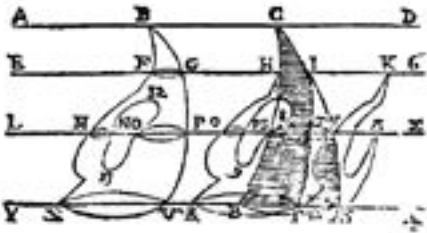


# BULLETIN

CSHPM

SCHPM

May/Mai 2017

Number/le numéro 60

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Canadian Society for History  
and Philosophy of Mathematics

Société canadienne d’histoire et  
de philosophie des mathématiques

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ISSN 0835-5924

## ABOUT THE SOCIETY

Founded in 1974, the Canadian Society for the History and Philosophy of Mathematics / Société canadienne d'histoire et philosophie des mathématiques (CSHPM/SCHPM) promotes research and teaching in the history and philosophy of mathematics. Officers of the Society are:

*President:* **Dirk Schlimm**, McGill University, Montreal, QC H3A 2T7, CA, [dirk.schlimm@mcgill.ca](mailto:dirk.schlimm@mcgill.ca)

*Vice-President:* **Maria Zack**, Point Loma Nazarene University, San Diego, CA 92106, USA, [MariaZack@pointloma.edu](mailto:MariaZack@pointloma.edu)

*Secretary:* **Patricia Allaire**, 14818 60th Ave., Flushing, NY 11355, USA, [PatAllaire@gmail.com](mailto:PatAllaire@gmail.com)

*Treasurer:* **Gregory Lavers**, Concordia University, Montreal, QC H3G 1M8, CA, [Greg.Lavers@concordia.ca](mailto:Greg.Lavers@concordia.ca)

*Past President:* **Elaine Landry**, UC Davis, Davis, CA 95616, USA, [emlandry@ucdavis.edu](mailto:emlandry@ucdavis.edu)

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### Volunteer Positions

The Society's Web Page ([www.cshpm.org](http://www.cshpm.org)) is maintained by **Michael Molinsky**, University of Maine at Farmington, Farmington, ME 04938, USA, [michael.molinsky@maine.edu](mailto:michael.molinsky@maine.edu), who also manages the Society's Archives. The Proceedings of the Annual Meeting are edited by **Maria Zack** and **Dirk Schlimm** (see above). **Hardy Grant**, [hardygrant@yahoo.com](mailto:hardygrant@yahoo.com), and **Amy Ackerberg-Hastings**, [aackerbe@verizon.net](mailto:aackerbe@verizon.net), edit the CSHPM Notes column for *Notes* of the Canadian Mathematical Society. **Maritza Branker**, Niagara University, Lewiston, NY 14109, [mbranker@niagara.edu](mailto:mbranker@niagara.edu), serves as CMS Liaison.

*New Members are most cordially welcome; please contact the Secretary.*

## President's Message

So, what's been happening in history and philosophy of mathematics these days? As usual, many CSHPM members have been busy presenting their work all over the world and helping organize many events.

In January the Joint Mathematics Meeting was held in Atlanta, with numerous participation of CSHPM members, too many to name them all. Let me just single out a few to stand as representatives: The HOM SIGMAA Guest Lecture, delivered by Glen Van Brummelen on 'Trigonometry and the Challenge of the History of Mathematics'. The four AMS-MAA-ICHM special sessions on *History of Mathematics* were co-organized by Adrian Rice, Daniel Otero, and Sloan Despeaux, with a total of 25 speakers, while two MAA sessions on *Preserving and Writing the History of Mathematics Departments* with 12 speakers in total were co-organized by Lawrence D'Antonio with Toke Knudsen. For the philosophers, Tom Drucker organized the POM SIGMAA Guest Lecture and Bonnie Gold co-organized (with Carl Behrens) an MAA Session on *Do Mathematicians Really Need Philosophy?*. Additionally, the ASL 2017 Annual North American meeting took place in Boise in March and featured as a highlight the Gödel Lecture, delivered by Charles Parsons on 'Gödel and the universe of sets'.

More past events are listed in the Announcements below, so instead of continuing to dwell on the past, let me remind you that an excellent place to look for future events is the 'Calendar' tab on the CSHPM website, well-maintained by Mike Molinsky, and bursting with announcements.

Most importantly, our Annual Meeting is coming up soon! I am looking forward to welcoming as many of you as possible in Toronto in the year of the 150th anniversary of the Canadian Confederation. The meeting will be held in conjunction with the Congress of the Humanities and Social Sciences (with the theme 'The Next 150, On Indigenous Lands'), from May 28 to 30, at Ryerson University. The program looks as exciting as ever. Our special session is organized this year by Pat Allaire and Rob Bradley on *18th Century Mathematics*, while Eisso Atzema has masterfully been in charge of the general sessions. To continue our

outreach, Greg Lavers was able to co-organize a joint session with the CPA on *New Perspectives on Logic in the Nineteenth Century, from Kant to Russell*. We've also been lucky to win Craig Fraser as the local organizer. To all who volunteered their time and skills in the organization of this meeting, I'd like to express my thanks!

Let me also remind you that the second volume of our proceedings published by Birkhäuser, *Research in History and Philosophy of Mathematics: The CSHPM 2015 Annual Meeting at Washington D. C.*, edited by Elaine Landry and Maria Zack has appeared in print. Thanks to the hard work of the editors and, of course, to the contributors to the volume!

Anything else happened in the world lately? Bob Dylan won the Nobel Prize in literature and to me his song that 'the times they are a-changing' seems to be more fitting than ever.

On the 105th birthday of Alan Turing, the UK voted for 'Brexit,' and on the 168th birthday of Gottlob Frege, Donald Trump was elected US president. Regardless of how one might think about these developments, they do have the potential of significantly impacting our activities in the future: Funding for students and projects might become more scarce, and international co-operations and traveling to conferences more burdensome (if not impossible).

As the history of mathematics is inherently a subject matter that spans across nations and cultures, I think it is all the more important for the CSHPM to reflect on its goals and values and to work on promoting them.

With regard to Canadian values, let me end on a personal note: I'm proud to report that I became a Canadian citizen in February 2017. One part of the process consists in studying the 'Rights and Responsibilities of Citizenship', one of which is, according to the official *Discover Canada* study guide, 'Multiculturalism—A fundamental characteristic of the Canadian heritage and identity. Canadians celebrate the gift of one another's presence and work hard to respect pluralism and live in harmony.' To me, this attitude also lies at the heart of the CSHPM.

*Dirk Schlimm*

## Announcements

Congratulations to Glen Van Brummelen, who was awarded one of ten 3M National Teaching Fellowships

by the Society for Teaching and Learning in Higher Education, the top teaching honour in Canada. The winners are profiled at [www.stlhe.ca/awards/3m-national-teaching-fellowships/](http://www.stlhe.ca/awards/3m-national-teaching-fellowships/) and in the March 2017 issue of *Maclean's Magazine*.

Kudos also for David Bellhouse, who has recently been given the University of Manitoba Faculty of Science Honoured Alumni Award in Statistics. The citation reads, "Dr. Bellhouse is a pillar of the Canadian statistical community and an interdisciplinary statistician who has written books about the history of statistics and collaborated in fields such as archaeology and medicine. His contributions have helped to improve the surveys run by Statistics Canada and surveys conducted by the National Science Foundation in the U.S."

Jim Tattersall is serving as a Visiting Professor in the Department of Pure Mathematics and Mathematical Statistics at Wolfson College, Cambridge, during the 2017 Easter Term.

The American Library Association's *CHOICE* magazine honored two MAA books as "outstanding": *A Century of Advancing Mathematics*, edited by Steve Kennedy and featuring contributions by several other CSHPM members; and *Trigonometry: A Clever Study Guide*, by James Tanton.

Joan Richards received the History of Science Society Joseph H. Hazen Education Prize at its 2016 annual meeting.

Jeremy Gray received the Otto Neugebauer Prize for the History of Mathematics from the European Mathematical Society. The citation read, "Jeremy Gray is one of the (if not the) leading historian of modern mathematics. His highly original, extensive and deep body of work on 19th- and 20th-century mathematics has greatly advanced our knowledge about this period."

Nerida Ellerton was named one of Illinois State's two Outstanding University Researchers in February 2017. Department of Mathematics Chair George Seelinger wrote, "Professor Ellerton's work has been called seminal, groundbreaking, distinctive for its quality in depth and scope, impressive, impactful, of superior quality and exceptional importance as recognized by both national and international peers."

Ian Stewart received the MAA's Euler Book Prize for *In Pursuit of the Unknown: 17 Equations That Changed the World* at the 2017 JMM.

Michael Jeremy Barany's project, *Distributions in Postwar Mathematics*, Princeton University, received special mention for the International Union of the History and Philosophy of Science and Technology, Division of History of Science and Technology's fourth DHST Prize for Young Scholars. The next round of applications will be held in 2020.

Peter Griffiths published an article clarifying Fermat's Last Theorem in the February 2017 issue of *M500*.

Princeton University Press has published Roi Wagner's *Making and Breaking Mathematical Sense: Histories and Philosophies of Mathematical Practice*. The book description reads in part: "Wagner challenges conventional views that mathematical signs represent fixed, ideal entities; that mathematical cognition is a rigid transfer of inferences between formal domains; and that mathematics' exceptional consensus is due to the subject's underlying reality."

Taylor & Francis has welcomed Ashgate's publications into its company.

The Math Forum electronic newsletter is now part of the National Council of Teachers of Mathematics and headquartered in Swarthmore, Pennsylvania. The URL remains the same, [mathforum.org/](http://mathforum.org/).

*Isis Cumulative Bibliographies* from 1913 to 1975 are now freely available at [cumulative.isiscb.org/about.html](http://cumulative.isiscb.org/about.html). Also, student members of the History of Science Society may join HSS for free in the first year after their PhD.

All back-issues of the *Biographical Memoirs of Fellows of the Royal Society* are now permanently available for free. See [rsbm.royalsocietypublishing.org/content/by/year](http://rsbm.royalsocietypublishing.org/content/by/year).

The Cambridge Digital Library has added a selection of papers and photographs from the Royal Greenwich Observatory expedition to view the 1874 transit of Venus, including private journals and caricature drawings made by the participants. See [cudl.lib.cam.ac.uk/collections/tov](http://cudl.lib.cam.ac.uk/collections/tov).

A fully searchable digitization of all of Christiaan Huygens' manuscripts, letters and annotations held at Leiden University is now available for purchase by libraries. See [www.brill.com/products/online-resources/codices-hugeniani-online](http://www.brill.com/products/online-resources/codices-hugeniani-online).

The TRIUMPHS project, funded by NSF, continues to seek site testers for primary source projects. Applications are due by June 15 for Fall 2017 and by

October 15 for Spring 2018. See [webpages.ursinus.edu/nscoville/TRIUMPHS.html](http://webpages.ursinus.edu/nscoville/TRIUMPHS.html).

**MAA News:** Past President Francis Su has created a free math news app, MathFeed, for iPhone/iPad. He explains that MathFeed "is a news aggregator, bringing together interesting stories about math, with high quality links, that showcases stories about the power and beauty of math, as well as its human side. Inside the feed, on a regular basis, are injected stories from MAA journals and magazines." A Math Treasure from *MAA Convergence* is included almost every day. MAA members can enter their password to access MAA journals. MathFeed can also be followed on Twitter, [twitter.com/mathfeed](https://twitter.com/mathfeed).

A number of MAA's almost 100 committees are seeking members. Several of these implicitly or explicitly need contributions from historians and philosophers of mathematics, including the MAA-AMS Joint Committee on Archives. A list of committees and subcommittees is available at [maa.org/about-maa/governance/council-and-committees-list](http://maa.org/about-maa/governance/council-and-committees-list). To volunteer yourself or a fellow scholar, complete the form at [surveymonkey.com/r/PDXSSQL](http://surveymonkey.com/r/PDXSSQL).

**HOM SIGMAA News:** The 14th annual Student Paper Contest in the History of Mathematics was held this spring. Submissions were due April 2. A subpage with contest information has been created at the new (and mobile-friendly) website, [sigmaa.maa.org/hom/](http://sigmaa.maa.org/hom/). Dorothee Blum (Millersville) was elected to succeed Dominic Klyve as Prize Coordinator.

**BSHM News:** Spring 2017 meetings include: "Beyond the Academy. The Practice of Mathematics from the Renaissance to the Nineteenth Century" at the Priory Street Centre, York, on April 6–7; "A History of Mathematical Logic in Honour of Ivor Grattan-Guinness" at Birkbeck College, London, on May 27; "Charles Dodgson's Mathematics" at the Mathematical Institute, Oxford, on May 29; and "Picturing Mathematics" at Rewley House, Oxford, on June 24.

The Choir of The Queen's College, Oxford, has released a CD exploring the theme of "revelation" that includes a new composition by Phillip Cooke featuring the words of Jackie Stedall, "The World on Fire." To order *A New Heaven*, visit [hyperurl.co/ANewHeaven](http://hyperurl.co/ANewHeaven). The joint BSHM/Portuguese Mathematical Society website for postage stamps with history of mathematics themes has been enhanced; see [www.mathematicalstamps.eu](http://www.mathematicalstamps.eu). BSHM members

should visit [www.bshm.ac.uk/about/announcements/online-access-bshm-bulletins](http://www.bshm.ac.uk/about/announcements/online-access-bshm-bulletins) for information on activating access to the online archives of the *BSHM Bulletin*.

**FedCan News:** News coverage, videos, and other information from the Annual Conference (reported on elsewhere in this issue) can be accessed at [www.ideas-idees.ca/events/annual-conference](http://www.ideas-idees.ca/events/annual-conference). See [www.ideas-idees.ca/events/webinars](http://www.ideas-idees.ca/events/webinars) for the recorded version of a January 24 webinar on membership recruitment and retention strategies. The Federation has completed its submission to the Fundamental Science Review process. Federation President Stephen J. Toope has been named Vice-Chancellor of the University of Cambridge.

**CMS News:** Maritza M. Branker (Niagara) organized a scientific session on History and Philosophy of Mathematics on December 3, 2016, during the Winter Meeting at Niagara Falls, ON. Speakers included: Craig Fraser (Toronto), “Mathematics in Library Subject Classification Systems”; Mariya Boyko (Toronto), “The changing image of mathematics in Soviet textbooks in the 1960s and 1970s”; Allan Olley (Toronto), “Celestial Mechanics as Applied Mathematics”; Gwennaël Bricteux (Montréal), “What is a Diagram? Views from Category Theory and Logic”; Margaret Stawiska-Friedland (Michigan), “Tadeusz Wazewski’s early works in topology”; and Sylvia Nickerson (York). Glen Van Brummelen (Quest) gave one of the four plenary lectures, on “History for the Future: Heavenly Storytelling in the Mathematics Classroom”. Speakers on the 2016–2017 schedule for the Philadelphia Area Seminar on the History of Mathematics (PASHoM) included: Fred Rickey (West Point, emeritus) on “E228” on September 15; Toke Knudsen (SUNY-Oneonta), who spoke about Danish professor Johannes Hjelmsley’s approach to geometry pedagogy on October 20; William Dunham (Bryn Mawr) on “Bertrand Russell at Bryn Mawr” on November 17; Jemma Lorenat (Pitzer) on “*Anschauliche Geometrie* in 1832: Jakob Steiner, the illustrated figure, and the imagination” on December 15; Shelley Costa (Swarthmore and West Chester) on “Gender Roles in Modern Plays” on February 16; Erich H. Reck (California-Riverside) on “Dedekind and the Structuralist Transformation of Mathematics” on March 16; and Amy Ackerberg-Hastings on “John Playfair and His Misnamed Axiom” on April 20.

The Frederick V. Pohle Colloquium on the History of Mathematics, hosted by the Department of Mathematics & Computer Science at Adelphi University, presented the following speakers in 2017: Jim Tattersall (Providence) on “Surfing the Educational Times” on March 1; Maritza Branker (Niagara) on “Complex Numbers through the Eyes of Cauchy and Hamilton” on April 5; and John McCleary (Vassar) on “Max Dehn and Hilbert’s Third Problem” on May 3.

Michel Serfati announces the second semester program for the annual seminar on Epistemology and History of Mathematical Ideas, held Wednesdays at 2:00 pm at the Institut Henri Poincaré in Paris: Jean Paul Allouche (Inst. Math. Jussieu), “Combinatoire ou combinatoires” on 15 March; Michel Serfati (IREM), “Mathématiques et épistémologie chez Descartes: Les Règles Utiles et Claires Pour la Direction de l’Esprit” on 22 March; Marie-Françoise Roy, “Le 17ème problème de Hilbert: de l’algèbre abstraite à la construction d’identités algébriques” on 26 April; Siegmund Probst (Archives Leibniz), “Leibniz et Roberval” and Michel Serfati, “Aspects majeurs de la pensée symbolique de Leibniz mathématicien: La Nova Algebrae Promotio” on 3 May; Jean-Pierre Kahane (Académie des Sciences), “Lire Fourier” on 17 May; and Antoine Ruscio (IREM), “De l’épistémologie comparative : hommages à Gilles Gaston Granger” and Michel Serfati, “Sur les concepts mathématiques ‘naturels’” on 7 June.

The 11th Annual Southern History of Science and Technology Meeting was held April 7–8 at Vanderbilt University in Nashville, TN. See [sohost.wordpress.com](http://sohost.wordpress.com).

The Briscoe Center’s reading room re-opened on April 10. A new entrance leads through expanded galleries, and the reading area features ergonomic chairs. The Archives for American Mathematics are housed in the Briscoe Center at the University of Texas, Austin.

The 6th annual Scientiae conference on disciplines of knowing in the early modern world was held at the University of Padua, April 19–22.

The 2nd National Math Festival was held April 22 at the Washington DC Convention Center. The Museum of Math in New York City had an exhibit, and a variety of mathematics award winners and mathematicians combining mathematics and the arts were available to meet the public. See [nationalmathfestival.org/](http://nationalmathfestival.org/).

The Institute for the Study of the Ancient World spon-

sored an exhibition on “Time and Cosmos in Greco-Roman Antiquity” until April 23. See [isaw.nyu.edu/exhibitions/time-cosmos/intro](http://isaw.nyu.edu/exhibitions/time-cosmos/intro).

The Oughtred Society held its annual meeting in Las Vegas, NV, at the Atomic Test Museum on April 29. See [oughtred.org](http://oughtred.org). The website has also made available Rod Lovett’s searchable archives for long scale and hyperbolic slide rules.

The VIII UNIVERSEUM Network Meeting will be June 8–10 at the University of Belgrade. See [www.universeum2017.rect.bg.ac.rs](http://www.universeum2017.rect.bg.ac.rs).

The Thirteenth Biennial History of Astronomy Workshop will be held July 5–9 at the University of Notre Dame. A one-day field trip to the Adler Planetarium in Chicago is included. Mike G. Edmunds, Chair of the *Antikythera* Mechanism Research Project is the invited speaker. See [www.nd.edu/~histast](http://www.nd.edu/~histast).

The Summer School on Mathematics Education will be held in Utrecht, August 14–25. Applications were due May 1. See [www.utrechtsummerschool.nl/](http://www.utrechtsummerschool.nl/).

The Fourth International Conference on History and Pedagogy of Modern Mathematics will be August 20–26 in Chengdu, China. Tom Archibald (Simon Fraser) is co-chair of the scientific committee. Further information is available in the HPM Newsletter, [groupnpm.wordpress.com/](http://groupnpm.wordpress.com/).

The next International Meeting IM2017 of historical calculating instruments will be at the Arithmeum museum of computing instruments in Bonn, Germany, September 22–23. See [www.im2017.org](http://www.im2017.org).

The Fourth International Meeting of the Association for the Philosophy of Mathematical Practice will be October 23–27 in Salvador da Bahia, Brazil. See [www.philmathpractice.org](http://www.philmathpractice.org). Jemma Lorenat and Erich Reck are among the keynote speakers, and Elaine Landry is participating in a round table on “Platonism in Mathematical Practice.” Gert Schubring is organizing a workshop on “Education and Mathematical Practice.”

The History of Education Society annual meeting will be held November 2–5 in Little Rock, AR. See [www.historyofeducation.org/our-annual-meeting/](http://www.historyofeducation.org/our-annual-meeting/).

The Eleventh Southern Hemisphere Conference on the Teaching and Learning of Undergraduate Mathematics and Statistics will be held November 26–December 1 in Gramado, Rio Grande do Sul, Brazil. See [www.univates.br/delta](http://www.univates.br/delta).

The 13th Maghrebian Colloquium on the History of Arabic Mathematics will be held in Tunis City, Tunisia, March 30–April 1, 2018. Abstracts are due September 15. For more information, see the announcement on [www.cijm.org](http://www.cijm.org). Also see the report on COMHISMA 12 in our November 2016 issue.

ESU-8, the 8th European Summer University on History and Epistemology in Mathematics Education, will be held July 20–24, 2018, in Oslo, Norway. See the November 2010 and November 2014 issues of our *Bulletin* for reports on previous meetings. The conference website is [esu8.edc.uoc.gr](http://esu8.edc.uoc.gr). Proposals are due October 31.

Proposals for hosting the 15th Biennial Conference of the International History, Philosophy and Science Teaching Group are solicited for 2019. The IHPST Group also welcomes proposals for hosting a 2018 Regional Conference. Contact Zoubeida Dagher, *president@ihpst.net*.

The ICMI Awards Committee has extended the call for nominations for the Klein and Freudenthal Prizes to June 15. The Felix Klein medal is awarded for lifetime achievement in mathematics education research. The Hans Freudenthal medal is aimed at acknowledging the outstanding contributions of an individual’s theoretically robust and highly coherent research programme. For application information, see [www.mathunion.org/icmi/activities/awards/call-for-awards-2017/](http://www.mathunion.org/icmi/activities/awards/call-for-awards-2017/).

The most recent recipient of the Grattan-Guinness Archival Research Travel Grant is profiled elsewhere in this issue. Doctoral students and early-career scholars are invited to apply for an award of up to US\$3,000 by submitting a 3,000-word proposal to [ggart.grant@gmail.com](mailto:ggart.grant@gmail.com) no later than 31 December 2017. For full application information, please see the November 2016 *Bulletin*.

The International Society for Design & Development in Education awards US\$5,000 for an individual project or product that shows excellence in design for education in science or mathematics. Initial nominations are due June 15. For more information, see [www.isdde.org](http://www.isdde.org).

This year’s applications for Scientific Instrument Society research grants, of up to £500, are due September 1. See [www.scientificinstrumentsociety.org/grants/](http://www.scientificinstrumentsociety.org/grants/).

The Deutsches Museum in Munich offers 6- and 12-

month research scholarships for visiting scholars. Applications are due October 13. See [www.deutsches-museum.de/en/research/scholar-in-residence/](http://www.deutsches-museum.de/en/research/scholar-in-residence/).

The British Society for the History of Science offers a variety of small grants. See [www.bsbs.org.uk/grants](http://www.bsbs.org.uk/grants). BSBS has also begun an initiative to provide translations of classic scientific papers with commentary, [www.bsbs.org.uk/bsbs-translations/](http://www.bsbs.org.uk/bsbs-translations/).

A number of fellowship opportunities available at the Smithsonian Institution are described at [www.smithsonianof.com/fellowship-opportunities/](http://www.smithsonianof.com/fellowship-opportunities/).

The International Committee for the History of Technology offers an article prize, the Maurice Daumas Prize, and other awards for students and young scholars. See [www.icohtec.org/resources-prizes.html](http://www.icohtec.org/resources-prizes.html).

The Hakluyt Society, devoted to the history of exploration and travel, offers an essay prize and research grants. See [www.hakluyt.com/hak\\_soc\\_special\\_funding.htm](http://www.hakluyt.com/hak_soc_special_funding.htm).

The University of Edinburgh's Science, Technology and Innovation Studies subject group, together with National Museums Scotland, offered a 3-year PhD studentship on the history of collecting scientific materials in museums. Applications were due April 28. See [www.ahrc-cdp.org/](http://www.ahrc-cdp.org/).

The Robert H. Smith International Center for Jefferson Studies at Monticello offers short-term fellowships. See [www.monticello.org/site/research-and-collections/fellowships](http://www.monticello.org/site/research-and-collections/fellowships).

The on-line journal *Philosophy of Mathematics Education* invites submissions. See [socialsciences.exeter.ac.uk/education/research/centres/stem/publications/pmej/](http://socialsciences.exeter.ac.uk/education/research/centres/stem/publications/pmej/).

*Interdisciplinary Science Reviews* invites proposals for thematic issues. See [www.isr-journal.org/](http://www.isr-journal.org/).

Issues 6 and 7 of the *Science Museum Group Journal* are now available at [journal.sciencemuseum.org.uk](http://journal.sciencemuseum.org.uk). The journal offers a writing prize for early career scholars.

The most recent issues of the *HPS&ST Note* may be viewed at [www.idtc-ihps.com/hpsst-note.html](http://www.idtc-ihps.com/hpsst-note.html). The March 2017 issue details Springer's plans for a festschrift for Mario Bunge, the Argentinian and Canadian philosopher and physicist.

The 104th Tesseract catalogue is a special issue showing David Coffeen's 35-year collection of 20 devices for designing and laying out sundials. A free download is

at [www.etesseract.com/C104.pfg](http://www.etesseract.com/C104.pfg).

Swarthmore College needs a new home for its 24-inch f/18 refracting telescope made by the Brashear Company of Pittsburgh in 1911. See the request for proposals at [tinyurl.com/htc6pff](http://tinyurl.com/htc6pff). The cost of removal may be around US\$35,000 and may be borne in whole or part by the College.

The Computer History Museum has received an NEH grant to improve its long-term preservation plan.

The Antiquarian Horological Society has undertaken a research project to determine whether a large-scale clock manufactory supplied raw movements to the London trade as early as the late 17th century. See [www.synchronome.org.uk/AHS\\_March\\_2017.pdf](http://www.synchronome.org.uk/AHS_March_2017.pdf) and [www.ahsoc.org](http://www.ahsoc.org).

## “On Mathemata” in Berlin

On 17 and 18 November 2016, nearly three dozen scholars and graduate students from around the world convened at Humboldt University in Berlin to discuss and debate the role of commentary in the history of Greek and Arabic mathematical texts, [msiala01.wixsite.com/onmathemata](http://msiala01.wixsite.com/onmathemata). The program was organized by Michalis Sialaros (TOPOI, Humboldt University, Berlin).

The conference opened with a series of papers discussing some general issues and setting the stage for papers of more limited focus later in the program.

- Marcus Asper (Humboldt University) outlined the role of the commentator in revealing personal information about earlier authorities who are named in the text. Pappus, writing on the *Elements*, praises Euclid, taking the lack of personal information in the *Elements* as a mark of his humility. On the other hand, he criticizes Apollonius as egotistical because he includes several personal references in his writings. The commentator, al-Nayrīzī, in his commentary to the *Elements*, named several predecessors in order to situate his work in relation to earlier authorities. But he distances himself from these predecessors, and makes no attempt to adjudicate conflicting points of view among earlier authorities.
- Ramon Masià (Open University of Catalonia) discussed the possibilities for quantitative analysis of Greek commentaries and demonstrated several visualization tools, such as an interactive timeline that can display the distribution of works or

words/concepts in a given time period and explained how they can enrich traditional scholarship. The Zoomable Sunburst, a multi-level pie chart, can display multiple variables at the same time, while allowing one to shift the focus from one variable to another with the click of a mouse. Using such technologies can help us to see new relations within the available data.

- Sonja Brentjes (Max Planck Institute) presented an overview of forms and functions of mathematical commentaries in Islamic societies. The task of the commentator is clearly delineated in the Arabic tradition. He must first establish the text and check its authenticity. Then he must read the entire text and understand each of its claims. He must correct the content of the text if necessary, and critique earlier commentators. He must contextualize the text and explain why it is worthy of study. Once these preliminary tasks have been completed, the commentator can turn to his main task of explicating the obscure points in the text or in the comments of earlier scholars. A commentary may be an independent work or may appear as marginal glosses surrounding the original treatise. A commentary may incorporate the entire text of the work being explicated or may refer to the original text only through brief quotations. The commentator may discuss the entire text or only selected problems in the text. These variants probably point to a two-fold role for the commentary: (1) discussion among professional mathematicians and (2) pedagogical works intended for students.
- Nathan Sidoli (Waseda University) examined the practice of commenting by considering a specific example—commentaries on the Arabic version of Euclid’s *Data*. In its original form, the *Data* is a purely theoretical treatise, but later scholars tended to see it as a guide to computation and in this context it was used as an introduction to Ptolemy’s *Almagest*. The most common form of the treatise in Arabic is in the redaction of Naṣīr al-Dīn al-Ṭūsī—a linguistic reworking based on the version of Thābit ibn Qurra. It contains several types of comments: (a) added cases, (b) conditions on some theorems, (c) critiques of mathematical difficulties in the text that sometimes require the construction of new diagrams. Al-Ṭūsī’s redaction, although not given the title of a commentary, fulfills several functions typically ascribed to the

genre.

These foundational papers were followed by discussion of two different forms of commenting in the medieval Arabic mathematical tradition.

- Jeff Oaks (University of Indianapolis) examined the approach to quadratic equations by Diophantus (250–350 CE) and al-Karajī (11th century CE). There are important differences in techniques employed—for example, medieval Arabs typically normalize the equation first, while Diophantus’s approach did not. Al-Karajī solves the same sort of problems that Diophantus discussed, but al-Karajī reworks the typical Arabic rules for solving such equations. He then presents “the method of Diophantus”. Al-Karajī may have learned this approach from reading the now-lost section of Diophantus’ *Arithmetica* or from a commentary on the text.
- Gregg De Young (American University in Cairo) explored *ziyādāt* (additions) as a technique of commenting on or further developing a text. The term can describe blocks of propositions that further develop a theme from Euclid or individual propositions that were inserted for a variety of reasons, such as to fill logical gaps, to prove the converse of a proposition, or to demonstrate added cases. Often these additions seem intended to demonstrate the mathematical abilities of the author as part of an effort to gain patronage.

The attention then turned to roles of commenting in the Greek philosophical tradition.

- Jacqueline Feke (University of Waterloo) explained Ptolemy’s theory of Harmonia. The topic grows out of the ethical aspects implicit in the study of the mathematics of *Almagest* I, 1. The discussion has its background in Plato’s *Timaeus*. Contemplation of the mathematical ratios that describe the perfect movements of the heavens provides an analogical image for discussing harmony in human actions.
- Vassilis Karamanis (National Technical University of Athens) discussed Aristotle’s treatment of Meno’s Paradox. Since Aristotle rejects Plato’s doctrine of “recollection” he must provide an alternative explanation for learning. His solution,



described in his *Prior and Posterior Analytics*, is framed in terms of formal logic.

- Henry Mendell (UCLA) examined Aristotle’s *Physica*, VII. Books Z, H,  $\Theta$  form a kind of unit within the text in that they develop theorems, although there seems to be some repetition. He concluded that book H is either a first draft of  $\Theta$  or a study by one of Aristotle’s students inserted here wrongly or awkwardly.

Following this excursus into philosophy, the delegates turned their attention once more to mathematics in the final sessions of the conference.

- Orna Harari (University of Tel Aviv) examined the strategies of discussion in Proclus’ commentary on Euclid’s *Elements*. Proclus does not comment sentence by sentence. Rather he states the enunciation of the proposition, then discusses general philosophical questions raised by the proposition and its demonstration. His focus is not on geometry, but on broader philosophical issues. His goal is to justify the use of Euclidean geometry in the Platonic schools.
- Michalis Sialaros (Humboldt University) presented a paper on “premodern algebra” as an historical category. The approach of pre-modern algebra is distinctly different from that of modern algebra. Pre-modern algebra is a set of techniques for problem solving and is considered a branch of arithmetic. So we must ask of any non-modern work what time period we are considering and what is the author’s philosophical agenda.
- Following up on this paper, Jean Christianidis and Athanasia Megremi (University of Athens) presented their joint work on the history of Pre-Modern Algebra. Between Diophantus and al-Khwārizmī, there is little evidence of algebra as a method for solving computational problems. To approach the question of transmission of algebraic techniques, they study testimonia about Diophantus recorded in later literature, and consider preserved examples of algebraic solutions. They presented scholia to several mathematical epigrams (which generally appear among epigrams classed as “oracles”) that include step-by-step algebraic solutions.
- Leo Corry (University of Tel Aviv) discussed “distributivity-like” results in the medieval Eu-

clidean tradition. Heron’s alternative demonstrations to the first ten propositions of Book II have been interpreted as “algebraic” statements. Heath’s discussion of them masks the fundamental “if—then” style of argument that is central to Greek mathematics. In the medieval period, Campanus adds twelve comments to proposition IX, 15—of which 4–12 are versions of Heron’s demonstrations. These comments seem intended to bridge the gap seen in Euclid’s *Elements* between discrete and continuous magnitudes. Campanus also adds to book V a long comment explaining why Euclid decided to separate these two types of magnitudes in the *Elements*. His work lays the foundation for medieval attempts to unite Euclid’s two discussions of magnitudes.

- Ken Saito (Osaka Prefecture University) gave a presentation on the diagrams accompanying the propositions of the arithmetical books of the *Elements*. Here, line segments typically represent the discrete magnitudes (numbers). Saito distinguishes S-type diagrams (an undivided line segment with one letter label) and R-type (in which one or more of the segments is divided in the course of the demonstration, so the line segments require three or more letters to label them). Although in the manuscripts the lengths of the lines do not reflect a true metric—in many S-type diagrams the line segments are all the same length—the arrangement of the lines in the manuscript diagrams reflects the relations described in the proposition. Because Heiberg, the editor of the Greek text, reconstructed the diagrams and re-arranged the line segments (for example, in book VIII), the diagrams now obscure rather than illuminate the meaning.
- Giovanna Cifoletti (Centre A. Koyré) outlined Renaissance usage of *Elements*, Book II to justify algebraic rules. For example, a French treatise by Peletier, titled *L’algèbre*, describes basic algebraic rules and justifies them geometrically. This treatise was not written for scholars since it was not composed in Latin. Its title is remarkable because the term algebra was not in common usage at that time. Ramus criticized Euclid for listing abstract characteristics of angles even when such limitations were not needed. Such works raise interesting questions: what is a commentary in Renaissance France? how do commentaries impose their interpretations on the mathematical community?

- Vincenzo De Risi (Max Planck Institute) surveyed the development of axiomatics in Renaissance commentaries to Euclid’s *Elements*. There are multiple traditions of introducing axioms and postulates into Euclid’s text, beginning with Campanus. Most changes are made to the basic principles and assumptions, not to the actual Euclidean demonstrations themselves, which remain remarkably unchanged. Over time more than 350 axioms were inserted into the text. It is interesting that the more axioms the commentator added, the fewer diagrams were needed to support the demonstrations of the propositions.

*Gregg De Young*

## Grattan-Guinness Travel Grant

We are delighted to announce that this year’s recipient of a Grattan-Guinness Archival Research Travel Grant is **Dr. Lukas Verburgt** of the University of Amsterdam, for a project entitled “John Venn: A Life in Logic”. The grant will help to fund a research visit to the United Kingdom in July 2017 to examine Venn’s correspondence and papers, housed in various archives at the Universities of Cambridge, Birmingham, and Glasgow. This archival visit will contribute to Dr. Verburgt’s ultimate goal of writing the first full-length intellectual biography of Venn, encompassing Venn’s contributions to logic, probability, and the philosophy of science, together with broader analysis and contextualization. We look forward to seeing the results of Dr. Verburgt’s research in due course and wish him every success.

See the Announcements for information on applying for a future grant.

*The Grattan-Guinness Grant Committee*

## HPM-Americas Update

The Americas Section of the International Study Group on the Relations Between History and Pedagogy of Mathematics met at Point Loma Nazarene University in San Diego, CA, October 15–16, 2016, locally organized by Maria Zack, and at the University of Pennsylvania in Philadelphia, PA, April 1, 2017, locally organized by Brit Shields. At Point Loma, history of mathematics talks included: Stacy Langton, “D’Alembert’s Principle”; John Martin, “Blaise

Pascal and His Mystic Hexagram”; Lina Wu, “Origin, Development, and Dissemination of Differential Geometry in Mathematics History”; and Carlos Oliveira, “The Calculus Creator: Newton or Leibniz? Fermat in Truth.”

Presentations on using history to teach mathematics included: Maria Zack, “18th-century Portuguese Engineering: Helping a Student to Develop Research Skills”; Brendan Purdy, “Teaching Introductory Statistics with Historical Context”; Cihan Can, “The Potential of Using Primary Sources in Mathematics Education for Developing Social Awareness”; and Kathy Clark and Cihan Can, “The TRIUMPHS Project: Opportunities for History, Research, and Change in Undergraduate Mathematics Classrooms.” Kathy Clark reported on HPM involvement in ICME-13 at Hamburg, Germany, in July 2016. Dave Roberts spoke on the history of mathematics education in “Reflections on Mathematics Popularization and Its Relation to Pedagogy, from the 1930s to the Present.” Talks on mathematics education included: Barnabas Hughes, “High School Algebra R.I.P.”; and Rebecca Vinsonhaler, “First Semester Honors Calculus with Standard Analysis versus Non-Standard Analysis.”

Janet Beery gave a keynote address on “Thomas Harriot and the Roanoke Colony, Gunpowder Plot, Sun, Moon, and Mathematics in Manuscript.” Many attendees followed up on the time period of her paper by attending a performance of *Equivocation* at Lamb’s Player’s Theatre in Coronado. *Equivocation* is a play about telling the truth in difficult times. It proposes the question: what if the government commissioned William Shakespeare to write the definitive history of a national crisis, the Gunpowder Plot, in one of his plays?

The Philadelphia meeting was characterized by talks on the history of mathematics education, often as that area intersected with government and public policy: Brittany Shields, “An Emergency Education: The Engineering, Science, and Management War Training Program during the Second World War”; Emily Redman, “Using the Past to Make Sense of the Present: Historical Analysis in Understanding the Contemporary Mathematics Classroom and U.S. Education Policy”; Theodora Dryer, “Mathematical Statistics in New Deal Research Pedagogy”; Rosemarie Casey, Sarah Cuddihy, Taylor DeMarco, and Erin Lapolla, “The History of the SUNY Oneonta Mathematics

Department”; Toke Knudsen, “Mathematics in the Oneonta Normal School’s Student Newspapers”; and Marina Vulis, “Mathematical Research and Education at the ST. Petersburg Academy of Sciences in the 18th-19th Centuries.”

Peggy Kidwell provided an overview of the use of mathematical instruments in American engineering and engineering education, while Amy Ackerberg-Hastings looked specifically at sets of drawing instruments. Chris Rorres spoke about the history of mathematics and a potential current application in engineering in “The History, Optimal Shape, and Manufacture of an Archimedes Screw.” The group ended the day with a screening of the documentary, *Top Secret Rosies: The Female Computers of WWII*, a visit to the portions of the ENIAC on display in Levine Hall, and dinner at a nearby bar and grill.

The Americas Section is a loosely organized group of scholars and teachers that is always looking for collegial places to hold relatively inexpensive meetings where discussions on interactions between history of mathematics and teaching mathematics can be fostered. Volunteer officers are also needed. To contact the current officers for further information, please visit [www.hpm-america.org](http://www.hpm-america.org).

*Amy Ackerberg-Hastings*

## Annual Conference CFHSS

### *CFHSS Conference*

On Wednesday, November 9, 2016, in the Great Hall, Hart House, at the University of Toronto, the annual one-day conference of the Canadian Federation of Humanities and Social Sciences (CFHSS, of which CSHPM is a member), took place. In the day’s first event, Julian Agyeman highlighted the conference theme, “People, Place and Possibility: Cities and the Humanities and Social Sciences” in his Big Thinking Lecture, “Just Sustainabilities: Re-imagining E/quality, Living Within Limits.” He focused on developing a mutually supporting urban agenda for both social justice and environmental justice. Agyeman (Urban and Environmental Policy, Tufts University) was supported by a response panel of Michele Dagenais (History, Université de Montréal), Cyndy Baskin (Social Work, Ryerson University), Pamela Klassen (Religion, University of Toronto) and Shauna Sylvester (Professional Practice, Simon Fraser University).

The morning ended with the Keynote Lecture, “Human-

centred Cities, Co-designing Systems with Citizens,” by Zahra Ebrahim (Doblin Canada / University of Toronto). She focused on community suggestions in designing a Scarborough Community Centre and on her own Design of Cities course centred around “Empathy, Insight and Effort.”

After a buffet lunch we broke into three concurrent workshops: 1) Strengthening Innovation through Scholarship and Community; 2) Reconciliation (with Indigenous Canadians) in the City; 3) Demonstrating our Community Impacts. I attended the first one, where Richard Hawkins (STS, Calgary) warned us against the “innovation” rhetoric. Here government means that technical change is the magic bullet of economic success; yet, over the thirty year period, 1980–2010, there’s been a complete reverse in the 30%–70% split between services (social knowledge) and products (technical knowledge).

After the mid-afternoon break we returned to plenary business, again in the Great Hall, for the CFHSS response to the Canadian government’s “Fundamental Science” review. Christine Tausig Ford (Interim Director, CFHSS) chaired this session. CFHSS President Stephen Toope went over the Federation’s response, which was based on extensive member input. In the strong current research environment there is no need for big changes, but we do need more resources to support working together. Whereas only 35% of our scholars get SSHRC funding, there is a special need for cross-disciplinary projects. Hence a “Multidisciplinary Challenges Fund”, managed by SSHRC, that is open to all. Vivek Goel (VP Research, U. of T.) looked at the granting councils NSERC and SSHRC. They shouldn’t be for funding targeted research. Furthermore, they should be equally funded, “not the current 2:1 ratio favouring NSERC.” Government should recognise that universities are changing so that teaching and research go together: basic and applied research are no longer separable.

### *UC Alumni of Influence Awards*

The following Wednesday evening, November 16, my wife and I dined in the baronial splendour of the Great Hall at the University College Alumni of Influence Banquet. As mentioned in the November 2016 *Bulletin*, I had nominated and accepted the award for Clarence Chant (1865–1956), founder of U. of T.’s Astronomy Department (1920) and its David Dunlap Observatory (1935). This was to be the night of his offi-

cial induction. *UC Magazine* had already announced Chant's recognition with a brief biography (that I co-authored) and an image of Chant using the 74" DDO reflecting telescope.

Since Chant was unavailable, I was asked to be his stand-in, first of all to be piped in between Sarmite Bulte (Liberal politician) and Norman Doidge (neuroscientist). We marched up to the stage as we were announced and then re-joined our tables. I found my wife at table 13, where another UCAA Executive member was also seated. Sitting across from me was Stephen Leacock's stand-in. The overall mix in our group, including a couple of UC students, made for brilliant table talk all round. The centrepiece of the meal: a huge slab of roast beef.

Images of the inductees were projected on the immense back wall of the Great Hall, just above the mahogany panelling bearing the arms of the historic European universities. Most were head and shoulder images, so Chant as hardworking astronomer really stood out. The high point of the evening came when we were called up individually to hear our accomplishments read out, to receive the engraved glass flower vase and to have our picture taken for posterity, and for UC publicity, with UC Principal Donald Ainslie.

#### *Hart House Singers Concert*

We returned again to the Great Hall on a Sunday afternoon, November 20. At that time the son of friends of my wife was a cellist accompanist for the concert of the Hart House Singers on the theme "Light and Dark." Allan Olley, CSHPM member and historian of computer science, was in the Bass section. Allan told me that their next concert would be Sunday, March 19, 2017, with Beethoven and Handel on the programme.

Between now and when CSPHM meets in Toronto, May 28–30, 2017, I expect to have several more occasions to enjoy Hart House. As with the rare book and archival resources mentioned elsewhere in this issue, this cultural facility is well worth dropping by when you are in town.

*David Orenstein*

## **Review: Medieval Sourcebook II**

*Sourcebook in the Mathematics of Medieval Europe and North Africa*, edited by Victor J. Katz, Menso Folkerts, Barnabas Hughes, Roi Wagner, and J. Lennart Berggren. Princeton University Press, 2016, 592 pp.

ISBN 978-0-691-15685-9. \$US95.00, £79.95.

Ten years ago, when Victor Katz's *The Mathematics of Egypt, Mesopotamia, China, India, and Islam: A Sourcebook* was first published, I spent some time trying to figure out what selection criteria led to the choice of those five cultures in particular. One rule was clear: Greek mathematics was not to be included on the grounds that it was already well known. But what were the other principles?

All the cultures included were pre-modern, but they spanned a very wide range in terms of time: the earliest Egyptian and Mesopotamian texts included were written some 3000 years earlier than the latest Islamic sources. But it seemed fair to say that the first two criteria were "pre-modern, not Greek."

A third criterion was probably that there should exist a substantial body of texts from that culture. They need not have been translated, but texts should be accessible. There was, perhaps, a fourth criterion: they were all cultures about which many historical myths existed, myths that were in the process of being debunked by a new crop of historians.

Given all that, it seemed to me that one culture was obviously missing: where was the mathematics of Latin-speaking medieval Europe? It seemed to fit all the criteria: it was pre-modern, did not show much influence from Greek mathematics, there were lots of texts available, and it was widely described in history books as of no interest, which it was not.

In my review of that book (for *MAA Reviews*) I pointed this out en passant, and I guess Katz took notice. In the present volume, he writes

However, two of the reviewers wondered why we chose those five particular civilizations for the book, as there were other civilizations with mathematics that are not well represented in the general sourcebooks available. One of these reviewers specifically wondered why we did not include sources from Medieval European mathematics. The true answer to the reviewer's question was that the book was quite large already. But now that some time has passed, I decided that we could respond positively to the reviewer's question with a new sourcebook on Medieval European mathematics. (Preface, p. xi)

There is a quote, attributed to Mark B. Cohen, to the

effect that “Those who express random thoughts to legislative committees are often surprised and appalled to find themselves the instigators of law.” I confess to surprise when I heard of this book, but it was a pleasant one.

As in the first sourcebook, Katz recruited specialists in each of the cultures to be included to serve as sub-editors, with Menso Folkerts and Barnabas Hughes doing the chapter on medieval Europe. And yes, it is “cultures,” because Katz decided to go beyond my request, adding two other cultures, both closely connected to medieval Europe: the mathematics of Islamic Spain and the Maghreb (edited by J. Lennart Berggren) and the Hebrew mathematical tradition (edited by Roi Wagner). Neither of those would have fit my criteria for the 2007 volume, because there were then very few texts that had been published. The study of mathematics in the Maghreb and Spain has blossomed fairly recently (indeed, this was the major reason for the recent second edition of Berggren’s *Episodes in the Mathematics of Medieval Islam*); the study of Hebrew mathematics in Europe is still in the early stages. Unsurprisingly, the editors of these sections had to do a lot of translating, and the editor of the section on the Hebrew tradition has called on a large group of scholars to help him obtain and translate the relevant texts for this book.

An appendix addresses the other missing culture: Byzantine mathematics written in Greek. Here there are so few texts that have been edited and published that there is just not enough material for a proper sourcebook. The appendix is about 15 pages, while the rest of the book fills almost 550.

The result is a very good and useful book. I will certainly use texts from it in my teaching. I can’t see many people reading the book sequentially, however, and it seems unlikely that it will be adopted as a textbook. This would be more likely if, as I suggested for the previous sourcebook, it were possible to have students buy individual sections. For a course specifically on the mathematics of the Islamic world, to give an obvious example, one might want to use the Islamic sections from each of the sourcebooks. Maybe at some point it will be possible to make this happen.

The organization of the sections on Western Islamic and Hebrew mathematics is topical, with sections on arithmetic, algebra, geometry, etc. The material on medieval mathematics in Latin is divided into two

blocks corresponding to the early and late Middle Ages, with the dividing point being the creation of the first European universities; within each section, the material is organized by topic. This organization makes it easier to find the sources relevant to particular topics, for example for a course focused on the history of algebra. On the other hand, it makes it very hard to get a sense of the overall output and vision of particular authors, since their work is divided up and distributed into several different sections.

The range of topics is wide. I particularly liked the inclusion of recreational mathematics and of the early abacist texts in the Latin Europe section and the distinction between practical and scholarly geometry in the Hebrew section. The material on Spanish and Maghrebian mathematics was entirely new to me and very interesting. Most of the texts are well chosen.

The format is the same as in the first *Sourcebook*. In particular, the editorial text is distinguished from the original source material by a change of font, with the translated original sources in sans-serif. I was doubtful about this decision ten years ago; my older eyes today make me even more doubtful, especially when editorial remarks are interspersed. To take a page at random: on p. 158, in the middle of a selection from Richard of Wallingford’s *Quadripartitum*, there is an editorial remark meant to transition us to the next bit of the text. The font changes, but there is no vertical space separating the editorial text from the preceding material. It’s hard to spot.

The book does raise one small concern: with the exception of Wagner, all of the editors are emeritus professors. Historians who study mathematics in Latin, Arabic, or Hebrew are never going to be a large group, but I hope these fields are attracting young people with good new ideas! If this book will help get a new generation interested, that will already have been a huge contribution.

What is next in the world of sourcebooks? There are certainly other premodern cultures that could be (and are being) studied, so we might see a third book of this sort someday. But what I think is now at the top of the list is a proper sourcebook of *Greek* mathematics. After all, while many of the more famous texts (Euclid, Archimedes, Apollonius) are available in translation, many important ones (Heron, Diophantus) are not. More importantly, the historiography of Greek mathematics has also gone through a revolu-

tion recently, with much more attention being given to non-elite mathematics and its role in everyday life. So a new sourcebook, less focused on the traditional Big Three, seems to be in order. (But you don't need to do it, Victor; I'll volunteer if no one else steps forward.)

Meanwhile, the pair of "Katz sourcebooks" provides a rich resource for mathematicians interested to learn more about the early sources of their discipline, for courses in the history of mathematics, and indeed for historians who are not specialists in these cultures and periods. Katz, Folkerts, Hughes, Wagner, and Berggren have earned our gratitude.

*Fernando Gouvêa*

## 2017 CSHPM/SCHPM Meeting Programme

The Annual Meeting of the Canadian Society for History and Philosophy of Mathematics will be held at Ryerson University in Toronto, Ontario, 28–30 May 2017. Except for the one-hour May Lecture, presentations are 20 minutes, with 5 minutes for discussion and 5 minutes of set-up before the next talk. Many thanks to the program organizers, Eisso Atzema, Robert Bradley, and Patricia Allaire, and the local organizer, Craig Fraser.

### Sunday, May 28

**9:00** PRESIDENT'S WELCOME (Dirk Schlimm)

#### PARALLEL SESSION I-A: FRENCH INFLUENCES ON PORTUGUESE MATHEMATICS

(Room: Kerr South 251; Presider: Eisso Atzema)

**9:15** Maria Zack (Point Loma Nazarene): "Manuscript Transmission of Mathematical Knowledge in 18th-Century Portugal"

**9:45** Luis Saralva (CMAF/Lisbon): "Maurice Fréchet in Portugal, 1942"

#### PARALLEL SESSION I-B: MODERN LOGIC

(Room: Kerr South 369; Presider: Thomas Drucker)

**9:15** Eamon Darnell (Toronto) & Aaron Thomas-Bolduc: "Takeuti's Well-Ordering Proof: Is It Fine, Finitistically?"

**9:45** Philippos Papayannopoulos (Western Ontario): "The Open Texture of 'Real Number Algorithms'"

**10:15** COFFEE BREAK

## GENERAL SESSION II (JOINT SESSION WITH CANADIAN PHILOSOPHICAL ASSOCIATION): NEW PERSPECTIVES ON LOGIC IN THE NINETEENTH CENTURY FROM KANT TO RUSSELL

(Room: Kerr South 369; Presider: Greg Lavers)

**10:30** Sandra LaPointe (McMaster): "Logic in the 19th Century, Before Frege"

**11:00** Dirk Schlimm (McGill): "Practices of 19th-Century Logic"

**11:30** Erich Reck (California-Riverside): "The Logic in Dedekind's Logicism"

**12:00** LUNCH BREAK & CSHPM EXECUTIVE COUNCIL MEETING (Room: Jorgenson 440)

## GENERAL SESSION III (JOINT SESSION WITH CANADIAN PHILOSOPHICAL ASSOCIATION): NEW PERSPECTIVES ON LOGIC IN THE NINETEENTH CENTURY FROM KANT TO RUSSELL

(Room: Kerr South 369; Presider: Erich Reck)

**14:00** Nicholas Griffin (McMaster): "Russell and Hilbert and Kant and Geometry"

**14:30** Jamie Tappenden (Michigan): "Frege, Carl Snell and Romanticism: Fruitful Concepts and the 'Organic/Mechanical' Distinction"

**15:00** Nick Stang (Toronto): "Anti-Psychologism in Context"

**15:30** COFFEE BREAK

## PARALLEL SESSION IV-A: MATHEMATICS EDUCATION IN RUSSIA

(Room: Kerr South 251; Presider: Eisso Atzema)

**15:45** Mariya Boyko (Toronto): "Socialist Competition in the Soviet Mathematics Curriculum Reform of the 1960s and 1970s"

**16:15** Inna Tokar (CUNY): "History of Schools for Mathematically Talented Students in the Former Soviet Union"

## PARALLEL SESSION IV-B: PHILOSOPHY OF MATHEMATICAL PRACTICE

(Room: Kerr South 369; Presider: Thomas Drucker)

**15:45** Nicolas Fillion (Simon Fraser): "Constructive and Conceptual Mathematics"

**16:45** Zoe Ashton (Simon Fraser): "Mathematical Proof and the Contact Between Minds"

**17:00–19:00** CFHSS PRESIDENT'S RECEPTION

**Monday, May 29**

**SPECIAL SESSION V: HISTORY OF 18TH-CENTURY MATHEMATICS**

(Room: Victoria 205; Presider: Craig Fraser)

**8:45** Amy Ackerberg-Hastings (Independent Scholar): “John Playfair’s Approach to ‘the Practical Parts of the Mathematics’”

**9:15** Marion W. Alexander (Houston CC): “What Mathematics Rittenhouse Knew”

**9:45** Duncan Melville (St. Lawrence): “John Marsh and the Curious World of Decimal Arithmetic”

**10:15** COFFEE BREAK

**SPECIAL SESSION VI: HISTORY OF 18TH-CENTURY MATHEMATICS**

(Room: Victoria 205; Presider: Patricia Allaire)

**10:30** Christopher Baltus (SUNY-Oswego): “Monge’s Descriptive Geometry in Context”

**11:00** Colin McKinney (Wabash): “The Four Curves of Alexis Clairaut”

**11:30** Robert Bradley (Adelphi): “Formal Power Series and the Foundational Problem”

**12:00** CSHPM ANNUAL GENERAL MEETING (LUNCH PROVIDED) (Room: Victoria 205)

**14:00** THE KENNETH O. MAY LECTURE, by William Dunham (Bryn Mawr): “A Tale of Two Series” (Room: Victoria 205)

**SPECIAL SESSION VII: HISTORY OF 18TH-CENTURY MATHEMATICS**

(Room: Victoria 205; Presider: Robert Bradley)

**15:15** Daniel J. Curtin (N. Kentucky): “E133: On the Surface Area of Scalene Cones”

**15:45** Lawrence D’Antonio (Ramapo): “‘The geometer spends his whole life with his eyes closed’: Diderot contra d’Alembert”

**16:15** William W. Hackborn (Alberta-Augustana): “Euler Goes Ballistic under Frederick the Great”

**Tuesday, May 30**

**PARALLEL SESSION VIII-A: MATHEMATICAL PHYSICS & MATHEMATICS IN CANADA**

(Room: Victoria 503; Presider: Craig Fraser)

**8:45** Roger Godard (Dept. Natl. Defense): “Boltzmann and Vlasov”

**9:15** Alessandro Selvitella (McMaster): “On Francis Ronald Britton and His Legacy at McMaster University”

**9:45** David Orenstein (Toronto): “The Canadian International Congresses of Mathematicians: Toronto 1924, Vancouver 1974”

**PARALLEL SESSION VIII-B: HISTORY OF LOGIC**

(Room: Victoria 504; Presider: Dirk Schlimm)

**8:45** Greg Lavers (Concordia): “Did Frege Solve One of Zeno’s Paradoxes?”

**9:15** Valérie L. Therrien (Western Ontario): “The Axiom of Choice as Paradigm Shift: The Case for the Distinction Between the Ontological and the Methodological Crisis in the Foundations of Mathematics”

**9:45** Thomas Drucker (Wisconsin-Whitewater): “Mathematicians and Their Logics”

**10:15** COFFEE BREAK

**PARALLEL SESSION IX-A: PRE-18TH CENTURY MATHEMATICS**

(Room: Victoria 503; Presider: Amy Ackerberg-Hastings)

**10:30** Joel Silverberg (Roger Williams) & Kim Plofker (Union): “The Most Obscure and Inconvenient Tables That Have Ever Been Constructed?”

**11:00** Robert Thomas (Manitoba): “What is Stated and Almost Always Proved in the *Spherics* of Theodosios”

**11:30** Andrew Perry (Springfield): “Recreational and Practical Mathematics of Michael of Rhodes”

**PARALLEL SESSION IX-B: NOTIONS OF MATHEMATICS**

(Room: Victoria 504; Presider: Greg Lavers)

**10:30** Scott Edgar (St. Mary’s): “A Defense of Hermann Cohen’s Principle of the Infinitesimal Method”

**11:00** Teresa Kouri (Ohio State): “Ante Rem Structuralism and the No Naming Constraint”

**11:30** Phil Bériault (Waterloo): “A Non-Error Theory Approach to Mathematics Fictionalism”

**12:00** LUNCH BREAK

**PARALLEL SESSION X-A: 19TH-CENTURY MATHEMATICS**

(Room: Victoria 503; Presider: David Orenstein)

**14:00** Craig Fraser (Toronto): “The Culture of Research Mathematics in 1860s Prussia: Adolph Mayer

and the Theory of the Second Variation in the Calculus of Variations”

**14:30** Gabriel Larivière (Simon Fraser): “On Cauchy’s Early Rigourization of Complex Analysis”

**15:00** Eisso J. Atzema (Maine): “In Search of Joseph-Émile Barbier (1839–1889): A Bio-bibliographical Sketch”

## PARALLEL SESSION X-B: ON MATHEMATICS EDUCATION

(Room: Victoria 504; Presider: Dirk Schlimm)

**14:00** Eugene Boman (Penn. State-Harrisburg): “Where is the Differential in Differential Calculus?”

**14:30** Derek Postnikoff (Saskatchewan): “Platonism and Plagiarism: Imitation, Collaboration, and Attribution in Mathematics Education”

**15:00** Parzhad Torfehnezhad (Montréal): “Empirical versus Rational Abstraction: A Reflection on Carnap’s Notion of Abstraction”

**15:30** Bernd Buldt (Indiana-Purdue Ft. Wayne): “Mastering New Mathematical Concepts”

**16:00** CLOSING REMARKS (Room: Victoria 504)

## Toronto HPM Resources

When you come to Toronto for our CSHPM conference this spring, you should take the opportunity to explore the many history and philosophy of mathematics resources in the University of Toronto Library system. Established in 1855 as a secular state institution, it has a pre-history that can be dated back to 1827, possibly even to 1796. The devastating Great Fire of February 14, 1890, destroyed the library (except for the volumes that had been lingering at the professors’ homes). Rebuilding the university’s library became a great cause in European and American scholarly and academic circles.

### *Thomas Fisher Rare Books Library*

I can walk from my home to the University of Toronto’s Thomas Fisher Rare Books Library, [fisher.library.utoronto.ca](http://fisher.library.utoronto.ca). Their books and pamphlets, but also their manuscript collections, have a strong concentration on history of mathematics and science, with a dedicated librarian. Highlights of the pre-1700 collections include:

1. The Stillman Drake Galileo Collection reflects Drake’s mastery of Galileo studies. The couple thousand books and several manuscripts include

a holograph Galileo letter on the variability of the obliquity of the ecliptic. This letter has been published and also translated and analysed by Drake. Using a beautiful and legible hand, Galileo gently indicates in Italian the errors of his diligent and sincere amateur correspondent. The letter is carefully preserved in a clothbound folder, stored in a hardboard box.

2. The collection also contains relevant pre-Galileo works such as the 1490 incunabulum printed in Basel, *Sphaera Mundi*. This edition of Johannes de Sacro Bosco’s ca 1215 astronomy textbook is catalogued as “gal 0312”. The woodcuts, whether elaborate initials, full page scientific allegories, or technical diagrams, have been hand-coloured. Frustratingly, there is no clear pagination (or even foliation) though it looks about 150 pages long. The extensive period marginalia is much truncated by page slicing for later binding. There are also many well-annotated bound-in slips. As a sign of the volume’s hoariness, there is an extensive scattering of little round holes in each page: bookworms!
3. While Johannes Regiomontanus’ *De Triangulis* is only available in a 1967 edition with English translation by Barnabas Hughes from the University of Wisconsin Press, Fisher does have Regiomontanus’ *Epytoma in Almagestum Ptolemaei*. This is another incunabulum printed in Venice in 1496 by Johannes Hamman. It’s also from the Drake Collection, “gal f 00027”. There are 108 leaves in this copy, though it is known that some are missing.
4. Skipping forward to the 16th-century, we find Fisher’s copy of Nicolaus Copernicus’ *De Revolutionibus*, 2nd edition, 1566, Basel. It also bears a Stillman Drake bookplate. Catalogue number: sci f 0006. The front cover and flyleaf bear a total of five bookplates! Copernicus expert Owen Gingerich features this very volume in his two books on *De Revolutionibus: The Book Nobody Read: Chasing the Revolutions of Nicolaus Copernicus* (2004) and *An Annotated Census of Copernicus’ De Revolutionibus* (2002). A copy of the latter is available in the Fisher Reading Room for cross-referencing. Toronto’s “two star copy ... originally belong[ed] to Philips Lansbergen, a seventeenth century astronomer and table calculator.” Fisher also possesses an edition of Lansbergen’s *Bedenckingen, op den daghelijcksen, ende iaerlijcksen loop vanden aerdt-cloot* (Middelburgh, 1650), gal 00238.



5. Also from the 16th century is the *editio princeps* of Ευκλείδου Στοιχείων βιβλ. ιε' εκ των Θεωνος συνουσιων, the first publication of Euclid's *Elements* in the original Greek (but including the two spurious books). Edited by Symon Grynaeus, it was printed in Basel by Johann Herwagen in 1533.
6. Simon Stevin's *Wisconstige Gedachtenissen* (Leyden, 1608) is in two massive board-bound volumes, each with its own two pairs of leather laces to hold the volumes shut. It doesn't seem to be associated with Stillman Drake at all. Note that Stevin uses "*Wisconst*" for "mathematics" and "*driehouck*" for "triangle" (among other new coinages that would stick).

We can also note a few treasures from the 18th century:

1. Robert Auld, a student of David Gregory, wrote out one of Fisher's 18th-century mathematical manuscripts on the lectures taken from Gregory in MDCCXL (1740) while at "Andreapolin" at St. Andrew's. This small handwritten book entitled *Geometricae Practicae Compendium* comprises: "De Logarithmis Eorumque Usu" (9 pp.); "Geometrica Practica" (70 pp. + 8 pl.); and "The Art of Common Dialling And Four Poems on Astronomy" (41 pp. + 5 pl.).
2. John Playfair, Professor in the University of Edinburgh, is represented by a separate coverless printing of his article, "On the Causes Which Affect the Accuracy of Barometrical Measurements", read to the Royal Society of Edinburgh on March 1, 1784, and January 10, 1785, and published in the Society's *Transactions*. On the first page in pencil is the price £10.50. It is housed in a modern file folder with the bookplate "Presented to the Library of the University of Toronto by Professor G. Staunton".
3. Gaspard Monge's *Geometrie Descriptive* comes in red leather boards with gold trim. It was delivered as "Lecons donnees aux eleves normales l'an 3 de la republique" (1794) and published by "Baudouin, Imprimeur du Corps legislative et de l'Institut. An VII" (1798). In addition to the 132 pages of text, there are 25 foldout plates at the end of the book. These plates contain in total about 400 geometrical diagrams of varying degrees of complexity.

*University of Toronto Archives and Records Management Systems*

From the Fisher Library I take the elevator up three floors to the University of Toronto Archives, [utarms.library.utoronto.ca](http://utarms.library.utoronto.ca). The University *Calendars* are available on open shelves, enabling you to trace the evolution of the mathematics department, its staff (often including home addresses) and curriculum (including textbooks assigned). Specifically mathematical collections include records of the students' Mathematical and Physical Society. Here are published volumes of papers delivered to the Society between 1901 and 1904, and a file of clippings maintained by the Office of the President of the University. Mathematics professor J. C. Fields (of Fields Medal fame) left 111 books of lecture notes from pursuing postdoctoral studies in Germany in the 1890s: Frobenius on Number Theory, Hilbert on functions of complex variables, Planck on mathematical physics, and so on.

*Gerstein Science Information Centre*

Across campus at the Gerstein Science Information Centre there are interesting materials available, dating back to the 18th century, on the open shelves that can be borrowed for home use. They can be found in the main Library of Congress cataloguing but also in the sub-basement where the Old Classification (unique to U. of T.) books are found and even in the sub-sub-basement where the early bound journals are arranged in alphabetical order by title. But that's another story.

*UTL Downsview*

While the offsite storage at UTL Downsview doesn't have any 15th- or 16th-century works, you can find 18th-century publications there. Then you can order them (online if you have a Library card) and take them home.

Such a work is *Recueil des Diverses Pieces Sur la Philosophie, les Mathematiques, L'Histoire &c. par M. de Leibniz* (Hamburg, 1734). Catalogued as "Philos L525r", it was entered in the U. of T. collection on June 8, 1903. A back flyleaf has a period annotation of a two page booklist beginning with "Buffon's Natur History / 2 Vol.s 8vo A.D. 1792". The editor, Chretien Kortholt, wrote a dedication "A Sa Majesté Guillemine Charlotte Reine de la Grande Bretagne", thanking her, her husband and her father for their earlier support and appreciation of the genius of Leibniz.

Kortholt's Preface summarises the various letters, whether they are on the nature of infinitesimals or

transubstantiation in the Christian communion. The first letter from Leibniz (to M. Dancicourt, Sept. 11, 1716), begins with the philosophical understanding of matter and substance: “il n’y a point de substance étendue”, and then to the nature of the geometric continuum: “je ne dit point que le *continuum* soit composé de points géométrique”. Then, it’s time to launch into “le calcul des Infinitesimales”, considering the views of “Monsieur HERMAN ... Monsieur NIEUWENTYT ... M. NAUDE ... l’Abbé GALLOIS, le Père GOUGE & d’autres”.

Early versions of Euclid that can be found at Downsvew include F. Peyrard’s *Les Oeuvres d’Euclide en grec, en latin et en français* (Paris, 1814) in three volumes in their original, if somewhat worn, bindings of a red leather spine and mottled brown boards. Catalogued as “LGR E86.Fp”, it was entered in the catalogue on February 2, 1900. Peyrard dedicated his work to the King and complained that the Napoleonic Wars had delayed its publication.

A more recent Downsvew treasure, in my hands as I write at my favourite neighbourhood café, is *Introductory Lectures Delivered at Queen’s College London* (London, 1849). It was catalogued Number 2064 with call number “Educat Teach I” on April 21, 1890, just a couple of months after the Great Fire. “These lectures (...) were delivered (...) last Spring [1848] when the teachers of Queen’s College expressed their general approach before the formal inauguration of their institution for women’s education.” The Preface further notes that the College has been criticised because its “mode of examining Governesses (...) indicates a wish to exalt intellectual above moral qualifications.”

There are 16 lectures on the various subjects offered, ranging from English Composition (Rev. Charles Kingsley), through German Language (Prof. Adolphus Bernays), Natural Philosophy (Rev. M. O’Brien), Theology (Rev. E. D. Maurice), and finally Mathematics (Rev. T. G. Hall, M.A., Professor of Mathematics in King’s College, London).

*Yet More?*

There are many other resources I could direct you to at the University of Toronto (e.g., the University of Toronto Scientific Instrument Collection (UTSIC) or the Mathematical Sciences Library) or elsewhere in the Toronto area (e.g., York University’s Computer Museum or the Bertrand Russell Collection at Hamilton’s McMaster University). When you come to Toronto,

why don’t you have a look?

*David Orenstein*

## 2016 Financial Statements

The following financial statements cover the period 1/1/2016 through 31/12/2016.

	\$ Can.
<b>Income</b>	
Dues/Subscriptions	12,183.64
CFHSS speaker grant	750.00
<b>TOTAL</b>	<b>12,933.64</b>
<b>Expenses</b>	
<i>Proceedings</i> , 2015	1,307.41
<i>Philosophia Mathematica</i>	3,054.63
Postage, office expenses, <i>Bulletin</i>	306.85
BSHM reciprocal memberships	1,302.75
CFHSS dues for 2016	1,219.40
May Speaker	2,259.29
PayPal service charge	348.69
Bank fees	39.80
<b>TOTAL</b>	<b>9,836.82</b>
<b>NET</b>	<b>3,096.82</b>
Bank balance, 12/31/16	38,229.80
PayPal balance, 12/31/16	8,521.29
TD Mortgage Corporation GIC	4,309.84
TD Mortgage Corporation GIC	4,237.76
<b>TOTAL ASSETS</b>	<b>55,298.69</b>

### Comments:

The Society has three accounts: a TD Canada Trust account for Canadian funds (CDN), a TD Canada Trust account for American funds (USD), and a PayPal account. The two bank accounts are used to deposit income or pay expenses in the appropriate currency. For example, journal subscriptions are paid in US dollars. Memberships paid by cheque can be in CDN or USD. The PayPal account is used to collect membership dues and journal subscriptions via the Internet; the PayPal account is kept in Canadian dollars. At the request of the editors, we have combined the numbers for these accounts. The numbers given are in Canadian dollars. A conversion factor of 1.34 has been used to convert American dollars into Canadian ones.

*Historia Mathematica* subscriptions were not billed in 2016. The first GIC fund earns interest at 1.60% and



Figure 1: Thomas Urquhart

matured 16 September 2016; the second has a 1,40% rate and matured 26 March 2017. Both funds automatically renew.

*Gregory Lavers*

## Models of Mathematics

[**Editor’s Note:** Late last summer, I advertised Joel Silverberg’s suggestion that we have a contest for the best and worst historical mathematicians’ clothing and hairstyles. After an underwhelming response, I’ve decided that perhaps an ongoing column better suits the format of the *Bulletin*. So, below Joel has graciously supplied our first entry, Thomas Urquhart (1611–1660, variously known as Thomas Urchard). The editors invite our members to watch out for portraits that tell us something amusing, interesting, or surprising about the history and philosophy of mathematics and then send along a contribution to the series.]

Urquhart’s *Trissotetras* was of interest to me because in it Urquhart appears to be the only person ever to employ Nathaniel Torporley’s “Bishop’s Mitre” config-

uration of right angled spherical triangles. The comparison between Torporley’s *Declides Coelometricae* and Urquhart’s *Trissotetras* has been interesting. Torporley’s (1602) work was written before Napier’s invention of logarithms; Urquhart’s (1645) *Trissotetras* was written thirty years after Napier’s publication of his logarithms and the supporting tables. Torporley’s trigonometry is based upon the use of tables that he developed, while Urquhart’s includes no tables of any kind, and is based upon the Art of Memory, the memorization of scores of nonsense words which encode trigonometric formulas for every possible combination of known and unknowns. Torporley was concerned with the application of his methods to solve real world problems, while Urquhart showed an absolute disdain for applications as something impure that is properly avoided by philosophers, mathematicians, and gentlemen. Yet both authors shared a love for the eccentric, unconventional, pedantic and obscure that severely limited the influence of their works on any of their colleagues and any future developments of their ideas.

But what really drew my interest to Urquhart was his extraordinary personality and remarkable life, not his mathematics or mnemonics. A member of the lesser Scottish nobility, he was a true polymath, with wide-ranging interests, abilities, and activities. Poet, translator, mathematician, pedant, soldier, bon-vivant, and fancy dresser—with an ego to match. He was a knight of the 17th century, but he behaved as if he were a knight of the Middle Ages. He fought for his King against the Parliamentary forces in the English Civil War. He went into exile in France while Cromwell ruled England and returned with Royalist forces in an unsuccessful invasion of England to expel the Roundheads. Living out his life in exile, upon hearing that the Monarchy had been restored and Charles II was to be crowned King (May 29, 1660), he reportedly burst into such a fit of laughter that he choked and died laughing (1660). The tale is most likely apocryphal, although it is often repeated. A like claim is that William Oughtred met a similar death, while raising a mug of ale after a toast to the new King (June 30, 1660). A similar tale reportedly also appears in the works of Rabelais (1494–1553).

Two engravings of Sir Thomas survive, both done by one Richard Glover. Both are quite revealing of Sir Thomas’ personality and character.



Figure 2: Thomas Urquhart with Muses

The first appears as a frontispiece both to Urquhart's 1641 *Epigrams* and to the *Trissotetras*. It is a small whole-length, and represents Sir Thomas in rich dress, holding out his hand to receive from some allegorical personage a laurel wreath "for Armes and Artes." Urquhart holds his hand out to accept the laurels from a messenger of the Muses, and responds to him (in Greek): "thank those who sent you and gave the order." On a table beside him are his hat and embroidered cloak. In the vacant spaces on each side of the upper part of the figure are his name and titles: "Sr Thomas Urchard, Knight, of Bray and Udol, etc., Baron of Ficherie and Clohorby, etc., Laird Baron of Cromartie and Heritable Sheriff thereof, etc."

The second engraving was intended for the frontispiece to an unpublished volume of epigrams which was to have been titled *Apollo and the Muses*. The work never found its way into print, and there is but a single copy of the engraving in existence. "Sir Thomas is depicted as seated with great complacency upon Mount Parnassus, in the midst of the Muses, seven of whom are pressing upon his attention wreaths of laurel of which he is worthy, 'for Judgment, Learning, witt, In-

vention, sweetness, stile.' At his feet is the sacred fountain of Castalia or Hippocrene, into the waters of which the other two Muses are sportively dipping sprinklers or asperges. One of them seems inclined to give Sir Thomas a sprinkling, but refrains, either because it was unnecessary or for fear of spoiling his nice clothes. In the background, the winged horse Pegasus is flying sufficiently low down to allow a woman to pluck a couple of feathers from his wing. These are no doubt intended to provide pens for Sir Thomas's next literary undertaking. In the further distance are several feathered creatures, which are probably meant for poetical swans, but which bear a painful likeness to prosaic geese. At the foot of the picture in one corner we have Apollo, playing on his lyre; on the ground in front are a half-starved dragon and a snake, writhing in impotent rage, as they witness the triumph of Sir Thomas. We can hardly be mistaken in concluding that these last are symbolical representations of envious and carping critics." [John Willcock, *Sir Thomas Urquhart of Cromartie, Knight* (Edinburgh and London: Oliphant Anderson & Ferrier, 1899). ]

It's unclear how long a man who published a drawing in which he is depicted receiving a laurel crown "for armes and artes" and described as "of him, whose shape this Picture hath design'd, Vertue, and learning, represent the mind" felt bad about his lack of mathematical fame and fortune. He manages to still have notoriety in certain quarters, as his hometown of Cromarty mounted an exhibition and conference for his 400th birthday (<http://www.cromarty-courthouse.org.uk/index.asp?pageid=301353>).

## Further Reading

Craik, Roger. "Sir Thomas Urquhart's Translation of Rabelais," *Studies in Scottish Literature* 31, no. 1 (1999): 151–168, [scholarcommons.sc.edu/ssl/vol131/iss1/12/](http://scholarcommons.sc.edu/ssl/vol131/iss1/12/).

Haas, Robert. *Maligned for mathematics: Sir Thomas Urquhart and his Trissotetras*.

"Thomas Urquhart." *NNDB*. <http://www.nndb.com/people/834/000094552/>.

Joel Silverberg



## HOM at 2017 AWM Research Symposium

Eight speakers participated in a History of Mathematics special session during the Association for Women in Mathematics (AWM) 2017 Research Symposium, held April 8–9 at the University of California, Los Angeles (UCLA). This was the first special session on history of mathematics to be held at an AWM symposium.

On Saturday, April 8, Judy Grabiner (Pitzer College) kicked off the session with “It’s All for the Best’: Optimization, Theology, Calculus, and Science,” describing the centrality and influence of optimization in science, mathematics, economics, theology, and philosophy. Her examples included work by Heron of Alexandria, Fermat, Leibniz, Maclaurin, and Adam Smith. Next, session organizer Janet Beery delivered Emelie Kenney’s (Siena College) talk, “Learning and Teaching Mathematics in World War II Poland: Experiences of Three Daring Women,” which featured the work of Zofia Szymdt, Irena Golab, and Zofia Krygowska in Poland’s underground educational system during the country’s six-year occupation by the Nazis. Laura Turner (Monmouth University) then described the creation of “The Krieger-Nelson Prize Lectureship,” an honor for women mathematicians awarded by the Canadian Mathematical Society. The final presentation on Saturday was by Sarah Greenwald (Appalachian State University) on “Incorporating Contributions of Women and Minorities in Classrooms: David Blackwell, Evelyn Boyd Granville and Mary Gray.”

The first of the four presentations on Sunday, April 9, was “Thou Shalt not Envy: A Sperner’s Lemma Guide to Fair Division,” in which Deborah Kent (Drake University) showed how to use Emmanuel Sperner’s graph-theoretic result (proved in 1928) to solve a problem in game theory. Brenda Davison (Simon Fraser University) then presented “G.H. Hardy and the Reform of Mathematics Education at Cambridge circa 1910,” focusing on Hardy’s role in de-emphasizing the Mathematical Tripos examinations. Next, Jemma Lorenat (Pitzer College) took a new approach to a well-known woman mathematician’s work, exploring “Certain Modern Ideas and Methods: Charlotte Angas Scott’s Philosophy of Mathematics.” Finally, Elena Marchisotto (California State University Northridge) described “The Enduring Legacy of Mario Pieri (1860–1913),” focusing on Pieri’s axioms for the



Figure 3: Jemma Lorenat and Janet Beery.

foundation of arithmetic and comparing them with those of Peano and others.

Janet Beery (University of Redlands) organized the History of Mathematics special session; she hopes another such session will be held at the next AWM Research Symposium, to be held in 2019. This session was one of 19 special sessions held during AWM’s 2017 Symposium. It attracted a small but enthusiastic audience of non-specialists that included graduate students in mathematics through seasoned mathematical researchers.

*Janet Beery*

### Quotations in Context

“Mathematics is like checkers in being suitable for the young, not too difficult, harmless, amusing and without peril to the state.”

For quite some time, I had been unsuccessfully trying to track down the original source of this quotation, which is attributed to Plato in many modern publications. So I was surprised and relieved to find the correct citation in the CSHPM archives, on the last page of the September 1988 *CSHPM/SCHPM Bulletin*, which contained a column of “Citations/Quotes.” No author of the column is listed, so the material may have been collected by that issue’s editor, Roger Herz-Fischler; in any case, I was very grateful to finally discover the correct source and wanted to give full credit to our society’s archived *Bulletin* for showing me the

way.

In 1951, the article “A Mathematical Reappraisal of the Corpus Platonium” appeared on pages 173–189 of the journal *Scripta Mathematica*. The author, Domhnall A. Steele, begins the article by expressing deep concern over the “danger of trivialization,” specifically the tendency to reduce or oversimplify the works of Greek mathematicians, robbing their work of important context and translating them into something “trite and obvious.” The author states that this is particularly a problem with modern assessments of Plato, and provides several examples of mathematical terms and phrases from Plato’s work, arguing that the original context supports a more meaningful and robust English translation than is usually given.

Steele argues that correct interpretation of Plato requires that we “know into what kind of mathematical world he was born,” and he explores examples of mathematics from Hippocrates, Eudoxus and Euclid to illustrate the kinds of mathematics that Plato would have seen and the level of understanding and expertise of his culture. Steele follows this with fifteen brief examples of mathematics from Plato’s own works.

The final portion of the article presents Plato’s overall views on mathematics by synthesizing statements on the subject from his many works. While this section of the article provides numerous endnotes to meticulously indicate the sources from which the views originate, this material is paraphrased rather than directly quoted, and Steele states clearly that he will “speak for a while in Plato’s name.” It is in this section of the article that we find this column’s quotation:

Mathematics is like checkers in being suitable for the young, not too difficult, harmless, amusing, and without peril to the state. The citizens of the ideal state, our Callipolitans, cannot be allowed to neglect mathematics, for there is an immense chasm between a man who has grasped it and a man who has not. The holders of high office must proceed to its advanced stages and master at least the theory of the multiplicative composition of numbers.

When we look to the future activity of the young in industry or affairs public or private, no subject is more suitable for their training than the science of number, for it wakes up the intellectually somniferous and confers even upon them an adroitness in excess of their natu-

ral capacity. The born arithmeticians turn out sharpwitted in other studies as well.

The endnotes in the article indicate that the sentence containing this column’s quotation was based on material from Plato’s *Laws*. For the sake of comparison, below is an English translation of the relevant section of *Laws* by Benjamin Jowett, provided by Project Gutenberg:

Athenian: The natures of commensurable and incommensurable quantities in their relation to one another. A man who is good for a thing ought to be able, when he thinks, to distinguish them; and different persons should compete with one another in asking questions, which will be a fair, better and more graceful way of passing their time than the old man’s game of draughts.

Cleinias: I dare say; and these pastimes are not so very unlike a game of draughts.

Athenian: And these, as I maintain, Cleinias, are the studies which our youth ought to learn, for they are innocent and not difficult; the learning of them will be an amusement, and they will benefit the state. If anyone is of another mind, let him say what he has to say.

I suspect that Steele’s paraphrase of Plato has proven popular in modern works because it seems to give a negative (or at least not very positive) impression of mathematics; after all, calling something “harmless” and “without peril to the state” is not usually a way of indicating that a subject is highly valued or useful. However, when the quotation is viewed in the surrounding context of Steele’s article (and also considering the original text of Plato on which it was based), it is clear how much higher of a value is really being assigned to mathematics.

*Mike Molinsky*

## Interact with *MAA Convergence*

*MAA Convergence* is both an online journal on the history of mathematics and its use in teaching and an ever-expanding collection of online resources to help its readers teach mathematics using its history. Founded in 2004 by well-known mathematics historians and educators Victor Katz and Frank Swetz, *Convergence*

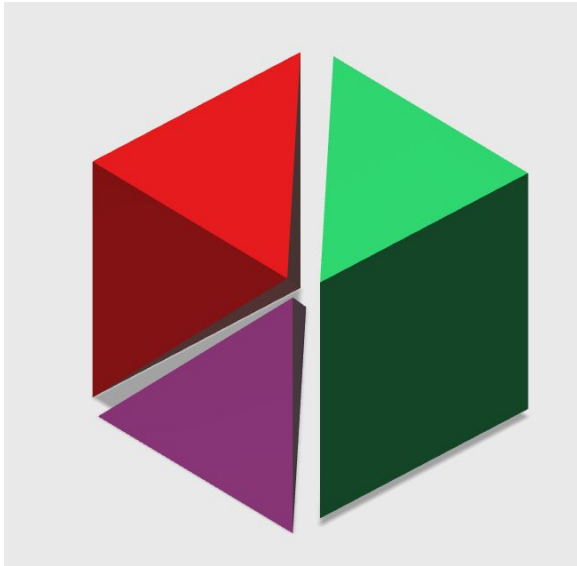


Figure 4: Cube Puzzle Pieces

brings you a variety of interesting articles and teaching tools.

We highlight here some of our newest articles and resources for use in your classroom. Many of them use interactive features to help students understand and explore historical mathematical ideas.

In “Exploring Liu Hui’s Cube Puzzle: From Paper Folding to 3-D Design,” author Lingguo Bu offers history, classroom activities, and interactive applets to help you and your students explore Liu Hui’s 3rd-century dissection of the cube into three pieces with volumes  $1/2$ ,  $1/3$ , and  $1/6$  of the volume of the cube. Both images show the three puzzle pieces. The pieces in the second image were made using a 3-D printer.

For a different kind of puzzle, try “Mathematicians from A to Z,” a *New York Times*-style crossword puzzle created by mathematics instructor Sid Kolpas and crossword puzzle creator Stu Ockman.

The article, “Misseri-Calendar: A Calendar Embedded in Icelandic Nature, Society, and Culture,” by Kristín Bjarnadóttir, reviews the calendar’s long history from Viking times to the present and offers animations and ideas for your classroom.

In “A Translation of Evangelista Torricelli’s ‘The Quadrature of the Parabola, solved by many methods through the new geometry of indivisibles,’” authors Andrew Leahy and Kasandra Sullivan provide plenty of history and helpful diagrams along with their translation.

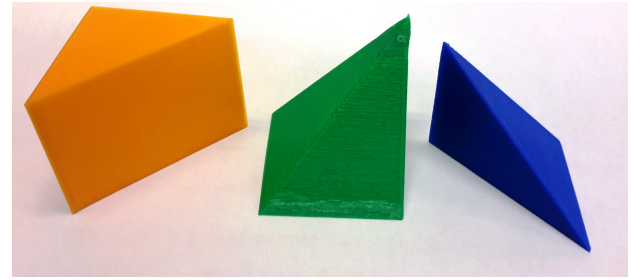


Figure 5: Created with a 3D-Printer

In “Mathematical Treasures at the Linda Hall Library,” author Cynthia Huffman highlights the mathematics collections available at this rare book library in Kansas City, Missouri. See images of mathematics books by Euclid, Pacioli, Cardano, Torricelli, Maria Agnesi, and Emilie du Châtelet.

Our “Index to Mathematical Treasures” includes hundreds of images for use in your classroom from dozens of libraries and sources. See all of these articles and more at the *Convergence* of mathematics, history, and teaching: [www.maa.org/press/periodicals/convergence!](http://www.maa.org/press/periodicals/convergence)

*Janet Beery*

## New Members

*Congratulations to the following new members who have joined the Society since our last Bulletin. We look forward to your contributions.*

Brandon Allen  
Rochester, MN  
USA

Zoe Ashton  
Burnaby, BC  
Canada

Brittany Anne Carlson  
Hemet, CA  
USA

William Cole  
Knoxville, TN  
USA

William Dunham  
Bryn Mawr, PA  
USA

Anne Alicia Kelton  
Cleveland, TN  
USA



Figure 6: Bonnie and her Triplets

Teresa Kouri  
Columbus, OH  
USA

Jorge M. Lopez  
Guaynabo, PR  
USA

Colin McKinney  
Crawfordsville, IN  
USA

Derek Postnikov  
Saskatoon, SK  
Canada

Andrew Schroter  
Toronto, ON  
Canada

## From the Editor

As is usual for the spring issue, much of our content relates to our upcoming Annual Meeting, this year at Ryerson University in Toronto. While Craig Fraser is our official local organizer, coordinating catering and such with Congress, David Orenstein has written about a couple of attractions you might enjoy while attending our conference, the University of Toronto’s library and archival resources and its home for cultural events. Another local institution that I learned about last year, largely through updates from David, is Toronto’s High Park Zoo, whose resident capybaras went on the lam for several weeks in May and June 2016 before being successfully trapped and returned. On February 23, 2017, “Bonnie” and “Clyde” settled down into parenting with the birth of triplets, who should be ready to go on view by the time we arrive.

The *Bulletin* reaches your hands or screen due to

the continued efforts of Eisso Atzema, Layout Editor; Maria Zack, Production Editor; Pat Allaire, Secretary; and Mike Molinsky, Webmaster. The next submission deadline for the *Bulletin* is 1 October 2017. As always, the editors seek news items of interest to historians and philosophers of mathematics, reports on conferences attended, and personal and professional announcements. We also welcome suggestions for memorials, book and web reviews, and informative or thought-provoking column-style articles. Microsoft Word (please turn off its auto-formatting features such as “curly quotes”) and LaTeX data files (not compiled PDFs) are easiest for the editors to deal with. Submissions may be sent to [aackerbe@verizon.net](mailto:aackerbe@verizon.net).

*Amy Ackerberg-Hastings*

## About the Bulletin

The *Bulletin* is published each May and November by a team of 3 volunteers: Content Editor Amy Ackerberg-Hastings ([aackerbe@verizon.net](mailto:aackerbe@verizon.net)), Layout Editor Eisso Atzema ([eisso.atzema@maine.edu](mailto:eisso.atzema@maine.edu)), and Production Editor Maria Zack ([Maria-Zack@pointloma.edu](mailto:Maria-Zack@pointloma.edu)). Material without a byline or other attribution has been written by the editors. Les pages sont chaleureusement ouvertes aux textes soumis en français. Comments and suggestions are welcome and can be directed to any of the editors; submissions should be sent to Amy Ackerberg-Hastings at the above email address, or by postal mail to 5908 Halsey Road, Rockville, MD 20851, USA.



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