching of the history and philosophy of science. The note is sent on to different international and national HPS lists and science teaching lists.

The note seeks to serve the diverse international community of HPS&ST scholars and teachers by disseminating information about events and publications that connect to HPS&ST concerns.

Contributions to the note (publications, conferences etc.) are welcome and should be sent direct to the editor: Michael R. Matthews, UNSW, m.matthews@unsw.edu.au .

Division of the History of Science & Technology (DHST) 25th International Congress, Rio de Janeiro, Brazil, 23 to 29 July 2017.

The 25th ICHST will be held in the Praia Vermelha campus of the Federal University of Rio de Janeiro (UFRJ), located in one of the most beautiful and touristic regions in the city, served by various forms of public transport and close to important clusters of hotels, beaches, and numerous artistic and cultural attractions.

More information is available at: <http://www.ichst2017.sbhc.org.br/>



The theme of the 25th Congress is “Science, Technology and Medicine between the Global and the Local”. This theme is construed broadly, and studies of the History of Science,

Technology and Medicine at the global, national and local levels, across all periods, and from a variety of methodological and historiographical approaches are encouraged.

Deadline for submission of symposia proposals is 30 April 2016.

Deadline for submission of stand-alone papers 30 November 2016

*The Inter-Divisional Teaching Commission (IDTC) of the DHST/DLMPS will stage a education-related symposium during the congress. This might consist of 3, 5, 7 or more papers depending on number and quality of submissions received by **22 April 2016**, thus allowing time for selection by IDTC and final submission to Congress Organising Committee by due date of 30 April.*

Proposals of 1,000 words, including title, author's name, institution and email should be sent as a Word document to the local IDTC contact person:

Andréia Guerra

Centro Federal de Educação Tecnológica do Rio de Janeiro - CEFET-RJ

Tekne Group

Departamento de Pesquisa

BRAZIL

aguerra@tekne.pro.br

Education symposium papers ideally should connect to the Congress theme (broadly construed) and can deal with the history of science education, the utilisation of history of science in education, curriculum debates about appropriate school and university science programmes, the impact of textbooks on teaching, the role of HPS in teacher education, and other topics. All symposium presenters need to be registered for the congress.

In addition to the symposium, the IDTC will arrange a congress session on 'Engaging and Innovative Teaching in the History of Science'. More details on this will follow.

New ways to discover and advance students' and the wider public's reasoning about science and religion

A conference exploring links between education, science and religion, organised by the LASAR (Learning about Science and Religion) project at the University of Reading with the Department of Education, University of Oxford

Keynote Alister McGrath, **Chair** Michael Reiss

Date: Friday 28th October 9.30 am - 5.30 pm

Location: Oxford University, Department of Education

email abstracts (300-500 words) for 15 minute papers as a Word document to Dr Berry Billingsley, lasar@reading.ac.uk.

Deadline: June 20th 2016

More information at: <http://tinyurl.com/jqdmela>

**# Early Modern Experimental Philosophy, Metaphysics, and Religion;
Workshop, University of Warwick, 10-11 May 2016**

Speakers

Keith Allen (York), *Cavendish on Colour and Experimental Philosophy*

Peter Anstey (Sydney), *Experimental Philosophy and Corpuscular Philosophy*

Philippe Hamou (Paris-Ouest Nanterre), *John Locke and the Experimental Philosophy of the Human Mind*

Dana Jalobeanu (Bucharest), *Francis Bacon's 'Perceptive' Instruments*

Dmitri Levitin (Oxford), *Metaphysics, Natural Philosophy, and the Soul: Rethinking Kenelm Digby's Philosophical Project*

Elliot Rossiter (Concordia), *From Natural Philosophy to Natural Religion: Teleology and the Theologia Rationalis*

Tom Sorell (Warwick), *Experience in Hobbes' Science of Politics*

Alberto Vanzo (Warwick), *Experimental Philosophy and Religion in Seventeenth-Century Italy*

Koen Vermeir (Paris-Diderot), *Magnetic Theology*

Catherine Wilson (York), *What was Behind the Rejection of Hypotheses in Newtonian Science?*

The full programme is available on the workshop webpage: <http://bit.ly/EMExper>

Registration closes on Monday 25th April.

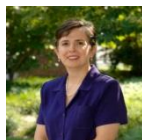
Limerick Symposium on Nature of Science in Science Education: Recent Debates and Future Directions, 26th- 28th of October 2016, University of Limerick, Ireland

Introduction by Dr Anne Looney, National Council of Curriculum and Assessment, Ireland

Plenary Speakers



Gurol Irzik
Sabanci University



Zoubeida Dagher
University of Delaware



Ebru Kaya
Bogazici University



Sibel Erduran
Uni. of Limerick

Nature of science (NOS) has become a predominant area of research in science education in the past few decades. Teaching and learning of NOS can help students understand how science works and appreciate science as a key contributor to society. Recent curriculum development efforts including the Junior Cycle Specification in Ireland have included NOS as a key component of the science content. This symposium will bring together researchers, policy makers and practitioners to review

recent debates on NOS and discuss the implications for the science curriculum, teacher education as well as a classroom teaching and learning.

The symposium will be hosted by EPI•STEM, National Centre for STEM Education based at University of Limerick, Ireland. The programme includes plenary talks, paper presentations, workshops and poster presentations.

Deadlines:

27th May - Abstract Submission

27th June - Acceptance Notification.

27th July - Early Bird Registration (99 Euro).

27th September - Late Registration (129 Euro).

Submissions to

LimerickNOS2016@gmail.com

Inquiries at:

www.epistem.ie

British Journal for the History of Science, Book Reviewers

Every quarter *The British Journal for the History of Science* posts a new list of 'Books Received' on the journal's website. This can be accessed, along with achieved lists from previous quarters, at <http://journals.cambridge.org/action/displaySpecialPage?pageId=7272>

The journal is interested in commissioning reviews from established academics, emeriti, doctoral students and independent scholars. Prospective reviewers are encouraged to browse the books received list and contact the reviews editor. The reviews editor is also open to suggestions for reviews of books either not on the list, or forthcoming, provided they have been published within the past two calendar years. All enquiries should be directed to: reviews.editor@BSHS.ORG.UK.

1st European IHPST Regional Conference, August 22-25, 2016, Europa-Universität Flensburg, Germany

Chairs: Peter Heering & Claus Michelsen (ihpst16@uni-flensburg.de)

Plenary speakers:

Johannes Grebe-Ellis (Bergische Universität Wuppertal):

Hanne Andersen (University of Copenhagen)

Iwan Rhys Morus (Aberystwyth University)

http://ihpst.net/content.aspx?page_id=22&club_id=360747&module_id=189361

Asian HPS&ST Conference, December 15-18, 2016, Pusan National University, South Korea.

Chairs: Hae-Ae Seo (Biology Education, PNU) & Youngmin Kim (Physics Education, PNU)

*Conference Theme: **Inquiry in Science and in Science Education: Historical, Philosophical and Pedagogical Dimensions***

Pusan National University is in Busan, South Korea's second largest city, located on the southern coast of the country with easy high-speed train and air connection to Seoul. The Conference will open on Thursday evening with a plenary lecture and welcoming reception in the evening and on Friday and Saturday for full day presentations. The Conference will close on Sunday at lunch time and a half-day excursion will be offered in the afternoon. A pre-conference research workshop on HPS and Education themes and methodologies will be organized for graduate students and junior scholars.

Plenary Speakers include:

Darrell P. Rowbottom is Professor and Head of Philosophy at Lingnan University, Hong Kong. He studied physics as an undergraduate (at Bristol), and history and philosophy of science (at the LSE) and philosophy (at Durham) thereafter. He subsequently held posts at several universities in the UK, including Bristol, Edinburgh, and Oxford. His current research focuses on general issues in the philosophy of science (e.g. scientific method, scientific realism, and scientific progress) and the philosophy of probability (e.g. intersubjective probability and measurement paradoxes). He also has interests in epistemology, metaphysics, and the philosophy of education.



See:

<http://www.ln.edu.hk/philoso/staff/rowbottom/>

Proposals for individual papers (1,000 words) and symposia are due by: **June 10, 2016.**

Inquiries to: Hae-Ae Seo (haseo@pusan.ac.kr)

Conference website: <http://asiahpsst2016.bolog.com/welcome.php>

Graduate HPS&ST Course, University of Copenhagen, September 19-23, 2016.

A graduate course on *Educational Implications of the History and Philosophy of Science and Mathematics* will be held at University of Copenhagen, September 19-23, 2016.

This international doctoral course will focus on the utilisation of historical and philosophical scholarship to inform science and mathematics education. The course will present an overview of this research tradition and discuss educational implications of HPS&M based on

the analysis of case studies from different disciplines. The course is open to both Danish and international students; it is free of charge for the participants (including lunch); and can have a maximum of 25 participants. Participants can receive 5 ECTS (European Credit Transfer and Accumulation System) points.

Among the course lecturers are *Michael Matthews* (founding editor of *Science & Education*), *Peter Heering* (Past President IHPST), *Helge Kragh* (History of Physics) and *Jesper Lützen* (History of Mathematics).

More information about the course and a registration link can be found at www.ind.ku.dk/hpscource; and from the course coordinator Ricardo Karam (ricardo.karam@ind.ku.dk).

IsisCB Explore History of Science Index

Consider using the *IsisCB Explore History of Science Index* (isiscb.org/explore) for your research, and encourage your library or department to add it to their list of resources. Accessible to anyone on the web, *IsisCB Explore* is a completely open access service made possible by the History of Science Society with support from the University of Oklahoma.

IsisCB Explore opens up bibliographical research in the history of science, technology, and medicine. It is designed for students, scholars, librarians, and the general public. Users will find the data architecture intuitive and powerful, and librarians can trust that it will guide researchers to the best literature in the discipline.

There are some instructional videos on the [IsisCB Explore YouTube Channel](#). The [introductory video](#) gives you a quick overview. You can find more information about the history of the Isis Bibliography on the main site: isiscb.org.

Information from: Stephen Weldon, Department of History of Science, University of Oklahoma (spweldon@ou.edu).

*International Handbook of Research in History, Philosophy and Science Teaching*, Springer 2014

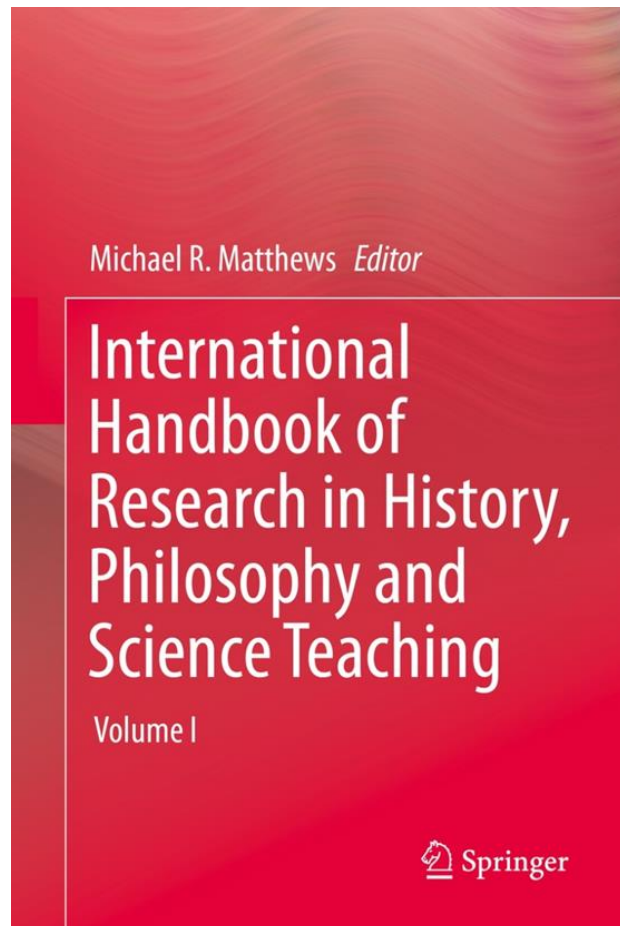
The first handbook devoted to the appraisal and synthesis of past and present Research in History, Philosophy and Science and Mathematics Teaching has been published by Springer. It consists of 2,544 pages in 3-volumes, with 76 chapters, written by 125 authors from 30 countries.

The extensive scope of the work is reflected in the Subject Index which has 2,000 entries, the Name Index which has 3,600 entries, and in the 10,200 references cited.

Recognising the intimate historical connection between science and mathematics, and between students' learning of science and learning mathematics, seven chapters are devoted to historically and philosophically-informed research in mathematics education.

The handbook is structured in four sections: pedagogical, theoretical, national, and biographical research.

Each chapter sets the relevant literature in its historical context, and engages in an assessment of the strengths and weakness of the research addressed, and suggests potentially fruitful avenues of future research.



The Handbook lays out the rich tradition of historical and philosophical engagements with science and mathematics teaching, and the lessons can be learnt from these engagements for the resolution of current theoretical, curricular and pedagogical questions that face teachers and administrators.

Where institutions have purchased the Handbook, their staff and students can download individual chapters gratis. Further, such staff and students utilising the Springer *MyBook* scheme can purchase the whole 3-volume printed work for EUR25 or USD25. An e-Book version will be available for general purchase.

Gerald Holton, Physics Department, Harvard University

Science educators will be grateful for this unique, encyclopaedic handbook, which provides a balanced guide to the whole spectrum of research on the inclusion of history and philosophy in science teaching.

Fabio Bevilacqua, Physics Department, University of Pavia

This handbook is the most comprehensive attempt at bridging the worldwide “two cultures” gap in education. It gathers the fruits of over thirty years’ research by a growing international and cosmopolitan community

ISBN: 978-94-007-7653-1 (hardcover); 978-94-007-7654-8 (e-book)

Complete contents and purchase information can be seen at:

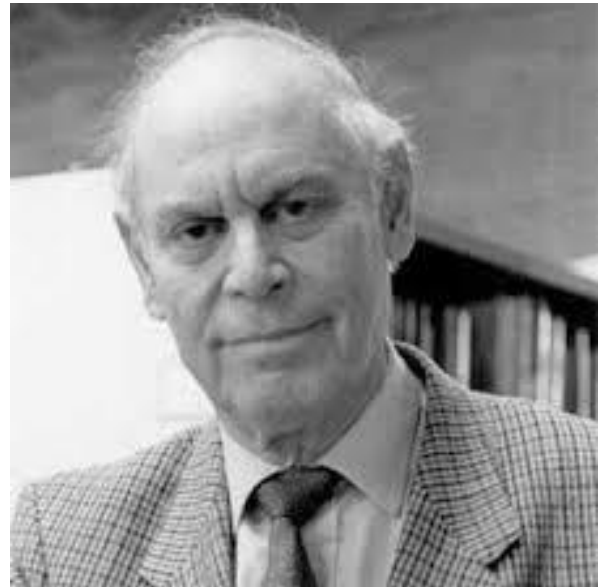
<http://www.springer.com/education+%26+language/book/978-94-007-7653-1>

Gerald Holton Interview

Gerald Holton, born 1922 is in his 94th year and ‘going strong’. He is Mallinckrodt Professor of Physics and Professor of History of Science Emeritus at Harvard University.

He has published numerous important and well-known books in the history and philosophy of science, and (with Stephen G. Brush) the substantial textbook *Physics, the Human Adventure: From Copernicus to Einstein and Beyond* (2001).

He was also one of the guiding figures in the creation and on-going revision of the HPS-informed Harvard Project Physics Course for high schools. Among his honors are the Millikan Medal, the George Sarton Medal, election to Fellowships of the American Philosophical Society and the American Physical Society, and the presidency of the US History of Science Society.



More details of his life, achievements and research can be found at:

https://en.wikipedia.org/wiki/Gerald_Holton

Holton is a giant of twentieth-century HPS&ST research. Among his many publications on the theory and pedagogy of physics teaching are two published in *Science & Education*:

Holton, G.: 2003, ‘What Historians of Science and Science Educators can do for One Another’, *Science & Education* **12**(7), 603-616.

Holton, G.: 2003, ‘The Project Physics Course: Then and Now’, *Science & Education* **12**(8), 779-786.

Unfortunately he has not yet written an autobiography, but in 2015 he was interviewed by the Harvard University Gazette with a view to eliciting something of his most interesting life story. The interview can be read at:

<http://news.harvard.edu/gazette/story/2015/05/a-completely-new-life-was-beckoning/>

Recent HPS&ST -Related Research Articles

Studies in History and Philosophy of Science Part A (Vol. 55, February 2016)

Special Section on Historiography and the Philosophy of the Sciences

Edited by Robin Findlay Hendry and Ian James Kidd

Special Section on Scientific Knowledge of the Deep Past

Edited by Adrian Currie

- Bella, R. L., Mulvey, B., K., Maeng, J. L. (2016). Outcomes of nature of science instruction along a context continuum: preservice secondary science teachers' conceptions and instructional intentions. *International Journal of Science Education*, 38(3), 493-520. doi: 10.1080/09500693.2016.1151960
- Biener, Z. (2016). Hobbes on the Order of Sciences: A Partial Defense of the Mathematization Thesis [preprint] Retrieved at <http://philsci-archive.pitt.edu/11868/>
- Brigandt, I. (2016). Why the Difference Between Explanation and Argument Matters to Science Education. *Science & Education*, 1-25. doi: 10.1007/s11191-016-9826-6 online first
- Buchwald, J. Z., Yeang, C.-P. (2016) Kirchoff's theory for optical diffraction, its predecessor and subsequent development: the resilience of an inconsistent theory. *Archive for History of Exact Sciences*, 1-49. doi: 10.1007/s00407-016-0176-1 online first
- Bromham, L. (2016). What is a gene for? *Biology & Philosophy*, 31(1), 103-123. doi: 10.1007/s10539-014-9472-9
- Fulford, J. M., Rudge, D.W (2016). The Portrayal of Industrial Melanism in American College General Biology Textbooks. *Science & Education*, 1-28. doi: 10.1007/s11191-016-9820-z online first
- Galamba, A. (2016). Conflicting Interpretations of Scientific Pedagogy. *Science & Education*, 1-19. doi: 10.1007/s11191-016-9822-x online first
- Hirofumi, O. (2015). Philosophical Foundations of Stereochemistry. *HYLE-International Journal for Philosophy of Chemistry*, 21(1), 1-18.
- Imre, A. R., Novotný, J. (2016). Fractals and the Korcak-law: a history and a correction. *The European Physical Journal H*, 1-23. doi: 10.1140/epjh/e2016-60039-8 online first
- Kahn, S., Zeidler, D. L. (2016). Using our Heads and HARTSS*: Developing Perspective-Taking Skills for Socioscientific Reasoning (*Humanities, ARTs, and Social Sciences). *Journal of Science Teacher Education*, 1-21. doi: 10.1007/s10972-016-9458-3 online first
- Konnemann, C., Asshoff, R., Hammann, M. (2016). Insights Into the Diversity of Attitudes Concerning Evolution and Creation: A Multidimensional Approach. *Science Education*. doi: 10.1002/sce.21226 online first
- Mößner, N. (2016). Scientific Images as Circulating Ideas: An Application of Ludwik Fleck's Theory of Thought Styles. *Journal for General Philosophy of Science*, 1-23. doi: 10.1007/s10838-016-9327-y online first
- Morante, S., Rossi, G. (2016). The Notion of Scientific Knowledge in Biology. *Science & Education*, 25(1), 165-197. doi: 10.1007/s11191-015-9803-5
- O'Sullivan, C. (2016). Some reflections on the role of semi-classical atomic models in the teaching and learning of introductory quantum mechanics. *American Journal of Physics*, 84, 211-215. doi: 10.1119/1.4938404
- Pavez, J. M., Vergara, C. A., Santibañez, D., Cofré, H. (2016). Using a Professional Development Program for Enhancing Chilean Biology Teachers' Understanding of Nature of Science (NOS) and Their Perceptions About Using History of Science to Teach NOS. *Science & Education*, 1-23. doi: 10.1007/s11191-016-9817-7 online first
- Pereira, A. P., Junior, P. L., Rodrigues, R. F. (2006) Explaining as Mediated Action An Analysis of Pre-service Teachers' Account of Forces of Inertia in Non-inertial Frames

- of Reference. *Science & Education*, 1-20. doi: 10.1007/s11191-016-9806-x online first
- Retz, T. (2015). At the interface: academic history, school history and the philosophy of history. *Journal of Curriculum Studies*, 1-15. doi: 10.1080/00220272.2015.1114151 online first
- Shane, J. W., Binns, I. C., Meadows, L., Hermann, R. S., Benus, M. J. (2016). Beyond Evolution: Addressing Broad Interactions Between Science and Religion in Science Teacher Education. *Journal of Science Teacher Education*, 1-17. doi: 10.1007/s10972-016-9449-4 online first
- Sjöström, J., Eilks, I., Zuin, V. G. (2016). Towards Eco-reflexive Science Education: A Critical Reflection About Educational Implications of Green Chemistry. *Science & Education*, 1-21. doi: 10.1007/s11191-016-9818-6
- Stan, M. (2016). Huygens on inertial structure and relativity. *Philosophy of Science*, 83(2), 277-298. doi: 10.1086/684912
- Vanzo, A. (2016). Experiment and speculation in seventeenth-century Italy: The case of Geminiano Montanari. *Studies in History and Philosophy of Science Part A*, 56(1), 52-51. doi:10.1016/j.shpsa.2015.11.001
- Williams, C. T., Rudge, D. W. (2016). Emphasizing the History of Genetics in an Explicit and Reflective Approach to Teaching the Nature of Science: A Pilot Study. *Science & Education*, 1-21. doi: 10.1007/s11191-016-9821-y Online first

Recent HPS&ST Related Books

Albert, David Z. (2015). *After physics*. Cambridge, MA: Harvard University Press

“After Physics presents ambitious new essays about some of the deepest questions at the foundations of physics, by the physicist and philosopher David Albert. The book’s title alludes to the close connections between physics and metaphysics, much in evidence throughout these essays. It also alludes to the work of imagining what it would be like for the project of physical science—considered as an investigation into the fundamental laws of nature—to be complete.” (From the Publisher)

More information at: <http://www.hup.harvard.edu/catalog.php?isbn=9780674731264>
 Review by Kerry McKenzie in *Metascience* (2016, Vol. 25)
<http://link.springer.com/article/10.1007/s11016-015-0048-3>

Apel, Thomas A. (2016). *Feverish Bodies, Enlightened Minds: Science and the Yellow Fever Controversy in the Early American Republic*. Stanford, CA: Stanford University Press

“From 1793 to 1805, yellow fever devastated U.S. port cities in a series of terrifying epidemics. The search for the cause and prevention of the disease involved many prominent American intellectuals, including Noah Webster and Benjamin Rush. This investigation produced one of the most substantial and innovative outpourings of scientific thought in early American history. But it also led to a heated and divisive debate—both political and theological—around the place of science in American society.

Feverish Bodies, Enlightened Minds opens an important window onto the conduct of scientific inquiry in the early American republic. The debate between “contagionists,” who thought the disease was imported, and “localists,” who thought it came from domestic sources, reflected contemporary beliefs about God and creation, the capacities of the human mind, and even the appropriate direction of the new nation. Through this thoughtful investigation of the yellow fever epidemic and engaging examination of natural science in

early America, Thomas Apel demonstrates that the scientific imaginations of early republicans were far broader than historians have realized: in order to understand their science, we must understand their ideas about God.”(From the Publisher)

More information at: <http://www.sup.org/books/title/?id=26338>

Axtell, James (2016). *Wisdom's Workshop: The Rise of the Modern University*. Princeton, NJ: Princeton University Press.

“When universities began in the Middle Ages, Pope Gregory IX described them as "wisdom's special workshop." He could not have foreseen how far these institutions would travel and develop. Tracing the eight-hundred-year evolution of the elite research university from its roots in medieval Europe to its remarkable incarnation today, *Wisdom's Workshop* places this durable institution in sweeping historical perspective. In particular, James Axtell focuses on the ways that the best American universities took on Continental influences, developing into the finest expressions of the modern university and enviable models for kindred institutions worldwide. Despite hand-wringing reports to the contrary, the venerable university continues to renew itself, becoming ever more indispensable to society in the United States and beyond. Born in Europe, the university did not mature in America until the late nineteenth century. Once its heirs proliferated from coast to coast, their national role expanded greatly during World War II and the Cold War. Axtell links the legacies of European universities and Tudor-Stuart Oxbridge to nine colonial and hundreds of pre-Civil War colleges, and delves into how U.S. universities were shaped by Americans who studied in German universities and adapted their discoveries to domestic conditions and goals. The graduate school, the PhD, and the research imperative became and remain the hallmarks of the American university system and higher education institutions around the globe.

A rich exploration of the historical lineage of today's research universities, *Wisdom's Workshop* explains the reasons for their ascendancy in America and their continued international preeminence. (from the publisher)

More information at: <http://tinyurl.com/hc5vas6>

Bala, Arun (Ed.) (2016). *The Bright Dark Ages - Comparative and Connective Perspectives*. Boston, MA: Brill

“The European 'dark ages' in the millennium 500 to 1500 CE was a bright age of scientific achievements in China, India and the Middle East. The contributors to this volume address the implications of this seminal era of Asian science for comparative and connective science studies. Although such studies have generally adopted a binary perspective focusing on one or another of the Asian (Chinese, Indian, Islamic) civilizations, this study brings them together into a single volume within a wider Eurasian perspective. Moreover, by drawing together historical, philosophical, and sociological dimensions into one volume it promotes a richer understanding of how Eurasian connections and comparisons in the millennium preceding the modern era can illuminate the birth and growth of modern science” (From the Publisher)

More information at: http://www.brill.com/products/book/bright-dark-ages#DESREAD_1

Barbin, E., Jankvist, U., Kjeldesen, T. (Eds.) (2015). *Proceedings of the Seven European Summer University: History and Epistemology in Mathematics Education*. Copenhagen, Denmark: Danish School of Education. Retrieved at: http://conferences.au.dk/fileadmin/conferences/ESU-7/ESU7_e-version-red.pdf

“The purpose of ESU is not only to stress the use of history and epistemology in the teaching and learning of mathematics, in the sense of a technical tool for instruction, but also to reveal that mathematics should be conceived as a living science with a long history and a vivid present. The main idea of the Summer University is threefold: i) to provide a school for working on a historical, epistemological and cultural approach to mathematics and its teaching, with emphasis on actual implementation, ii) to give the opportunity to mathematics teachers, educators and researchers to share their teaching ideas and classroom experiences related to a historical perspective in teaching, and iii) to motivate further collaboration along these lines, among teachers of mathematics and researchers on history and education of mathematics in Europe and beyond. In accordance with this, the ESU is more a collection of intensive courses than a conference for researchers.” (From the “Presentation of the Proceedings”)

Birkhead, T. (Ed.) (2016). *Virtuoso by Nature: The Scientific Worlds of Francis Willughby FRS (1635-1672)*. Boston, MA: Brill

“Francis Willughby together with John Ray revolutionized the study of natural history. They were motivated by the new philosophy of the mid 1600s and transformed natural history in to a rigorous area of study. Because Ray lived longer and more of his writings have survived, his reputation subsequently eclipsed that of Willughby. Now, with access to previously unexplored archives and new discoveries we are able to provide a comprehensive evaluation of Francis Willughby’s life and works. What emerges is a polymath, a true virtuoso, who made original and imaginative contributions to mathematics, chemistry, linguistics as well as natural history. We use Willughby’s short life as a lens through which to view the entire process of seventeenth-century scientific endeavor.”(From the publisher)

More information at: <http://www.brill.com/products/book/virtuoso-nature-scientific-worlds-francis-willughby>

Blackwell, S. H., Johnson, K. (Eds.) (2016). *Fine Lines: Vladimir Nabokov’s Scientific Art*. New Haven, CT: Yale University Press

“This landmark book is the first full appraisal of Vladimir Nabokov’s long-neglected contributions as a scientist. Although his literary achievements are renowned, until recently his scientific discoveries were ignored or dismissed by many. Nabokov created well over 1,000 technical illustrations of the anatomical structures of butterflies, seeking to understand the evolutionary diversity of small butterflies called Blues. But only lately have scientists confirmed his meticulous research and vindicated his surprising hypotheses. This volume reproduces 154 of Nabokov’s drawings, few of which have ever been seen in public, and presents essays by ten leading scientists and Nabokov specialists. The contributors underscore the significance of Nabokov’s drawings as scientific documents, evaluate his visionary contributions to evolutionary biology and systematics, and offer insights into his unique artistic perception and creativity.” (From the Publisher)

More information at: <http://yalebooks.com/book/9780300194555/fine-lines>
Review of Vladimir Lukhtanov in *Nature* at: <http://tinyurl.com/hdt7ulo>

Davis, Ernest, Davis, Philip J. (Eds.) (2015). *Mathematics, Substance and Surmise: Views on the Meaning and Ontology of Mathematics*. Netherlands: Springer International Publishing

“The seventeen thought-provoking and engaging essays in this collection present readers with a wide range of diverse perspectives on the ontology of mathematics. The essays address such questions as: What kind of things are mathematical objects? What kinds of assertions do

mathematical statements make? How do people think and speak about mathematics? How does society use mathematics? How have our answers to these questions changed over the last two millennia, and how might they change again in the future? The authors include mathematicians, philosophers, computer scientists, cognitive psychologists, sociologists, educators and mathematical historians; each brings their own expertise and insights to the discussion.”(From the Publisher)

More information at: <http://tinyurl.com/zhugg75>

Franklin, Allan (2016). *What Makes a Good Experiment? Reasons and Roles in Science*. Pittsburgh, PA: Pittsburgh University Press.

“What makes a good experiment? Although experimental evidence plays an essential role in science, as Franklin argues, there is no algorithm or simple set of criteria for ranking or evaluating good experiments, and therefore no definitive answer to the question. Experiments can, in fact, be good in any number of ways: conceptually good, methodologically good, technically good, and pedagogically important. And perfection is not a requirement: even experiments with incorrect results can be good, though they must, he argues, be methodologically good, providing good reasons for belief in their results. Franklin revisits the same important question he posed in his 1981 article in the *British Journal for the Philosophy of Science*, when it was generally believed that the only significant role of experiment in science was to test theories. But experiments can actually play a lot of different roles in science—they can, for example, investigate a subject for which a theory does not exist, help to articulate an existing theory, call for a new theory, or correct incorrect or misinterpreted results. This book provides details of good experiments, with examples from physics and biology, illustrating the various ways they can be good and the different roles they can play.” (From the publisher)

More information at: <http://www.upress.pitt.edu/BookDetails.aspx?bookId=36582>

Fuller, Steve (2015). *Knowledge: The Philosophical Quest in History*. Oxford, UK: Routledge

“The theory of knowledge, or epistemology, is often regarded as a dry topic that bears little relation to actual knowledge practices. *Knowledge: The Philosophical Quest in History* addresses this perception by showing the roots, developments and prospects of modern epistemology from its beginnings in the nineteenth century to the present day.” (from the Publisher)

More information at <https://www.routledge.com/products/9781844658183>

Review by Berry Allen at <https://ndpr.nd.edu/news/56619-knowledge-the-philosophical-quest-in-history/>

Symposium on this book in *Metascience*: <http://link.springer.com/article/10.1007/s11016-015-0015-z>

Gelfert, Axel (2016). *How to Do Science With Models: A Philosophical Primer*. Dordrecht: Springer.

“Taking scientific practice as its starting point, this book charts the complex territory of models used in science. It examines what scientific models are and what their function is. Reliance on models is pervasive in science, and scientists often need to construct models in order to explain or predict anything of interest at all. The diversity of kinds of models one finds in science – ranging from toy models and scale models to theoretical and mathematical models – has attracted attention not only from scientists, but also from philosophers,

sociologists, and historians of science. This has given rise to a wide variety of case studies that look at the different uses to which models have been put in specific scientific contexts. By exploring current debates on the use and building of models via cutting-edge examples drawn from physics and biology, the book provides broad insight into the methodology of modelling in the natural sciences. It pairs specific arguments with introductory material relating to the ontology and the function of models, and provides some historical context to the debates as well as a sketch of general positions in the philosophy of scientific models in the process.” (From the Publisher)

"This is a truly excellent book. Not only does it provide insightful analysis of contemporary philosophical accounts of modelling, but it draws our attention to important yet unexplored questions related to the exploratory function of models and their connection to issues in the philosophy of technology. By focusing our attention on a broad range of examples it provides the best systematic treatment of scientific modelling to appear in many years. Highly recommended!" - Margaret Morrison, University of Toronto

More information at: <http://www.springer.com/en/book/9783319279527>

Grayling, A. C. (2016). *The Age of Genius: The Seventeenth Century and the Birth of the Modern Mind*. Bloomsbury, NY: USA

“The Age of Genius explores the eventful intertwining of outward event and inner intellectual life to tell, in all its richness and depth, the story of the 17th century in Europe. It was a time of creativity unparalleled in history before or since, from science to the arts, from philosophy to politics. Acclaimed philosopher and historian A.C. Grayling points to three primary factors that led to the rise of vernacular (popular) languages in philosophy, theology, science, and literature; the rise of the individual as a general and not merely an aristocratic type; and the invention and application of instruments and measurement in the study of the natural world.

Grayling vividly reconstructs this unprecedented era and breathes new life into the major figures of the seventeenth century intelligentsia who span literature, music, science, art, and philosophy--Shakespeare, Monteverdi, Galileo, Rembrandt, Locke, Newton, Descartes, Vermeer, Hobbes, Milton, and Cervantes, among many more. During this century, a fundamentally new way of perceiving the world emerged as reason rose to prominence over tradition, and the rights of the individual took center stage in philosophy and politics, a paradigmatic shift that would define Western thought for centuries to come.” (From the Publishers)

More information at: <http://www.bloomsbury.com/us/the-age-of-genius-9781620403440/>

Kaji, Masanori, Kragh, Helge, Palló, Gábor (Eds.) (2015). *Early Responses to the Periodic System*. Oxford, UK: Oxford University Press

“The reception of the periodic system of elements has received little attention among scientists and historians alike. While many historians have studied Mendeleev's discovery of the periodic system, few have analyzed the ways in which the scientific community perceived and employed it. American historian of science Stephen G. Brush concluded that the periodic law had been generally accepted in the United States and Britain, and has suggested the need to extend this study to other countries.

In *Early Responses to the Periodic System*, renowned historians of science Masanori Kaji, Helge Kragh, and Gábor Palló present the first major comparative analysis on the reception, response, and appropriation of the periodic system of elements among different nation-states. This book examines the history of its pedagogy and popularization in scientific communities,

educational sectors, and popular culture from the 1970s to the 1920s. Fifteen notable historians of science explore the impact of Mendeleev's discovery in eleven countries (and one region) central to chemical research, including Russia, Germany, the Czech lands, and Japan, one of the few nation-states outside the Western world to participate in the nineteenth-century scientific research.

The collection, organized by nation-state, explores how local actors regarded the new discovery as law, classification, or theoretical interpretation. In addition to discussing the appropriation of the periodic system, the book examines meta-physical reflections of nature based on the periodic system outside the field of chemistry, and considers how far humans can push the categories of "response" and "reception." *Early Responses to the Periodic System* provides a compelling read for anyone with an interest in the history of chemistry and the Periodic Table of Element.”

More information at: <http://tinyurl.com/how78e7>

Review in *Journal of Chemical Education*:

<http://pubs.acs.org/doi/pdf/10.1021/acs.jchemed.6b00026>

Kaji, M., Furukawa, Y., Tanaka, H., Kikuchi, Y. (Eds.) (2016). *Proceeding of the International Workshop on the History of Chemistry: Transformation of Chemistry from the 1920s to The 1960s*. Japan: Japanese Society for History of Chemistry. Retrieved at: <http://kagakushi.org/iwhc2015/proceedings>

“The main theme of this workshop was the transformation of chemistry from the 1920s to the 1960s. Chemistry underwent many changes during these years: We saw the development of biochemistry, the emergence of polymer, quantum, and computational chemistry, and the so-called Instrumental Revolution. New methods, theories, and technologies opened up new fields in the chemical sciences. Chemistry expanded its scope by interacting with other sciences such as physics, biology, medicine, and mathematics. The chemical industry grew in importance and supported national and international economies. Production of plastics, synthetic fibers and rubber, fertilizers, drugs, and numerous chemicals shifted from coal to petroleum. The environmental problems caused by synthetic materials tarnished the public image of chemistry as well. Chemistry was also greatly influenced by World War II and the Cold War, when it served military and security purposes.

The aim of this workshop was to stimulate discussion of the transformation of chemistry in Japan and in the world during this period. This conference brought together scholars investigating the history of chemistry in the 20th century from different perspectives.” (From the Preface)

Kiehl, Jeffrey T. (2016). *Facing Climate Change: An Integrated Path to the Future*. New York, NY: Columbia University Press

“Facing Climate Change explains why people refuse to accept evidence of a warming planet and shows how to move past partisanship to reach a consensus for action. A climate scientist and licensed Jungian analyst, Jeffrey T. Kiehl examines the psychological phenomena that twist our relationship to the natural world and their role in shaping the cultural beliefs that distance us further from nature. He also accounts for the emotions triggered by the lived experience of climate change and the feelings of fear and loss they inspire, which lead us to deny the reality of our warming planet.

But it is not too late. By evaluating our way of being, Kiehl unleashes a potential human emotional understanding that can reform our behavior and help protect the Earth. Kiehl dives deep into the human brain's psychological structures and human spirituality's imaginative

power, mining promising resources for creating a healthier connection to the environment—and one another. Facing Climate Change is as concerned with repairing our social and political fractures as it is with reestablishing our ties to the world, teaching us to push past partisanship and unite around the shared attributes that are key to our survival. Kiehl encourages policy makers and activists to appeal to our interdependence as a global society, extracting politics from the process and making decisions about our climate future that are substantial and sustaining.”

More information at: <http://cup.columbia.edu/book/facing-climate-change/9780231177184>

Park, Hyung Wook (2016). *Old Age, New Science: Gerontologists and Their Biosocial Visions, 1900–1960*. Pittsburgh, PA: Pittsburgh University Press

“Between 1870 and 1940, life expectancy in the United States skyrocketed while the percentage of senior citizens age sixty-five and older more than doubled—a phenomenon owed largely to innovations in medicine and public health. At the same time, the Great Depression was a major tipping point for age discrimination and poverty in the West: seniors were living longer and retiring earlier, but without adequate means to support themselves and their families. The economic disaster of the 1930s alerted scientists, who were actively researching the processes of aging, to the profound social implications of their work—and by the end of the 1950s, the field of gerontology emerged.

Old Age, New Science explores how a group of American and British life scientists contributed to gerontology’s development as a multidisciplinary field. It examines the foundational “biosocial visions” they shared, a byproduct of both their research and the social problems they encountered. Hyung Wook Park shows how these visions shaped popular discourses on aging, directly influenced the institutionalization of gerontology, and also reflected the class, gender, and race biases of their founders.” (From the Publisher)

More information at: <https://www.upress.pitt.edu/BookDetails.aspx?bookId=36625>

Shearmur, Jeremy, Stokes, Geoffrey (2016). *The Cambridge Companion to Popper*. Cambridge, UK: Cambridge University Press

“Karl Popper was one of the most influential philosophers of the twentieth century. His criticism of induction and his falsifiability criterion of demarcation between science and non-science were major contributions to the philosophy of science. Popper’s broader philosophy of critical rationalism comprised a distinctive philosophy of social science and political theory. His critique of historicism and advocacy of the open society marked him out as a significant philosopher of freedom and reason. This book sets out the historical and intellectual contexts in which Popper worked, and offers an overview and diverse criticisms of his central ideas. The volume brings together contributors with expertise on Popper’s work, including people personally associated with Popper (such as Jarvie, Miller, Musgrave, Petersen and Shearmur), specialists on the topics treated (Bradie, Godfrey-Smith and Jackson), and scholars with special interests in aspects of Popper’s work (Andersson, Hacoen, Maxwell and Stokes). (From the Publisher)

More information at: <http://tinyurl.com/grhxe2y>

Scerri, E., Fisher, G. (Eds.) (2016). *Essays in the Philosophy of Chemistry*. Oxford: Oxford University Press.

“The philosophy of chemistry has emerged in recent years as a new and autonomous field within the Anglo-American philosophical tradition. With the development of this new

discipline, Eric Scerri and Grant Fisher's "The Philosophy of Chemistry" is a timely and definitive guide to all current thought in this field. This edited volume will serve to map out the distinctive features of the field and its connections to the philosophies of the natural sciences and general philosophy of science more broadly. It will be a reference for students and professional alike.

Both the philosophy of chemistry and philosophies of scientific practice alike reflect the splitting of analytical and continental scholastic traditions, and some philosophers are turning for inspiration from the familiar resources of analytical philosophy to influences from the continental tradition and pragmatism. While philosophy of chemistry is practiced very much within the familiar analytical tradition, it is also capable of trail-blazing new philosophical approaches. In such a way, the seemingly disparate disciplines such as the "hard sciences" and philosophy become much more linked. (From the Publisher)

More information at: <http://tinyurl.com/zbobq8b>

Steinle, Friedrich, Levine, Alex (2016). *Exploratory Experiments: Ampère, Faraday, and the Origins of Electrodynamics*. Pittsburgh, PA: Pittsburgh University Press

“The nineteenth century was a formative period for electromagnetism and electrodynamics. Hans Christian Ørsted’s groundbreaking discovery of the interaction between electricity and magnetism in 1820 inspired a wave of research, led to the science of electrodynamics, and resulted in the development of electromagnetic theory. Remarkably, in response, André-Marie Ampère and Michael Faraday developed two incompatible, competing theories. Although their approaches and conceptual frameworks were fundamentally different, together their work launched a technological revolution—laying the foundation for our modern scientific understanding of electricity—and one of the most important debates in physics, between electrodynamic action-at-a-distance and field theories.

In this foundational study, Friedrich Steinle compares the influential work of Ampère and Faraday to reveal the prominent role of exploratory experimentation in the development of science. While this exploratory phase was responsible for decisive conceptual innovations, it has yet to be examined in such great detail. Focusing on Ampère’s and Faraday’s research practices, reconstructed from previously unknown archival materials, including laboratory notes, diaries, letters, and interactions with instrument makers, this book considers both the historic and epistemological basis of exploratory experimentation and its importance to scientific development.” (From the Publishers)

“It is high time that Friedrich Steinle’s original study, which introduces, develops, and defends the concept of exploratory experimentation, becomes available to an English-speaking audience. This book is a powerful illustration of how history of science can be a valuable resource for philosophical thought.”—Jutta Schickore, Indiana University

“This is an extraordinary book, destined to be a classic in several disciplines. Steinle is one of the pioneers responsible for introducing the concept of exploratory experimentation into the philosophy of science.”—Richard Burian, Virginia Tech

More information at: <http://www.upress.pitt.edu/BookDetails.aspx?bookId=36631>

Coming HPS&ST-Related Conferences

April 14-17, 2016, NARST annual conference, Baltimore, MD, USA.

Details at: <https://www.narst.org/annualconference/2016conference.cfm>

- April 21-23, 2016 Nordic Network for Philosophy of Science Fourth Annual Meeting, Tartu, Estonia.
Details at: <https://nnpscience.wordpress.com/meetings/tartu-2016/>
- May 10-11, 2016, Early Modern Experimental Philosophy, Metaphysics, and Religion, Workshop, University of Warwick, UK.
Details at: <http://bit.ly/EMExper>
- May 18-29, 2016, Models and Simulations 7 Conference (MS7), Barcelona, Spain.
Details at: <http://www.ub.edu/ms7/>
- May 19-22, 2016, 3rd Annual Meeting of the Consortium for Socially Relevant Philosophy of/in Science and Engineering (SRPoiSE), Richardson, Texas, USA.
Details at: <http://www.utdallas.edu/c4v/cfp-srpoise-vmst-2016/>
- May 19-21, 2016, Philosophy of Science in a Forest 2016, Conference Centre Kaap Doorn, Utrecht, Netherlands.
Details at: <https://www.kaapdoorn.nl/nvwf/>
- May 19-22, 2016, 6th Annual Values in Medicine, Science, and Technology Conference, Richardson, Texas, USA.
Details at: <http://www.utdallas.edu/c4v/cfp-srpoise-vmst-2016/>
- May 6-28, 2016, 23rd Symposium on Chemical and Science Education, Dortmund, Germany.
Details at: <http://www.chemiedidaktik.uni-bremen.de/symp2016/>
- May 18-20, 2016, Connecting Worlds: History of Science International Conference, Porto, Portugal.
Details at: <https://historyofscienceup.wordpress.com/home>
- May 28-30, 2016, Annual Conference of the Canadian Society for the History and Philosophy of Science (CSHPS), Calgary, Canada
Details at: <http://www.yorku.ca/cshps1/meeting.html>
- May 2-31, 2016, Annual Meeting of the Canadian Society for History and Philosophy of Mathematics (CSHPM), Calgary, Canada
Details at: <http://www.cshpm.org/meeting/>
- June 13-14, 2016, Eighth Workshop on the Philosophy of Information, University of Ferrara, Italy
Details at: <http://www.socphilinfo.org/workshops/8wpi>
- June 16-18, 2016, Ernst Mach Centenary Conference, University of Vienna, Austria.
Details at: <http://sshap.org/2015/08/13/cfp-ernst-mach-centenary-conference-2016/>
- June 17-19, 2016, 6th Conference of the Society for the Philosophy of Science in Practice (SPSP), Glassboro, NJ, USA.
Details at: <http://www.philosophy-science-practice.org/en/events/sixth-spsp-glassboro-nj-2016/>
- June 20-24, 2016, 12th International Conference of the Learning Sciences, Nanyang Technological University, Singapore
Details at: <https://www.isls.org/icls/2016/theme.html>
- June 22-25, 2016, Eighth Joint Meeting of the BSHS, CSHPS, and HSS, Edmonton, Alberta, Canada.
Details at: www.uab.ca/3societies
- June 22-15, 2016, History of Philosophy of Science (HOPOS) annual conference, University of Minneapolis, USA.
Details at: <http://hopos2016.umn.edu/>
- June 22-26, 2016, Annual Meeting of the Society for the History of Technology (SHOT), Singapore
Details at: http://www.historyoftechnology.org/call_for_papers/index.html
- July 3-5, 2016, Sixth Integrated History and Philosophy of Science conference (&HPS6)

- Details at: <https://philosophyofsciencenetwork.wordpress.com/hps6/>
- July 8-9, 2016, 'Representations of Nature(s), Humans and God(s) in Literature',
International Commission on Science and Literature DHST/IUHPST Hermoupolis,
Syros Island, Greece.
Details from: George Vlahakis gvlahakis@yahoo.com
- July 10-15, 2016, Second World Conference on Physics Education, São Paulo, Brazil.
Details at: <http://www.wcpe2016.org/en/>
- July 13-15, 2016, Science in Public 2016, University of Kent, Canterbury, UK
Details at: <http://scienceinpublic.org/science-in-public-2016/>
- July 16-18, 2016, 18th UK-European Foundations of Physics Conference
Details at: <http://www.lse.ac.uk/philosophy/blog/2015/10/01/foundations-2016/>
- July 18-22, 2016, History and Pedagogy of Mathematics, Montpellier, France
Details at: <http://hpm2016.sciencesconf.org/resource/page/id/2>
- July 26-30, 2016, 43rd ICOHTEC meeting: Technology, Innovation, and Sustainability:
Historical and Contemporary Narratives. Porto, Portugal
Details at: <http://www.icohtec.org/annual-meeting-2016-cfp.html>
- August 1-4, International Society for the Philosophy of Chemistry, Conference, Boca Raton,
Florida, USA
Details at: <https://sites.google.com/site/ispc2016/program>
- August 10-13, 2016, Annual Meeting of the Cognitive Science Society, Philadelphia, MA,
USA
Details at: <http://cognitivesciencesociety.org/conference2016/index.html>
- August 22-25, 2016, 1st European IHPST Regional Conference, Flensburg, Germany
Details at:
http://ihpst.net/content.aspx?page_id=22&club_id=360747&module_id=189361
- August 26-28, 2016, International Conference of East-Asian Association for Science
Education, Tokyo, Japan.
Details at: <http://ease2016tokyo.jp/>
- September 5-7, 2016, European Physical Society, *2nd International Conference on the
History of Physics*, Pöllau Castle, Pöllau, Austria.
Abstract submission deadline: 28 April 2016
Details at: www.historyofphysics.org
- September 16-17, 2016, Mathematical Biography: A MacTutor Celebration, St Andrews
University, Scotland
Details at: <http://www.mcs.st-and.ac.uk/mathbiog/>
- September 22-24, 2016, The 7th International Conference of the European Society for the
History of Science (ESHS), Prague
Details at: <http://www.7eshs2016.cz>
- October 26-28, 2016, Conference on science and democracy, Pisa, Italy
Details at: <http://iasc.me/2016-conference/>
- October 26-28, 2016, Nature of Science Symposium, Limerick, Ireland
Details at: LimerickNOS2016@gmail.com
- October 28, 2016, Science and Religion in Education Conference, Oxford, UK
Details at: <http://www.faradayschools.com/events/conference/>
- November 5, 2016, Leibniz: Legacy and Impact, Manchester Metropolitan University, UK
Abstract deadline: February 28.
Details at: <http://leibniz-translations.com/leibniz2016.htm>
- November 14-15: Symposium: The Dilemmas of Upright Scientists, Israel, Tel-Aviv
University
Inquiries to: Yuliana Litov, ylitov@tauex.tau.ac.il

December, 15-18, 2016, 3rd Asian HPS&ST Conference, Pusan National University, South Korea.

Inquiries to: Hwe-Ae Seo, haseo@pusan.ac.kr

January 5-8, 2017, 131th Annual Meeting of the American Historical Association, Denver, Colorado, USA.

Details at: <http://historians.org/annual-meeting/future-meetings>

February 16-20, 2017, AAAS Annual Meeting, Boston, USA

Details at: <https://aaas.confex.com/aaas/2017/cfp.cgi>

July 4-7, 2017, 14th IHPST International Biennial Conference, Ankara, Turkey.

Conference Chairs Mehmet Fatih Taşar [mftasar@gazi.edu.tr] & Gultekin Cakmakci [cakmakci@hacettepe.edu.tr]

Details at: <http://ihpst.net/>

July 16-21, 2017, International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB) 2017 Meeting, São Paulo, Brazil.

Details at: <http://www.ishpssb.org/announcements/148-ishpssb-2017-meeting>

July 23-29, 2017, 25th International Congress of History of Science, and Technology (ICHST), Rio de Janeiro, Brazil.

Details at: <http://www.ichst2017.sbhc.org.br/site/capa>

Assistance Required

In one form or another, this monthly HPS&ST newsletter/note has been produced and distributed for the past 25+ years. Since its original printed, folded and posted beginnings, it has served as a vehicle for keeping the wide and ever-growing international community of HPS scholars who have education interests and the equally wide community of science educators who have HPS interests in contact with each other and with research and activities in the HPS&ST field.

Since 1987 its editor has been Michael Matthews, School of Education, UNSW (m.matthews@unsw.edu.au). Over the years there have been sterling assistant editors. For the past year Paulo Maurício from Lisbon, Portugal (<https://sites.google.com/site/pauloeigenvalue/home>) has been giving invaluable assistance in gathering material for the newsletter. Another assistant would be most useful in enhancing the content and reach of the newsletter/note. Having net access to journal holdings is important, as is some ability to make contact with the multitude of international and national HPS associations and Science Education associations with interests in the field. Anyone interested in giving such assistance can make direct contact with the editor.