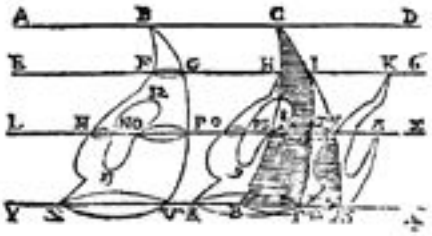
BULLETIN

CSHPM SCHPM



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WHAT'S INSIDE

Canadian Society for History
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Société canadienne d'histoire et
de philosophie des mathématiques

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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: **Glen Van Brummelen**, Quest University, Squamish, BC V8B 0N8, CA, gvb@questu.ca
Vice-President: **Elaine Landry**, UC Davis, Davis, CA 95616, USA, emlandry@ucdavis.edu
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The Society's Web Page (www.cshpm.org) is maintained by **Michael Molinsky**, University of Maine at Farmington, Farmington, ME 04938, USA, michael.molinsky@maine.edu. The Proceedings of the Annual Meeting are edited by **Tom Archibald**, Simon Fraser University, Burnaby, BC, V5A 1S6, tarchi@math.sfu.ca. The Society's Archives are managed by **Michael Molinsky** (see above). **Tom Archibald** (see above) serves as CMS Liaison.

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

From the President: Reaching Out

Why do we do what we do? For the history and philosophy of mathematics there are several competing answers. Some of us are devoted to using history and philosophy to humanize mathematics in the classroom. Others are interested in uncovering the chain of ideas that led us to our current mathematical situation. Still others, perhaps the leading camp these days, hope to show how mathematics has been affected by, altered by, and interacted with different aspects of human culture. All of these are legitimate goals, with the potential to enrich and inform the human experience.

But each of these efforts requires more than just pure research, for its own sake. If we all spend our lives entirely within the research bubble, not much will change. If we don't commit to some outreach, no one is going to come along to communicate our ideas and discoveries to our intended audience. I see part of the CSHPM's role as helping to organize our collective efforts to publicize the importance of our academic passions.

One of our crucial audiences, perhaps more receptive to our mission than we often think, are professional mathematicians. Sessions in history and philosophy are popular at mathematics conferences, and while I've heard the opinion that we are a sort of entertainment between the mathematics talks, it seems to me that there is more to it than that: a desire to make a deeper connection with meaningful issues outside of their discipline. It is up to us to make that possible.

These issues are the primary reason why I am delighted to announce several joint efforts with two major North American professional mathematical organizations. The first is the institution of a new column devoted to history and philosophy of mathematics in the *CMS Notes*, the news magazine of the Canadian Mathematical Society. This publication, produced six times annually, is read by over one thousand mathematicians across Canada. The column will be coordinated and edited by two long-time CSHPM stalwarts, Amy Ackerberg-Hastings and Hardy Grant. The idea for the column was inspired by Mike Molinsky's fine regular contributions to this *Bulletin*, "Quotations in Context". Tom Archibald, who has spearheaded our joint efforts with the CMS for years, will write the

first contribution. Our greatest thanks to all four; also to *CMS Notes* editors Robert Dawson and Srinivasa Swaminathan; and to Johan Rudnick, the executive director of the CMS, who played a major role in making this happen.

Our cooperation with the CMS continues this summer, via a joint display at the Mathematical Congress of the Americas in Mexico this August, organized on our end by Tom Drucker. Tom is also putting together a CSHPM display in the exhibitors' area at MathFest, the summer meeting of the Mathematical Association of America. This exhibit will support our joint meeting with the MAA in Hartford, CT, from August 1 to 3, and I hope to meet many of you there.

All of these initiatives may require some feedback and assistance from some of you, through contributions of columns and other materials, and participation in the exhibit booths. So, keep an eye on your email inbox! Through communal efforts like this, the CSHPM will continue to make a difference well beyond our own academic neighbourhood.

Glen Van Brummelen

Announcements

Judy Grabiner and Karen Parshall were named to the inaugural class of Fellows of the American Mathematical Society. The Fellows of the American Mathematical Society program recognizes members who have made outstanding contributions to the creation, exposition, advancement, communication, and utilization of mathematics.

Michael Molinsky was promoted to Professor at the University of Maine at Farmington.

Dan Curtin received a Certificate of Meritorious Service from the MAA.

Danny Otero has been elected Chair of HOMSIG-MAA, and Scott Guthery was elected Electronics Resources Coordinator.

Docent Press published four books on the philosophy of Charles S. Peirce in the final quarter of 2012: Fernando Zalamea, *Peirce's Logic of Continuity*; Alison Walsh, *Relations between Logic and Mathematics in the Work of Benjamin and Charles S. Peirce*; Benjamin Lee Buckley, *The Continuity Debate: Dedekind, Cantor, du Bois-Reymond, and Peirce on Continuity and Infinitesimals*; and Paul Shields, *Charles S. Peirce on the Logic of Number*.

Akademie Verlag has published online the latest volume (series 7, vol. 6) of Leibniz's works, *1673–1676. Arithmetische Kreisquadratur*, edited by Uwe Mayer and Siegmund Probst. See gwlb.de/Leibniz/Leibniz-archiv/Veroeffentlichungen/VII6.pdf.

MIT Press published Janet Abbate's new book, *Recoding Gender: Women's Changing Participation in Computing*.

The Prologue and chapters 1–6 of Pseudo-Masha'allah's treatise on the astrolabe, edited by Ron B. Thomson, is available at ouhos.org/2013/01/08/pseudo-mashaallah-on-the-astrolabe/.

The special issue of *Logica Universalis*, in celebration of the centenary of the birth of Jean van Heijenoort, has just appeared in print (vol. 6, no. 3–4 (2012)). Contributors include Irving H. Anellis, Anita Burdman Feferman, John W. Dawson, Jaakko Hintikka, Ignacio Angelelli, Claus-Peter Wirth, Francine F. Abeles, Solomon Feferman, Phillippe de Rouilhan, Jan Wolenski, and Anssi Korhonen. An article by Jean van Heijenoort and his bibliography are also included. Regrettably, illness prevented Georg Kreisel from delivering his contribution. Abstracts and open source articles are available electronically from Springer-Verlag, via logica-universalis.org.

Speakers on the 2012–2013 schedule for the Philadelphia Area Seminar on the History of Mathematics (PASHoM) included: David Richeson (Dickinson) on September 20; William Dunham (Muhlenberg) on October 25; Amy Shell-Gellasch (Hood) on November 15; Steven Weintraub (Lehigh) on December 13; William Huber (Haverford) on January 17; Chris Rorres (Drexel) on February 14; Tom Drucker (UW-Whitewater) on March 14; and David L. Roberts (Prince George's CC) on April 18.

The Frederick V. Pohle Colloquium in the History of Mathematics, hosted by the Department of Mathematics & Computer Science at Adelphi University, presented the following speakers this past year: Tom Bartlow (Villanova), "A Look at American Postulate Theory" on October 3; Lee Stemkoski (Adelphi), "The Work of Leonhard Euler Related to Fermat's Last Theorem" on December 5; Paul Wolfson (West

Chester), "Elliptical Orbits and the Conflict over the Calculus" on February 6; Rob Bradley (Adelphi), "L'Hôpital, Bernoulli and the First Calculus Book" on March 6; and Walter Meyer (Adelphi), "Cajori Two: Survey of American Undergraduate Mathematics Courses in the 20th Century" on April 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: Michel Serfati (IREM), "Histoire et origins d'une structure ordonnée: les algèbres de Post" on February 27; Siegmund Probst (Archives Leibniz), "Le traité de la quadrature arithmétique du cercle et les séries chez Leibniz (1672–1676)", and Michel Serfati, "Mathématiques, métaphysique, et symbolisme chez Leibniz: le principe de continuité" on March 27; Joseph Kouneiher (Nice, etc), "Formes différentielles, Grassmanniennes et les fondements de la physique: en guise de réalisation du projet Leibnitien" on April 17; Jean-Pierre Lubet (IREM de Lille), "Calcul symbolique et calcul intégral de Lagrange à Cauchy" on April 24; Bruno Gagneux (IREM), "Commentaires et critiques sur la Géométrie de Descartes, de Schooten à Rabuel", and Michel Serfati, "La Géométrie de Descartes, ou la 'pierre de Rosette' du symbolisme" on May 22; and Phillippe Seguin (IREM), "Formalisme et 'consistence'. Mathématiques et littérature chez Edgar Allan Poe (1809–1849)", and Michel Serfati, "Descartes et Pascal. Science, réalité et fiction, dans le théâtre de J. C. Brisville" on June 5.

The ORESME (Ohio River Early Sources in Mathematical Exposition) Reading Group held its 30th semiannual meeting at Northern Kentucky University on February 1–2, 2013. At the meeting, attended by 8 stalwart readers, we worked through a number of selections from the recent English annotated translation of Cauchy's *Cours d'analyse* (1821) by Rob Bradley and Ed Sandifer (Springer, 2009). The discussion was engaging enough to lead us to follow up this study with a look at the work of Weierstrass related to rigorizing the calculus. This future meeting will likely take place in late September 2013. New members are welcome. For more information, visit the ORESME website, www.nku.edu/ curtin/oresme.html, or contact Danny Otero (*otero@xavier.edu*) or Dan Curtin (*curtin@nku.edu*).

The ARITHMOS Reading Group met February 2–3 at Western Connecticut State University. The topic of discussion was Book 3 of Descartes' *Géometrie*. For more information, see arithmos.org.

On April 6–7, Fred Rickey and Jim Tattersall organized a Special Session on History and Philosophy of Mathematics at the American Mathematical Society Eastern Section Meeting at Boston College in Chesnut Hill, MA—known to locals as being at the acme of the infamous Heartbreak Hill of the Boston Marathon. Speakers included: Hardy Grant, "'Epistemic Cultures' and the History of Mathematics"; Dave Roberts, "Mathematics as Mind Training: The History of a Complex of Educational Ideas"; Scott Guthery, "Mathematical Tables in 19th-century America"; Kim Plofker, "Pre-computer Number Crunching: Computational Aids and Techniques in Indian Mathematics"; Joe Dauben, "The Evolution of Mathematics in Ancient China: From the Newly Discovered *Shu* and *Suan shu shu* Bamboo Texts to the *Nine Chapters on the Art of Mathematics*"; Chris Rorres, "Correcting an Error in Book I of Archimedes' *On Floating Bodies"*; Andy Fiss, "The Burial of Euclid: Defacing geometry in Early 19th-century America"; Chris Phillips, "Soldiers and Scholars: Descriptive Geometry on the Blackboard"; Duncan Melville, "Perspective, Painting, Publishing, and Patronage: Joshua Kirby and Brook Taylor"; Amy Ackerberg-Hastings, "Sectors at the Smithsonian"; Dick Jardine, "Episodes from American Mathematics in the Age of Jefferson"; John Dawson, "Alternate Proofs in Mathematical Practice"; Jean-Pierre Marquis, "The Abstract Method and the Nature of Mathematical Abstraction in 20th-century Mathematics"; Fran Abeles, "Hypotheticals, Conditionals, and the Implication Relation in Pre-Boolean 19th-century British Logic"; Larry D'Antonio, "A Pox on Both Your Houses! The Bernoulli-d'Alembert Smallpox Inoculation Controversy"; and Brittany Shields, "Émigré Mathematicians: Richard Courant and the Mathematical Institutes at the University of Göttingen and New York University."

On May 31–June 1, Chris Rorres is organizing and New York University's Courant Institute of Mathematical Sciences will host "Archimedes in the 21st Century." The first day will feature invited speakers who are experts in technical/scientific fields that utilize present-day applications, and the second day

includes short talks about the teaching of Archimedes' works, principles, and inventions, aimed at school and undergraduate teachers. The conference is *free*, but pre-registration is required.[1]

On June 12-16, the Eleventh Biennial History of Astronomy Workshop will be held at the University of Notre Dame. The theme is "diffusion of astronomical knowledge across and within cultures," and F. Jamil Ragep is the invited speaker. See www.nd.edu/~histast/.

The 16th Annual Legacy of R. L. Moore Conference, co-hosted by the Educational Advancement Foundation and the MAA, will be held in Austin, TX, June 13–15. See legacyrlmoore.org/events.html.

The 2013 meeting of the Euler Society will occur in conjunction with MAA MathFest in Hartford, CT. See www.eulersociety.org/.

From September 18 to November 23, 2013, the Grolier Club in New York City will mount the exhibition, "Extraordinary Women in Science and Medicine since 1600." Mathematicians will be represented by books and manuscripts authored by Emilie Du Châtelet, Maria Gaetana Agnesi, Sophie Germain, Sofia Kovalevskaya, Emmy Noether, and Florence Nightingale (included for her work on statistics). See the Forthcoming Exhibitions page on www.grolier.org.

The 1st European Autumn School on History of Science and Education will be held November 14–16 in Barcelona and is aimed at graduate students, teachers, and scholars interested in the relationship between history of science and science education. The theme is "Sources and Resources for Educational Purposes in the Era of the Internet." See schct.iec.cat/Web1AutumnSchool/FirstAutumnSchool.html.

The online exhibition, "Newton at the Worth Library" (Dublin) is available at Newton.edwardworthlibrary.ie.

Palgrave Macmillan has launched Palgrave Pivot, for ebook and print-on-demand publication of research of 25–50,000 words,with rigorous peer review and publication within 12 weeks of acceptance. See www.palgrave.com/pivot/.

The most recent dissertations pertaining to the history of science and medicine from the August 2010 volumes of *Dissertation Abstracts* are listed on the Health Sciences Library System of the University of Pittsburgh.[2] The platform is now operated by ProQuest; short versions are no longer available, but complete bibliographic information is provided.

Letters from an Indian Clerk, a 1987 BBC documentary on Srinivasa Ramanujan, has been uploaded to YouTube by the writer and director, Christopher Sykes.

Michael J. Bradley of Merrimack College invites contributions to his clearinghouse for student enrichment projects exploring "famous mathematicians" at merrimack.edu/famous-mathematicians-projects/.

David Marans of St. Thomas University has made his *Logic Gallery* of chronology, quotations, and illustrations available via open access at humbox.ac.uk/3682/.

A one-day meeting on Lewis Carroll's mathematics will be held at the Birmingham and Midland Institute on 18 May 2013. Speakers include Keith Hannabuss, Robin Wilson, and David Singmaster. Registration for BSHM members is £20. Contact Mark Richards, *markrichards@aznet.co.uk*. Further information is available at lewiscarrollmanofscience.com.

The University of Edinburgh and Royal Geographical Society announce a three-year PhD studentship in instruments of geographical exploration and their associated print and manuscript histories. Applications are due 8 May 2013. For more information, contact Charles W. J. Withers, *c.w.j.withers@ed.ac.uk*.

The Göttingen Academy of Sciences seeks to appoint a two-year mathematician or historian of mathematics who is familiar with German, Latin, French, and philology to assist with editing Leibniz's mathematical writings for the Leibniz Academy Edition (Series VIII). Applications are due 17 May 2013. For more information, contact Michael Kempe, *Michael.kempe@gwlb.de*.

[1] See math.nyu.edu/~crorres/awc/conference.

[2] See www.hsls.pitt.edu/histmed.

Figure 1: Jeremy Gray

2013 Kenneth O. May Lecturer: Jeremy Gray

Professor Jeremy Gray of the Open University will be the May Lecturer at this year's annual meeting of the Canadian Society for History and Philosophy of Mathematics, which is taking place in conjunction with MathFest in Hartford, Connecticut. The lecture is named after Kenneth O. May, one of the founders of the history of mathematics community in North America. The address will be on Saturday, August 3, and will concern material from Professor Gray's recent intellectual biography of Henri Poincaré.

Professor Gray was an undergraduate at Christ Church, Oxford, and received his doctorate from the University of Warwick under the supervision of Ian Stewart and the late David Fowler. He has been on the faculty of the Open University since 1975 and has been Professor of the History of Mathematics there since 2002. In addition, he is an honorary professor in the Department of Mathematics at the University of Warwick. His research interests are in the history of mathematics, particularly geometry and analysis, and the development of mathematics generally around the turn of the twentieth century. His book *Plato's Ghost* (Princeton University Press, 2008) takes on the broad question of what distinguishes 'modern' mathematics, putting the question against the background of culture more generally.

In addition to his general historical interests, Professor Gray has written extensively on the philosophical significance of mathematical and geometrical views, including those in the area of foundations of mathematics. In 1998 he gave an invited lecture at the ICM in Berlin on the subject of the Riemann-Roch Theorem, and in 2009 he was awarded the Albert Leon Whitman Memorial Prize of the American Mathematical Society for history of mathematics. He is an editor of *Archive for History of Exact Sciences* and was a consultant for the television series *The Story of Maths*.

Perhaps Professor Gray's most widely read volume is *The Hilbert Challenge* (Oxford University Press, 2000), an account of the problems posed by David Hilbert at the International Congress in Paris in 1900 and their subsequent influence on mathematics. He has edited many anthologies and brings to the history and philosophy of mathematics a breadth of scholarship that illuminates the subjects of which he treats, from linear differential equations and group theory to the ideas of space. He spoke last year on Poincaré to the Congress of Logic, Methodology, and Philosophy of Science.

Tom Drucker

HPM Americas Section at West Point

The Americas Section of the International Study Group on the Relations Between History and Pedagogy of Mathematics met at the United States Military Academy in West Point, NY, March 1–3, 2013. Fred Rickey and Tina Hartley cajoled the librarians into bringing about three dozen rare books and journals into a classroom for discussion and viewing, led an expedition to Andrew Ellicott's grave, convinced Joy Rickey to have the entire group over for dinner, organized a meal at the West Point Club, and supplied tasty breakfasts and snacks.

In between all of the socializing, 28 attendees heard seventeen presentations on the use of history to teach mathematics and the history of mathematics education. A special treat was Michael N. Fried's plenary lecture, "The Varieties of Relationships to Mathemat-

ics of the Past." He suggested that those who are interested in past mathematics may be categorized as mathematicians, mathematics historians, and historians of mathematics, and he pondered a potential fourth category of educationalist historians of mathematics. Michael also participated enthusiastically in all of the sessions. Since his institution covered all of his expenses except lunch, the Section got a huge bargain that will be difficult to replicate at future meetings.

Talks on specific historically-oriented courses covered a full range of undergraduate levels of experience and interests. Amy Shell-Gellasch discussed halving and doubling problems in a course for non-majors, while Ray Coughlin explained how he developed Temple's "critical thinking and problem solving in science" course. By student request, Colin McKinney developed a classics course in which students read Book I of Euclid's *Elements of Geometry* in Greek. Eugene Boman and Robert Rogers introduced their historically-oriented real analysis textbook, which will be freely available through the SUNY Open Textbook Program. Saul Stahl outlined his course in introductory modern algebra.

More generally but also highly evangelistically, Reem Jaafar stressed the benefits in student engagement and mastery that result from incorporating history into remedial classes. Similarly, Laurence Kirby showed his documentary on Plimpton 322, which his institution uses as a motivational tool for students. (See the Announcements from our November 2012 issue.)

For individual classroom activities, Stuart Moskowitz repeated his presentation from last fall's meeting at Berkeley, on the history and theory of vanishing area puzzles, for an almost entirely new audience. Lina Wu shared how she points out mathematical concepts in artwork from various time periods and cultures. Yibao Xu discussed examples of recent discoveries in the history of Chinese mathematics that can be incorporated into lessons on number theory and the ratio system. Amy Ackerberg-Hastings highlighted resources for using planimeters to illustrate calculus concepts.

Contributing to the history of mathematics education, Valeria Holguín talked about the process of untangling the provenance of Abraham Lincoln's surviving arithmetic ciphering book. Elizabeth Fleming gave an overview of evolutionary changes in geometry textbooks' treatment of convergence. Walter Meyer considered what we learn about the evolution of the American undergraduate curriculum in the first half of the 20th century when we review the addresses given by presidents of the MAA. Ken Clements looked at the lag time between the first appearances of decimal currency in ciphering books and the wide adoption of the topic, while Nerida Ellerton compared the ciphering traditions in Great Britain and North America in the 18th and 19th centuries.

Although I would not recommend organizing a conference on short notice at a U.S. government facility with an impending budgetary sequester, the meeting itself turned out wonderfully. It has been very enjoyable to see the Americas Section slowly re-establish itself and focus increasingly explicitly on its *raison d'etre*, the relations between history and pedagogy of mathematics. To continue this development, the Section needs interested scholars and teachers from 4-year and 2-year colleges and high schools to attend its meetings but also to help identify meeting sites and assist with the logistics for a particular meeting. To propose a meeting site for the Americas Section on the East Coast, West Coast, or any point in between, please contact David L. Roberts at*robertsdl@aol.com* and Yibao Xu at *YXu@bmcc.cuny.edu*. Contact Yibao as well to be added to an email list that distributes information about future meetings. (The Americas Section has no formal membership or dues, so emailed announcements are the extent to which you will be pestered.)

Amy Ackerberg-Hastings

NMAH Object Groups

Smithsonian curators are currently digitizing the Institution's 137 million objects, artworks, and specimens. The cataloguing records for eight million items may be searched and viewed through the Collections Search Center database, collections.si.edu. It can, though, be unwieldy to locate particular types of objects in manageable numbers through this website. Thus, the National Museum of American History is simultaneously developing an area of its website for online mini-exhibits that bring together sets of like ob-

jects, americanhistory.si.edu/collections/object-groups.

Mathematics curator Peggy Kidwell, with the assistance of temporary project assistant Amy Ackerberg-Hastings and behind-the-scenes volunteer Judy Green, has been particularly active in compiling object groups from the 10,000 items in the mathematics collections. The groups online include: abaci and numeral frames, adders, patent models of counters, dividers and drawing compasses, mathematical charts and tables, the mathematical paintings of Crockett Johnson (best known as the author of *Harold and the Purple Crayon*), protractors, sectors, and items related to women mathematicians.

Each object group has an introduction page with a general overview, a few pages showing examples of general types of each instrument, and a page with resources for further reading in online and print materials. For example, the sectors group defines the object as having two arms that were made of brass, wood, or ivory and covered with scales useful for solving practical mathematics problems. A user measured distances between points on the scales with dividers, thus converting proportional problems into the relationships between similar triangles.

The introduction places the instrument in historical context and then traces the history of the instrument from its invention in the late 16th century to its disappearance in the 19th century. The 23 objects in the mathematics collections suggest that sectors had different forms and purposes, depending on whether they were made in Italy, France, and England. Thumbnail images of each object link to detailed catalog records, often including additional photos. Sectors in other museums may be located and viewed by following links on the Resources page. Because NMAH's emphasis is on telling the story of the United States and its many peoples, these object groups often highlight how the mathematics collections help researchers and visitors better understand American history.

Additional groups are continually being added, so readers are invited to make this site a regular stop on their travels around the web.

Mixed Mathematics and Library Catalogs

Searching for Books in Mixed Mathematics

Mixed mathematics is a blend of mathematics, domain, and practice.[3] Progress and innovation in a mixed mathematics endeavor will exhibit, usually to an unequal degree, progress and innovation along all three of these dimensions. Work that combines only mathematics and domain can be found expediently under the heading 'applied mathematics.' To find work that combines all three requires a bit more digging.

In considering mixed mathematics in colonial and post-colonial America I have found that catalogs of reading libraries are a rich and, as far as I can tell, unexplored resource for doing research in the history of mathematics—at least in the time and place I'm considering.[4] All the following thus pertains only to this very particular case.

A reading library (like almost all libraries) operates with a highly constrained acquisition budget. Purchasing one book necessitates forgoing another. An underlying and admittedly untested assumption in using catalogs of reading libraries to study mixed mathematics is that the acquisition librarian of a reading library will buy books that are of the greatest immediate interest and use to the patrons of the library; in the case at hand, for example, Oliver Evans's *The Young Mill-Wright & Miller's Guide* rather than Leonhard Euler's *Elémens d'algèbre, de l'analyse determinée*. Said simply, a mathematics book that combines the mathematics domain with practice will, from the acquisition librarian's point of view, have a higher likelihood of being borrowed than a book containing just mathematics and for this reason is a more desirable acquisition.

[3] See Gary I. Brown, "Evolution of the Term 'Mixed Mathematics'," *J. Hist. Ideas*, v. 52, n. 1, (1991), pp. 81–102. See also John V. Pickstone, "Working Knowledges Before and After circa 1800: Practices and Disciplines in the History of Science, Technology, and Medicine," *Isis*, v. 98, n. 3 (2007), pp. 489–516, and other work by Pickstone.

[4] The term 'reading library' as used here refers to a library that is open to the general public, perhaps but not necessarily on payment of a subscription or lending fee. 'Reading library' includes public libraries but excludes academic libraries.

Est.	Library	# Vols (Y)
1742	Am. Phil. Soc.	6 (1833)
1780	Am. Ac. of A. & Sci.	10 (1857)
1791	Mass. Hist. Soc.	7 (1851)
1794	Boston Libr. Soc.	10 (1837)
1807	Boston Athenæum	29 (1837)
1810	Salem Athenæum	11 (1850)

Table 1: Early American Reading Libraries

Proceeding with this assumption writ bold, the catalog of a reading library is thus taken as rough but recognizable profile of contemporary patrons' desire to expand their knowledge and skills. That is, the library catalog is a snapshot of the frontier between what the local reading population knows and understands and what this population wants—for whatever reason—to come to know and understand.

Early American Reading Libraries

The Davies Project at Princeton contains a database of 9,889 American libraries before 1876. The database is searchable over fourteen fields of recorded data. Table 1, listing some early American reading libraries, is taken from this database. Multiple catalogs are available for each of these libraries, which lets one consider the shift in patron demand over time. The Boston Athenæum, for example, published catalogs in 1810, 1827, 1840, and 1874 with supplements along the way.

With the intention of increasing the probability getting a handle on mixed mathematics, I applied an additional filter to the books in the catalogs: they had to contain tables of numbers. The working assumption here is that a table is *prima facie* reduction of domain mathematics to practice. The under-the-table path from the argument used to enter the table and the tabular value retrieved can be quite complex, both with respect to the mathematics used to compute the number and with respect to the domain model captured by that mathematics. The table represents a rolling up of all this knowledge into a form ready for handy use by the practitioner. That a table of this sort is onerous to create means that it will only be created if it is thought that there are sufficient number of practitioners ready and willing if not eager to use it.

Type	1810	1827	1840	1874
Astronomy	3	16	24	31
Commercial	4	7	9	21
Engineering	2	2	8	12
Military	2	3	3	4
Navigation	3	7	10	18
Surveying	1	2	4	7

Table 2: Mixed Mathematics Books by Type in Boston Athenæum Catalogs

Tabular Form of Mixed Mathematics

Table 2 lists books in the catalogs of the Boston Athenæum that contain tables constructed for use by practitioners. These are typically large tables with arguments spanning ranges that would be reasonably encountered in the field. The columns in Table 2 are essentially cumulative in that, by and large, books in, for example, the 1827 catalog are to be found in the 1840 catalog.

Summary

Mixed mathematics is, in my view, more than the sum of pure and applied mathematics. Mixed mathematics takes from pure mathematics the willingness to bring into being wholly new mathematical constructs. It takes from applied mathematics the techniques of adapting constructs found in the literature to a situation at hand. But mixed mathematics measures the value of both of these activities with respect to practice outcomes. That it is guided by this measure means that the path it takes on the pure and applied dimensions will be unique.

Library catalogs are thus found—in a very particular situation—to be of use in developing historical case studies of mixed mathematics.

Scott Guthery

Changes at *Historia Mathematica*

As of January 1, 2013, there is a change at the helm of *Historia Mathematica*. June Barrow-Green stepped down as Co-Editor in Chief after having served for a total of six years, the first three as managing editor. June devoted a great deal of her time and energy

to accomplishing all the complex tasks necessary to guarantee the continued success of the journal, and her many friends in CSHPM will surely wish her well in future endeavours.

Niccolò Guicciardini, who has been Co-Editor in Chief since 2010, will be joined by Tom Archibald of Simon Fraser University. Tom will be primarily responsible for submissions on modern and contemporary mathematics. Niccolò will continue to be primarily responsible for submissions on ancient, medieval and early-modern history of mathematics.

Adrian Rice and Toni Malet, after many years of outstanding service as review editors for English and non-English books, respectively, have been replaced by Deborah Kent (Drake) and Martina Schneider (Mainz). We would like to thank both the former and the new book review editors for their precious work. Duncan Melville (St Lawrence University), Kim Plofker (Union College), and Laura Martini (Siena) will continue their excellent work as assistant abstracts editors.

Historia Mathematica was founded as the journal of the CSHPM. The editorial team hopes that CSHPM will continue to support *Historia Mathematica* by contributing your good papers, reviews and abstracts, and by continuing as faithful readers.

Tom Archibald

Off the Shelf: *Histoire de la statistique*

Histoire de la statistique (Que-sais je? No. 2527), by Jean-Jacques Droesbeke and Philippe Tassi, Paris: Presses Universitaires de France, 1990, 128 pp., $8.50Can (at time of publication).

Whether walking to my neighbourhood cafe in Toronto's North Riverdale, taking the subway downtown to the University of Toronto, or riding VIARail to Montreal, I have in my pocket one of the 4,000 titles of the *Que sais-je?* series from the *Presses Universitaires de France*.

Jean-Jacques Droesbeke and Philippe Tassi's 1990 *Histoire de la statistique*, *Que sais-je* No. 2527, is one of my favourites. Purchased in the early 1990s at a French language bookstore in Ottawa's Byward Market, I've read it through or in sections many times over the years.

At the time of publication, Droesbeke was a professor at the *Université Libre de Bruxelles* while Tassi was a professor at ENSAE but also the Scientific Director of *Médiametrie*.

Like almost every other book in the series, *Histoire de la statistique* forms an excellent introduction to its subject. The authors do this primarily through seven survey chapters, each a history of a different field within Statistics, such as Descriptive Statistics or Data Analysis. A final chapter, in eight sketches, outlines the scientific biographies of such outstanding figures as Karl Pearson and Ronald Fisher. A select bibliography completes the reader's initiation.

Droesbeke and Tassi endeavour to find very early examples for each field. Probability starts with early games of knucklebones dating from ancient Egypt's First Dynasty. A graph of planetary inclinations from a 10th-century medieval European manuscript is the beginning of Time Series Analysis.

These tend to be isolated examples for most topics in Statistics. For serious and extended developments we must wait until the 17th and 18th centuries. Then we encounter the stars of the mathematical firmament (de Moivre, Pascal, Gauss, Laplace ...) but lesser known thinkers get full credit as well.

The Swiss mathematician Jean-Henri Lambert (1728–1777) included in his *Philometria* (1760) the study of continuous, symmetric and unimodal density curves and introduced what we now know as maximum likelihood. The British statistician William Playfair published *The Commercial and Political Atlas* in 1786,with 44 high quality graphs, mostly illustrating time series. But his graph "Exports and Imports of Scotland" is the first bar graph we know of, reproduced on page 7 of *Histoire de la statistique*. In 1763, the astronomer James Short dealt with the problem of outliers by taking the mean of three means. These means are a) the sample mean; b) the mean of all values within 1 arc second of the sample mean; c) the mean of all values within 0.5 arc seconds of the sample mean.

Excerpts from the historic literature are given a very full citation in the main text. For example, on page 16: "Le 9 février 1877 Galton fait un exposé au Royal

Institution of Great Britain, intitulé *Typical laws of heredity in man.* Dans le texte de son allocution (publiée dans les *Proc. R. Inst. G. Brit.* vol. 8, p. 282 – 301), Galton écrit:

"« Reversion is the tendency of the ideal mean filial type to depart from the ancestral type. . . .» " Such quotations remain in English without being translated.

The chapter on Mathematical Statistics, pages 57–66, begins with the mathematical background (integration theory, etc.) that permitted its technical development and the increasing number of disciplines that required it (biology, etc.). The field begins in 1713 when Jacques Bernoulli elucidated the Weak Law of Large Numbers in *Ars Conjectandi*. Where Thomas Bayes's posthumous publication of Conditional Probability was placed in 1763 is not mentioned, but the book's usual use of appropriate mathematical notation is maintained. For example, Bayes's prior probability of the parameter θ is:

$$f(x_1, ..., x_n) = \int \theta \prod f(x_i|\theta) g(\theta) d\theta$$

By 1818, Pierre Simon de Laplace, in the last part of the second supplement to *Théorie analytique des Probablités*, was able to anticipate R. A. Fisher by a century. To estimate $\mathbf{y}$ in the linear model:

$$a_i = y_{p_i} + x_i \qquad (i = \{1, ..., n\})$$

Laplace minimised the sum of absolute differences, $|y_{p_i} - a_i|$, using a normal distribution, $N(0, \sigma)$. By then combining this distribution with that of his least squares estimate, he used a bivariate normal distribution to minimise *Vas*, asymptotic variance. "[H]e isn't far from the concept of exhaustivity on which all Fisherian estimation theory is based."

After a quick glance at Karl Pearson's late 19th-century method of moments, we concentrate on Fisher's innovations. He first used maximum likelihood estimators in 1912, developing the theory in a 1922 and a 1925 paper, adding the concepts of exhaustivity and information. Fisher's purported Bayesianism is cited as one of the causes of his long running quarrel with Pearson. By 1930 he had given Statistics a general model of estimation and inference.

The chapter ends with the work of Jerzy Neyman and Egon Pearson (Karl's son) on the Theory of Hypothesis Testing.

Fisher, Neyman, and the Pearsons—as well as Francis Galton, William Sealy Gosset (the Student test), and Adolphe Quetelet—are all featured in the biographical chapter. Also featured is the multifaceted Italian scholar Corrado Gini (1884–1965). After a quick summary of his studies and employment at various Italian universities, we find he worked on:

- Probability – the proportion of the sexes at birth looking at the distance between two distributions
- Descriptive Statistics – the introduction of the difference mean, $g = (1/[n(n-1)]) \cdot \sum |x_i - x_j|$
- Economics – measurements of income inequality and the theory of price indices
- Leadership – Director of the Italian Central Bureau of Statistics and editor of *Metron* and *Genus*

As you can see from these selections, in their method of presentation and the statistical fields and personalities they described, Droesbeke and Tassi present a very rich and dense introduction in only 128 octavo pages. *Histoire de la statistique* does its job superbly, as do so many other titles in the *Que sais-je?* series. For more information, see www.quesais-je.com.

David Orenstein

Quotations in Context

"Measure what is measurable, and make measurable what is not so."

Variations of the quotation above have been repeatedly ascribed to Galileo Galilei over the last century, but a primary source for the quotation is never provided. An examination of some of his most famous works—*The Assayer*, *Dialogue Concerning the Two Chief World Systems*, *Discourse on Two New Sciences*, *Letter to the Grand Duchess Christina*, *Mechanics*, *On Motion*, and *Sidereus Nuncius*—shows that they contain no such statement; however, this is by no means a comprehensive list of his published writings, and it is always possible that the quotation appears in a private letter or set of unpublished notes.

The oldest source I have been able to discover that contains the above quotation is the work *Galilée: Les droits de la science et la méthode des sciences*

physiques, which was published by Thomas Henri Martin in 1868. In this book, Martin states:

> Galilée sait que tous les objets physiques sont étendus et par conséquent mesurables par essence, quoiqu'ils ne soient pas toujours mesurables pour nous; il sait que tous les phénomènes physiques s'accomplissent en des temps susceptibles de mesure; il sait que les phénomènes purement physiques doivent se réduire à des mouvements, les uns perceptibles pour nos sens, les autres imperceptibles pour nous à titre de mouvements appréciables. Il déclare que dans tous ces phénomènes **il faut mesurer tout ce qui est mesurable, et tâcher de rendre mesurable tout ce qui ne l'est pas directement**. Il ne s'agit donc pas de poser des principes, les uns métaphysiques, les autres mathématiques, puis d'essayer d'en conclure a priori quelles doivent être les lois physiques; mais il s'agit d'abord d'observer, d'expérimenter, de mesurer, de compter, et ensuite de demander aux mathématiques et au raisonnement la formule, l'analyse, la transformation et le développement des résultats obtenus.

Although Martin's work contains direct quotations from Galileo, he did not denote this specific passage as being one. This suggests the possibility that this famous quotation might not represent a direct statement from Galileo, but rather a summary description of his ideas and beliefs written by a much later author.

Mike Molinsky

2012 Financial Statements

The following financial statements cover the period 1/1/2012 through 12/31/2012.

	$ Can.
Income	
dues/subscr.	11,063.68
SSHRC travel grant	3,480.00
FedCan Keynote Speaker Fund	1000.00
FedCan Interdisc. Session Fund	250.00
CSHPS Joint Session Contrib.	150.00
TOTAL	15,943.68
Expenses	
CFHSS dues (2013)	1805.12
Travel Claims for 2012 AGM	3480.50
CFHSS 2012 Meeting Loss	147.72
Keynote Speaker	1550.00
Historia Mathematica	2851.68
Philo. Mathematica	2,184.00
Postage etc.	278.23
CSHPS Recipr. Memb. 09–11	860.00
CUMS Contribution	300.00
TOTAL	13,457.25
NET	2486.43
Balance (12/31/11)	34,043.01
TD Mortgage Corp. (matures 09/16/13)	4065.83
TD Mortgage Corp. (matures 03/26/14)	4,072.00
TOTAL	44,668.28

Comments:

Because the Society has 2 accounts, one in US dollars, we keep two different accounting systems. At the request of the editors, we have combined the numbers for these accounts. The numbers given are in Canadian dollars. Since the currency exchange rate was 1.00 on 31 December 2012, the Society funds in American dollars were directly combined with the Canadian funds.

In 2012 there has been a shift from our US funds to our funds in Canadian Dollars. This is mainly due to the fact that the membership contributions we collected via PayPal can only be transferred to our Canadian Dollar bank account (to avoid having to pay conversion fees, the 2013 membership form lists all fees only in $Can).

Let me add a few remarks on the experiences with online membership payments. For the year 2012, 75 members (52%) paid on-line and 68 paid by cheque. The PayPal fees amounted to roughly 3.45% (2.9% +

$0.30 CAD for each transaction; more for transactions from outside of North America) of the gross income (membership fees, journal subscriptions, donations). In absolute numbers, this is about $450. In 2012, CSHPM covered this amount. To some extent the PayPal fees were offset by a reduction in the cost of mailing the paper checks by registered mail from the Secretary to the Treasurer.

Dirk Schlimm

2013 Meeting Update

We are meeting jointly with HOMSIGMAA and POMSIGMAA at the Mathematical Association of America's MathFest in Hartford, CT, August 1–3, 2013. Rob Bradley, Bonnie Gold, and Maria Zack are organizing the general paper session, and Tom Drucker and Glen Van Brummelen are organizing the special session, on interactions between history and philosophy of mathematics. Abstracts were to have been pre-submitted to the organizers in February, and the deadline for final submission of abstracts to the MAA is April 30, 2013.

For registration and lodging information, please visit www.maa.org/mathfest/reginfo.html. The deadline for early registration is May 10, and regular registration closes on June 14.

The talks will be 20 minutes, with 5 minutes for questions and 5 minutes for changeover to the next speaker. The final schedule was not available at press time, but it will be posted on www.cshpm.org. The tentative general outline is as follows:

Thursday, August 1

8:00 Presidents' Welcome
8:15–10:15 General Session
10:30–11:20 Hedrick Lecture I by Olga Holtz
11:20–13:00 Lunch (on your own)/Executive Council Meeting
13:00–17:15 General Session

Friday, August 2

8:00–9:25 General Session
9:30–10:20 Hedrick Lecture II by Olga Holtz
11:30–12:00 MAA Prize Ceremony
12:00–13:00 Lunch (on your own)
13:00–14:30 Annual General Meeting
14:30–17:30 General Session

Saturday, August 3

8:00–9:25 Special and/or General Session
9:30–10:20 Hedrick Lecture III by Olga Holtz
10:30–11:30 Special and/or General Session
12:00–13:00 Lunch (on your own)
13:00–14:00 Kenneth O. May Lecture by Jeremy Gray, "Henri Poincaré: mathematician, physicist, philosopher"
14:15–17:15 Special Session

Mathematical Ephemera

It is perhaps of more interest to our American members than to the Canadians that the United States is currently observing the sesquicentennial of its Civil War and the bicentennial of the War of 1812. Nonetheless, our occasional column sharing some of the oddities in the history of mathematics returns this issue with an excerpt from Charles Davies's 1875 address to the 6th annual reunion of graduates of the U.S. Military Academy. The reunion was established in part to resolve divisions left after the Civil War; this particular gathering marked the centennial of the Battle of Bunker Hill as an event that resulted in joy for all Americans. In this portion of the speech, though, Davies reminded his audience of their classroom experiences:

Next to the memories of home, are the recollections of our educational life. The teacher and the lecture room are never forgotten. The entrance on an Academic course, is a marked epoch of individual history. We recur to it, as the connecting link between boyhood and manhood. With us, it began with the study of the Pure Mathematics. Logic, inexorable logic, applied to Number and Space, is the foundation of our entire system of instruction. Mathematics is the language in which science speaks to labor. Hence, it is the foundation of the mechanic arts. It is also the key which unlocks the mysteries of nature, and discloses the laws of the physical universe.

How distinctly each of us recalls his emotions when he solved the great problem of the stability of the solar system. When he learned to measure, as with a yard stick, the distance to every planet which circles the heavens—to calculate its orbit—its weight—its spe-

cific gravity—its times of revolution on its axis—and its exact position in space, at the end of any given time. How closely we seemed to approach the source of all knowledge, when, by the aid of science, we surveyed the whole heavens, and learned that the harmony of the spheres is but the result of universal law. Not till then, were we able to comprehend the sublime utterance of Hooker: "Of Law there can be no less acknowledged than that her seat is the bosom of God—her voice, the harmony of the world. All things in heaven and earth do her homage—the very least as feeling her care, and the greatest as not exempted from her power. Both angels and men, and creatures of what condition soever, though each in different sort and manner, yet all with uniform consent, admiring her as the mother of peace and joy."

When in the last year of our studies we were instructed in the Constitution of the United States, and the form of our government, we found them both fashioned after this Divine model. Each State had its own orbit, distinctly marked and clearly defined. In the department of physics, we had been taught, that if a single planet were stricken from the system, the whole would rush to confusion and ruin. In the department of constitutional law we were taught, that each State was absolutely necessary to the safety and prosperity of all—and that not a single link of the golden chain can be broken without bringing swift destruction on the fairest fabric of government which the world has seen. Hence, Union, regulated by law, is the pole star on which every graduate fixes his eyes.

Source: Charles Davies, "Address," in *Sixth Annual Reunion of the Association of the Graduates of the United States Military Academy, at West Point, New York. June 17, 1875* (New York: A. S. Barnes & Co., 1875), 12–13.

Annual General Meeting CFHSS

The Canadian Federation for the Humanities and Social Sciences (CFHSS) held its annual meeting on March 23 in Ottawa. Although the venue is only a stone's throw (for a major-league outfielder) from Parliament Hill, no representative of the federal government was present.

No contentious issues troubled the Annual General Meeting, which rubber-stamped a new set of bylaws and the Federation's audited financial statements. The latter show a surplus for the first time in five years.

More interesting to a found-in from the CSHPM was a workshop (one of four, run concurrently) on membership matters. Inducements offered by other societies include (i) three-year, non-renewable memberships for graduate students, (ii) an "early career" award, for work done within ten years of a final degree, and (iii) a fee schedule tied to income. Other strategies include pressing members to buy memberships for students and placing a society representative in every relevant university department. In this context the SSHRC's elimination of subsidy for conference travel was (at the workshop) universally lamented, but the prospect of a reversal was universally rated near zero. The CSHPM can take satisfaction from the fact that some sister societies are only now exploring practices long in place *chez nous*: discounted memberships in kindred organizations, proceedings edited by volunteers, annual meetings that bypass the CFHSS's own "Congress". As to that last, old-timers will perhaps sigh to hear that apparently *nobody* speaks of "the Learneds" any more.

A panel discussion on the current state of the humanities and social sciences in Canada, and an entertaining talk by the well known gadfly John Ralston Saul, rounded out the day's program. The Federation promises that presentations will soon be available at www.ideas-idees.ca/conference.

Hardy Grant

Help Wanted: CSHPM MathFest Booth

The Mathematical Association of America has allotted a booth to the Society for MathFest (to be held, as is announced elsewhere in this issue, in Hartford, Connecticut, during the first three days of August). Maria Zack and I have agreed to tackle the organization of the booth, but we shall be grateful to have ideas for how best to advertise the Society in that setting. Suggestions that have come forward from Council include having copies of the *Proceedings*, *Bulletin*, *Historia Mathematica*, *Philosophia Mathematica*, and

membership forms on display. We shall try to have a flyer available for those who come by when the booth is not staffed that will refer to the Society's Web site for further information. We would also like to decorate the booth with some pictures, although we have not yet decided whether the best way to do so is to enlarge photographs of past and present CSHPM presidents.

We'll probably also benefit from offers of help from volunteers to spend an hour or two at the booth during the meeting. Our intention is not to ask anyone to look after the booth while there are sessions sponsored by the CSHPM in progress, so the number of hours involved will be limited. The role of a volunteer is not so much to look after the items at the booth as to talk about the Society to those who stop by. Many of those at MathFest will never have heard of the CSHPM, and we should hope to put the best face on our scholarship and activities. If you might be willing to spend an hour or two at the booth, or if you have ideas about how best to use the space at Hartford, please let me know (*druckert@uww.edu*).

Tom Drucker

Philosophia Mathematica Online Access

CSHPM members who subscribe to *Philosophia Mathematica* automatically receive online access to the journal, in addition to their print copies. One merely has to sign up for access via a simple process:

1. Locate your subscriber number from the mailing label of any print issue or by emailing a request to *jnls.cust.serv@oup.com*. Include your full name, address, and the name of the journal.

2. Fill out the sign-up form at: www.oxfordjournals.org/for_personal_customers/online_access.html.

We apologize to any members who have unknowingly been missing out on their access, and we hope all subscribers will take advantage of this valuable benefit.

Robert Thomas

New Members

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

Jeff Beuchner
Rutgers University
Newark, NJ
USA

Romain Fauconnier
Montpellier
France

Tina Hartley
West Point, NY
USA

C. Hollings
West Yorkshire
UK

Greg Peace
Saint-Lambert, QC
Canada

Josipa Petrunic
Toronto, ON
Canada

Stephen C. Wittkowsky
North Tonawanda, NY
USA

Additionally, we welcome the following winner of the 2013 HOMSIGMAA Student Writing Contest.

Matthew S. Shives
Hood College
Frederick, MD
USA

From the Editor

This issue is slimmer than usual due to the lack of a final program for our upcoming annual meeting. The deadline for final submission of abstracts falls after our publishing deadline, since this year's meeting is in August instead of our traditional May. The conference will be well worth the wait, though, and you will find the program on our website, www.cshpm.org. In

addition to the quality of the overall slate of speakers and the privilege of welcoming Jeremy Gray to give our May Lecture, this gathering is momentous as the first time we will come together in the United States and as our first joint meeting with HOMSIGMAA and POMSIGMAA.

CSHPMers were instrumental in forming both of these MAA Special Interest Groups. Despite some initial trepidation about whether Canada would face collaboration or competition from new organizations south of the border, the SIGs have developed somewhat different foci from CSHPM. The three groups have had excellent working relationships so far, and these bonds can only deepen through the joint meeting. Additionally, as Glen suggests in his President's Message, MathFest provides a terrific opportunity for exposing North American mathematics educators to the benefits of professional research in the history and philosophy of mathematics.

In this issue, we debut a new column that I hope will become a regular feature, Off the Shelf. This column is for reviews of older books that may have been overlooked when they were originally published, books that we have occasion to revisit after our research questions or methods have changed, or, as David Orenstein shows, books that are time-tested and frequent companions. Suggestions for Off the Shelf topics are most welcome.

As always, several volunteers are instrumental in preparing the *Bulletin*: Eisso Atzema, Layout Editor; Maria Zack, Production Editor; Pat Allaire, Secretary; and Mike Molinsky, Webmaster. Thanks also to our numerous contributors. If you would like to join that merry band, the next submission deadline is 1 October 2013. As always, the *Bulletin* seeks 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. Plain text and LaTeX files are easiest for the editors to deal with, but we can also convert Word documents. Submissions may be sent to *aackerbe@verizon.net*. I hope to see many of you in Hartford!

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), Layout Editor Eisso Atzema (atzema@math.umaine.edu), and Production Editor Maria Zack (MariaZack@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.