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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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ABOUT THE SOCIETY

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

President: **Len Berggren**, Math Department, Simon Fraser University, Burnaby, BC V5A 1S6, CA, Berggren@sfu.ca

Vice-President: **Robert Bradley**, Adelphi University, Garden City, NY 11530, USA, bradley@adelphi.edu

Secretary: **Pat Allaire**, Dept. of Math., Queensborough C.C., Bayside, NY 11364 USA, pallaire@qcc.cuny.edu

Treasurer: **Roger Godard**, Kingston, ON K7M 1Y6, CA, godard-r@rmc.ca

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Members of Council

Amy Ackerberg-Hastings, Rockville, MD 20851, USA, aackerbe@erols.com

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The Society's Web Page (www.chspm.org) is maintained by **Robert Bradley**, Adelphi University, Garden City, NY 11530, USA

The proceedings of the Annual Meeting are edited by **Antonella Cuppilari**, School of Science, Penn State Erie, The Behrend Col-

lege, Erie, PA 16563, USA, axc5@iusb.edu

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

President's Message

I have enjoyed the two years of my third term as President of the CSHPM/SCHPM and, in particular, I have been very grateful for the support from Council, in terms of advice and encouragement, and the hard work of our officers. Here I must mention, in particular, our Secretary, Pat Allaire, and our Treasurer, Roger Godard. Both have served us very well, and I give them both heartfelt thanks.

I have been particularly pleased that the project of encouraging closer ties with the CMS, has borne fruit in terms of an agreement between our two organizations covering such items as history sessions at CMS meetings, joint (non-voting) representation on each other's Councils in order to keep lines of communication open, and our participation in joint meetings with the CMS every three years or so.

However, we also want to maintain good ties with humanistic disciplines in Canada. In line with this, the Canadian Government's granting agency in the social sciences and humanities, The Social Sciences and Humanities Research Council (SSHRC) is in the process of transforming itself into a 'knowledge agency' (their phrase) whose goals will include not only the continuing support of research but the promotion of 'interactive engagement' between disciplines and implementation of measures to maximize the 'impact' of the results of our research in the larger social context. Finally, there will be a tendency to support big research endeavours with consortia called

Confederations of Learning, i.e. networks of researcher groups across the country, working in coordination on diverse parts of some major research goal. SSHRC feels strongly that its initiatives represent the general direction in which the organization of research in the social sciences and humanities in Canada must go if these areas are not to see the gap widen between their funding and that for medical and natural sciences, and their associated technologies.

CSHPM/SCHPM comes into this because it is a member of the Canadian Federation of Humanities and Social Sciences (CFHSS), an umbrella group of virtually all scholarly associations in Canada. And, as part of their national consultations on SSHRC's initiative (and with financial support from SSHRC), the CFHSS invited the presidents of their member associations to convene for a day-long conference in Ottawa on Saturday, March 27, to discuss a range of specific issues. Along with the presidents of about 75 associations I attended the all-day meeting and – after recovering from spending the whole day in an Ottawa hotel! – thought it was time well spent. In addition to building good ties with the CMS we, equally, need to count ourselves in as part of the humanities in Canada and, to that end, I submitted to the CFHSS a 4-page response to the questions posed at the meeting after consulting, by email, with our Council. (This response is available on our web site.) There will also be a link to the CFHSS website where you can read that organization's response, framed. Among the points made in the document I submitted were the following:

Our good working relationships with both the Canadian Society for History and Philosophy of Science and the Canadian Mathematical Society show that for some time we have been committed to SSHRC's ideal

of interactive engagement between different disciplines.

Our members' talks to groups of school teachers, high school students, and community groups, and our use of both print and broadcast media to inform the public on topics of current interest, are all examples of our maximizing the social impact of knowledge in our areas.

In promoting large projects SSHRC must remember that primary unit of scholarship is still the individual scholar or small groups of scholars who come together out of common interest and complementary expertise. SSHRC has excelled in support of this style of scholarship and it must remain a focus of SSHRC's efforts.

SSHRC could make it a goal to ensure that the many small groups of geographically scattered scholars have easy, free electronic access to each other with so-called 'smart boards' and webcams. In this way SSHRC could enhance research and the dissemination of the results of that research.

However, in making sure scholars benefit from living in an electronic age SSHRC should recognize that face-to-face encounters, such as we enjoy at the summer meetings of the Canada's scholarly associations, are a form of linkage that is working very well. Funding for these should be expanded.

Our association would encourage SSHRC to give smaller grants to more people. And, SSHRC should establish a subcommittee to adjudicate grant applications in the history and philosophy of both mathematics in particular and science in general. Such a subcommittee should, of course, have members with a professional base of expertise in both the history and philosophy of mathematics.

Finally, SSHRC should take a serious look at the health of small disciplines in Canada

and see what could be done to nurture them. In general Canada boasts a proud record in the history of mathematics, but it is the legacy of the past. If there is to be a future, jobs will have to be found for historians and philosophers of mathematics in departments of history of science, mathematics, philosophy and education as well as in institutions such as museums of various kinds.

As I end my term I am conscious of how much our organization is indeed our organization, one that is what we make of it and has benefited so much from the volunteer contributions of many members. I feel very fortunate, as President, to have met this spirit of ‘Sure, I’ll help’ whenever I have asked. I hope (and firmly believe) that my successor, Rob Bradley, will find the same co-operative spirit and I wish him, and the new Council, every success over the next two years.

Len Berggren

Bylaws of the Society

ARTICLE I. Name

The Society shall be called ‘The Canadian Society for History and Philosophy of Mathematics/La Société Canadienne d’Histoire et de Philosophie des Mathématiques’.

ARTICLE II. Aim

Section 1 The aim of the Society is to promote throughout Canada discussion, research, teaching and publication in the history and the philosophy of mathematics.

Section 2 The activities of the Society shall be carried on without purpose or gain to its members and any profits or

other accretions to the Society shall be used in promoting its aims. (Amended June 1978)

ARTICLE III. Members and Dues

Section 1 Any person with interest in the history or in the philosophy of mathematics is eligible to become a member.

Section 2 An eligible candidate for membership who is nominated by two members shall be accepted upon payment of the annual dues for the first year.

Section 3 The date on which the annual membership dues shall be payable shall be established by the Executive Council. The dues and any change therein shall be approved at the annual meeting. Notice that changes in dues are to be submitted for approval shall be sent to members at least thirty days prior to the meeting.

Section 4 If the dues of any member remain unpaid beyond 12 months, his name shall be removed from the membership roll after due notice has been given. Reinstatement shall be made upon payment of the dues in arrears.

Section 5 Any member may resign by submitting a written resignation to the Secretary.

ARTICLE IV. Officers and Executive Council

Section 1 The officers of the Society shall be the President, the vice-President, Secretary and Treasurer. The latter two offices may be combined. These officers shall be members of the Society and shall perform the duties prescribed by these bylaws and by the parliamentary authority adopted by the Society.

Section 2 The Executive Council shall consist of the Officers of the society, the immediate past President, the Editor(s) of

the Proceedings, the Bulletin Editor(s), the Webmaster, and four other members of the Society. (Amended July 1999, May 2001)

Section 3 After the annual meeting, a Nominating Committee of three members shall be appointed by the Executive Council. It shall be the duty of this Committee to nominate candidates for the offices and Council Memberships to be filled at the next election. The membership shall be notified of the Nominating Committee's nominees at least thirty days before the distribution of ballots, during which time additional nominations by members shall be permitted. (Amended June 1976)

Section 4 The officers and Council Members shall be elected by mail ballot. The ballots shall be returned to the Secretary, by mail or in person, on or before the hour of the next meeting of the Society, or any other election date set by the Executive Council, but not less than thirty days after the distribution of ballots. The officers shall serve for one year or until their successors are elected and Council Members shall serve for two years or until their successors are elected. The members of the Executive Council shall begin their terms of office at the close of the election. (Amended June 1976)

Section 5 No member shall hold more than one office at a time, except when the offices of Secretary and Treasurer are combined. No member shall be eligible to serve more than two consecutive terms as President, or as Vice-President, or as Council Member.

Section 6 A vacancy in the office of President shall be filled by the Vice-President. A vacancy in any of the offices of Vice-President, Secretary, or Treasurer shall be filled by appointment by the Execu-

tive Council, such appointments expiring at the close of the next meeting of the Society, at which meeting any office so temporarily filled and any vacancy among the four elected members of the Council shall be filled by election using the procedure outlined in Article IV, Section 3 and Section 4 if time permits. The membership shall be notified of vacancies. (Amended July 1999)

Section 7 The Executive Council shall have general supervision of the affairs of the Society between its meetings, make recommendations to the Society, and shall perform such other duties as are specified in these bylaws. The Executive Council shall be subject to the orders of the Society, and none of its acts shall conflict with actions taken by the Society. The Executive Council shall report its actions and activities to the Society at the annual meeting.

Section 8 The meetings of the Executive Council shall be called by the President at his discretion or upon written request of three members of the Executive Council.

ARTICLE V. Meetings

Section 1 The annual meeting of the Society shall be called by the Executive Council. There shall be one annual meeting during each fiscal year.

Section 2 A special meeting of the Society may be called by the President or the Executive Council and shall be called upon the written request of ten members of the Society. The purpose of such a meeting shall be stated in the call. Except in cases of emergency, at least thirty days' notice shall be given.

Section 3 Ten members of the Society shall constitute a quorum.

ARTICLE VI. Finance

Section 1 The fiscal year of the Society shall be from January 1 to December 31. (Amended May 2003)

Section 2 The Executive Council is empowered to choose among its members two persons, each of whom once so designated is authorized to act for and in the name of the Society in all pecuniary transactions with any insured financial institution. (Amended May 2003)

ARTICLE VII. Committees

Section 1 A Program Committee, whose duty it shall be to plan the annual program of the Society, shall be appointed by the President promptly after the annual meeting.

Section 2 Such other committees, standing or special, shall be appointed by the President as the Society or Executive Council shall from time to time deem necessary to carry on the work of the Society. The President shall be ex officio a member of all committees except the Nominating Committee.

ARTICLE VIII. Official Journal

Section 1 The official journal of the Society shall be *Historia Mathematica*.

ARTICLE IX. Amendment of By-laws

Section 1 These bylaws can be amended only at an annual meeting of the Society by a two-thirds vote, provided that the amendment has been submitted in writing to the Secretary sixty days before the meetings. The Secretary shall notify the

members of the proposed amendment at least thirty days before the meeting.

Adopted: 1974, June 3
Toronto, Ontario
Amended: 1975, July 30
Amended: 1976, June 4
Amended: 1999, July 16
Amended: May 26, 2001
Amended: May 31, 2003

From the Treasurer

The following financial statement covers the period 1/1/2003 through 12/31/2003.

	\$ Can.
Credits	
dues/subscr.	14548.67
HSSFC travel grant	3480.00
Univ. Cad.	1066.13
Conf. Fees	748.00
Interest	87.00
May fund	500.00
TOTAL	20429.80
Debits	
Travel	4982.19
2003 Conference	640.96
CFHSS	1940
Printing	852.43
HM	3712.65
PM	2644.40
CSHPS	300
BSHM	0
Postage	439.42
Guest Speaker	1664.16
TOTAL	17251.49
NET	3253.60
Balance	13441.62
Bonds May Fund	3122.19

Some 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. A conversion factor of 1.37 has been used to convert American dollars into Canadian ones.

Thanks to our members, we manage to keep our finances in reasonable condition, and no increase for the membership fees seems necessary. During the past two years, we have seen a substantial increase of our assets, and the Society has to decide what to do with these assets in order to satisfy our members. Some money could be used to help contributors for the Cambridge meeting, or perhaps we should think of using this money in order to publish a book of outstanding papers from our annual meetings.

Efforts to increase the numbers of our members from Québec, France and Mexico and many other countries seem necessary, but we are pleased to recognize that our Society has reached some international recognition.

In 2003, we had to give more help to our contributors for their travel expenses. I suggest that we should only pay the residence fees to contributors.

Finally, I would like to acknowledge our Secretary, Prof. Pat. Allaire, who updated the membership list so conscientiously and secured the financial help of her University.

Roger Godard

In Memoriam David Fowler

David Fowler, one of the mainstays of the history of mathematics community around

the world, died on the 13th of April this year. Adrian Rice described him as ‘an extremely accomplished (but modest) historian, and a very kind and generous man’. There was an obituary by Christopher Zeeman in the *Guardian*, which Moshe Machover was helpful enough to forward to the ‘Historia-matematica’ list. It pays tribute to his move into history of mathematics after already having achieved distinction in administration and pedagogy. Another obituary was posted to the same list by Tony Mann from the *Independent*.

Fowler (who was born 28 April 1937) is perhaps best known to the scholarly community for his book *The Mathematics of Plato’s Academy*. It was published by Oxford University Press in 1987 and has since gone into a second edition. In the course of my review for *Isis*, I could not help drawing attention to the sheer effort that had gone into making the subject accessible to those who were specialists neither in Greek nor in ancient mathematics. Fowler did not allow himself to dwell in too many dusty controversies, but proffered a new account of many aspects of how the Greeks did arithmetic and ranged ahead to discuss topics of mathematical interest of more recent centuries. Evidently, Fowler claimed that it was Wilbur Knorr’s writings that lured him into the history of Greek mathematics, something that redounds to the credit of both of those historians with whose writings we now have to make do in the absence of their company.

My occasions for correspondence with Fowler were always marked by the kind of courtesy on his part that confirms Adrian Rice’s judgement. Fowler’s range of learning was wide but he never used it for intimidation in a scholarly controversy. There are many questions that one would still have liked to ask him. His example will inspire historians in the United Kingdom and elsewhere

to continue the task of broadening our understanding the mathematics of Greece and of bringing the results of research before the wider community in a comprehensible way.

Thomas Drucker

Programme Joint 2004 Meeting in Cambridge

Friday 9 July

10.30-1.00pm CSHPM business meetings

10.30-11.30am CSHPM Executive Council meeting

11.45-1.00pm CSHPM Annual General Meeting

1.00-2.00pm Lunch (not provided by Clare College)

2.00pm June Barrow-Green, President BSHM & Rob Bradley, Vice-President CSHPM: *Formal Welcome and Introductions*

2.15pm Christopher Cullen, Needham Research Institute: *A Chinese Rhind papyrus: The Suan shu shu and the beginnings of Chinese mathematics*

3.00-4.00pm PARALLEL SESSION 1: ANCIENT MATHEMATICS

3.00pm Annette Imhausen, University of Cambridge: *The Historiography of Egyptian Mathematics Past, Present, Future*

3.30pm Ma Li, Linköpings Universitet: *Studies of Mohist Mathematics*

3.00-4.00pm PARALLEL SESSION 2: THE WORK OF H. J. S. SMITH

3.00pm Keith Hannabuss, University of Oxford: *Henry Smith: The plurality of worlds*

3.30pm Rod Gow, University College Dublin: *Henry Smith's Work in Linear Algebra*

3.00-4.00pm PARALLEL SESSION 3: RECENT DEVELOPMENTS

3.00pm Israel Kleiner, York University: *Fermat's Last Theorem revisited*

3.30pm Roger Godard, Royal Military College of Canada: *The sampling theories from de la Vallée-Poussin to Shannon*

4.00-4.30pm TEA

4.30-6.00pm PARALLEL SESSION 1: ANCIENT MATHEMATICS

4.30pm Duncan Melville, St. Lawrence University: *Sequences and Series in Old Babylonian mathematics*

5.00pm Hardy Grant, York University: *Mathematics in Plato's Thought*

5.30pm Alain Bernard, Centre Koyré: *Mathematical Problems in Proclus' Commentary on Euclid*

4.30-6.00pm PARALLEL SESSION 2: THE WORK OF H. J. S. SMITH

4.30pm Lawrence D'Antonio, Ramapo College: *Henry Smith and the English School of Elliptic Functions*

5.00pm Francine F. Abeles, Kean University: *C.J. Hargreave's and H.J.S. Smith's Sieve Methods*

5.30pm W.N. Everitt, University of Birmingham: *H.J.S. Smith and the Fermat Two Squares Theorem*

**4.30-6.00pm PARALLEL SESSION 3:
RECENT DEVELOPMENTS**

4.30pm Janet Delve, University of Portsmouth: *Tea, Decision Making and the LEO Computer - A Very British Blend*

5.00pm David Anderson, University of Portsmouth: *Technology transfer in the 1940s*

5.30pm Miriam Lipschutz-Yevick, Rutgers University: *Grete Herman and Von Neumann's No-Hidden Variables Theorem*

6.00-7.00pm FREE TIME

7.00pm DINNER

Saturday 10 July

8.00am BREAKFAST

9.00am Glen Van Brummelen, Bennington College: *Taking Latitude with Ptolemy: Al-Kashi's Final Solution to the Determination of the Positions of the Planets*

9.45-10.45am PARALLEL SESSION 1: PHILOSOPHY OF MATHEMATICS

9.45am Jean-Louis Hudry, University of Edinburgh: *From Geometric divisibility to Algebraic sequence: The two mathematical structures of Zeno's Dichotomy Paradox*

10.15am Risto Vilkkö, University of Helsinki: *The Origins of the Frege-Russell ambiguity Thesis*

9.45-10.45am PARALLEL SESSION 2: 17TH/18TH CENTURY MATHEMATICS

9.45am Janet L. Beery, University of Redlands: *Thomas Harriot's Treatise on Figurate Numbers, Finite Differences, and Interpolation Form*

10.15am Jay Kennedy, University of Manchester: *Descartes's Opaque Mathematics*

9.45-10.45am PARALLEL SESSION 3: 19TH CENTURY MATHEMATICS

9.45am Patricia Allaire, Queensborough Community College: *A Glimpse of Duncan F. Gregory through His Letters*

10.15am Paul Wolfson, West Chester University: *Why Did Boole Invent Invariant Theory?*

10.45-11.15am COFFEE

11.15am-12.15pm PARALLEL SESSION 1: PHILOSOPHY OF MATHEMATICS

11.15am Guiseppina Ronzitti, University of Genoa: *Detaching Philosophy From Logic*

11.45am Jonathan P. Seldin, University of Lethbridge: *Informal Incompleteness: Rules, Philosophy, and Law*

11.15am-12.15pm PARALLEL SESSION 2: 17TH/18TH CENTURY MATHEMATICS

11.15am Tony Mann, University of Greenwich: *"A City particularly favour'd by the Celestial Influences": The inaugural*

Gresham College lectures of Wren and Barrow

11.45am David R. Bellhouse, University of Western Ontario: *Lord Stanhope's Papers on the Doctrine of Chances*

11.15am-12.15pm PARALLEL SESSION 3: 19TH-CENTURY MATHEMATICS

11.15am Peter Neumann, University of Oxford: *The Second Mémoire of Évariste Galois*

11.45am Munibur Rahman Chowdhury, University of Dhaka: *Cayley and the abstract group concept*

12.15-1.00pm FREE TIME

1.00pm LUNCH

2.00-3.30pm PARALLEL SESSION 1: PHILOSOPHY/PSYCHOLOGY OF MATHEMATICS

2.00pm Steve Russ, University of Warwick: *Meaning and Mathematics: Obsessions of a Bohemian Priest*

2.30pm Mehrnoosh Sadrzadeh, Université du Québec à Montréal: *On the constructive content of Hilbert's epsilon calculus and substitution method*

3.00pm Ioan James, University of Oxford: *The Psychology of Mathematicians*

2.00-3.30pm PARALLEL SESSION 2: 17TH/18TH CENTURY MATHEMATICS

2.00pm Muriel Seltman, University of Greenwich: *Harriot, Warner and Descartes and the end of species in algebra*

2.30pm Ed Sandifer, Western Connecticut State University: *Accidental greatness: Some of Euler's serendipitous discoveries*

3.00pm Robert Bradley, Adelphi University: *Three Bodies? Why not Four? The Motion of the Lunar Apsides*

2.00-3.30pm PARALLEL SESSION 3: 19TH CENTURY MATHEMATICS

2.00pm R.P. Burn, University of Exeter: *Cauchy's definition of limit*

2.30pm Eisso J. Atzema, University of Maine: *The Concept of the Infinitely Thin Pencil and the Rise of the American Optometric Community*

3.00pm Tony Crilly, Middlesex University: *A footnote to the Four Colour Theorem*

3.30-4.00pm TEA

4.00-6.00pm I.C.H.M. SPECIAL SESSION IN HONOUR OF THE RETIREMENT OF IVOR GRATTAN-GUINNESS: THE HISTORY OF NINETEENTH-CENTURY ANALYSIS

4:00pm Craig Fraser, University of Toronto: *Mikhail Ostrogradsky's 1850 Paper on the Calculus of Variations*

4.30pm Michiyo Nakane, Seijo University: *Weierstrass's Foundational Shift in Analysis: His Introduction of the Epsilon-Delta Method of Defining Continuity and Differentiability*

5.00pm Thomas Archibald, Acadia University: *French Research Programs in Differential Equations in the Late Nineteenth Century*

5.30pm Ivor Grattan-Guinness, Middlesex University: *Why did Cantor see his Set Theory as 'an extension of mathematical analysis'?*

6.00-7.00pm FREE TIME

7.00pm RECEPTION

7.30pm CONFERENCE DINNER

9.00pm (approx.) ENTERTAINMENT (details to be confirmed)

Sunday 11 July

8.00am BREAKFAST

9.00-10.00am PARALLEL SESSION 1: MATHEMATICS EDUCATION

9.00am Joel Silverberg, Roger Williams University: *The Teaching and Study of Mercantile Mathematics in New England during the Colonial and Early Federal Periods: Sources, Content, and Evolution*

9.30am Robin Wilson, The Open University: *Geometry Teaching in the 1860s and 1870s: Two Case Studies*

9.00-10.00am PARALLEL SESSION 2: MATHEMATICAL COMMUNITIES AND CONNECTIONS

9.00am Sloan Despeaux, Western Carolina University: *Guarding the gates: The development of mathematical refereeing for the Royal Society in the 19th century*

9.30am Amy K Ackerberg-Hastings, University of Maryland University College: *From Cambridge to Cambridge: The Mathematical Significance of John Farrar's European Sojourns*

9.00-10.00am PARALLEL SESSION 3: 19TH & 20TH CENTURY DEVELOPMENTS

9.00am Paul Garcia, The Open University: *Percy A. MacMahon: a good soldier spoiled*

9.30am Della Fenster, University of Richmond: *A Delicate Collaboration: A. Adrian Albert and Helmut Hasse and the Principal Theorem in Division Algebras in the Early 1930s*

10.00-10.30am COFFEE

10.30-11.30am PARALLEL SESSION 1: MATHEMATICS EDUCATION

10.30am Joel and Christine Lehmann, Valparaiso University: *Humanizing Mathematics: Using History to Introduce Non-Specialist Students to Mathematics*

11.00am Snezana Lawrence: *History of Mathematics Resources for Key Stages 3 and 4*

10.30-11.30am PARALLEL SESSION 2: MATHEMATICAL COMMUNITIES AND CONNECTIONS

10.30am Deborah Kent, University of Virginia: *Benjamin Peirce and the Question of American Scientific Identity*

11.00am Henrik Kragh Sørensen, Agder University College: *The emergence of regional research traditions in Scandinavian mathematics*

10.30-11.30am PARALLEL SESSION 3: 19TH & 20TH CENTURY DEVELOPMENTS

10.30am James J. Tattersall, Providence College: *Raymond Clare Archibald: A*

Historian's Historian

11.00am Gavin Hitchcock, University of Zimbabwe: *Summoning the nerve: the curious history of British algebra*

11.30-11.45am SHORT BREAK (so that the final talk may start promptly on time)

11.45am Jackie Stedall, University of Oxford: *Connections, American and mathematical: Thomas Harriot and John Pell*

12.30pm June Barrow-Green, President BSHM & Rob Bradley, Vice-President CSHPM: *Closing Remarks*

1.00pm LUNCH

The meeting finishes with the closing remarks by the two Presidents. Sunday lunch is included in the full conference accommodation/meals charge. Other conference participants and any guests of participants are welcome to join us for any meals provided that this has been arranged with the conference organisers (John Earle c.j.earle@exeter.ac.uk) in advance.

Research and Old Books

Every few months, the editors issue a call for submissions and provoke my Midwestern Protestant guilt complex. "I know Tom and Eisso need materials, but what should be my topic? What do I have going on that I can tell relatively briefly and that will interest a group that is mainly mathematicians?" For example, I have several times remembered and rejected an exercise based on Plimpton 322 that I use in my History of Science course. This course is offered by

the Physical Sciences Department of Anne Arundel Community College (AACC), and it is taken by non-science majors who need a science course but do not need a course with a lab. In order to reach a math-phobic audience, I play fast and loose with both historical and mathematical accuracy on this particular exercise... but do make a conceptual point about the role of a list of examples in scientific method.

Anyway, I finally thought of another exercise from this course that might be applicable in other disciplines and is highly pleasant besides. The idea for this exercise came from observing how much students and teachers enjoy the orientations Fred Rickey gives to handling the classics of mathematics and from a desire to give my students a small experience in what it is like to be a historian of science seeking to directly understand the past. "Research and Old Book" is a 30-minute exercise. (I chose the phrase "old books" deliberately, to emphasize that this is a fun rather than a brainiac exercise.) It provides a nice respite toward the end of the semester, when I am typically easing up a bit before the final and when the students' brains need a rest from comprehending relativity and Theories of Everything. (I take catalog course descriptions literally, so I really do get from prehistory to the day before yesterday in 14 weeks!)

AACC was founded only 43 years ago, and its library is small and oriented toward term paper research. Since there is no department of "special collections," I bring in four or five books from my own surprisingly small of nineteenth- and twentieth-century mathematics textbooks. (What can I say? I'm a cheapskate with a habit of waiting until it's too late to bid on eBay, and I find it more convenient to flip through photocopies than through fragile pages when I am do-

ing research at home.) I divide the class (normally 12-15 students) into groups of 3, which seems to be small enough that everyone has a chance to handle a book and also large enough that they can figure out the answers to the questions together. Each person receives a handout with the following information:

“Much of what historians know about the history of science comes from the ‘old books’ written by scientists of historical importance. Therefore, this exercise is designed to provide you with an opportunity to handle some of the materials historians handle and ask some of the questions they ask. “Those who handle old books should follow a few guidelines: 1) Use clean hands and no gloves; 2) Take notes with pencils, not pens; 3) Turn one page at a time; 4) Use supports and weights to cradle fragile volumes; 5) Keep careful records in your notes, and get permission to use information from the books when you publish your research; 6) Treat the librarians with courtesy, and explain your project to them (they may know of additional materials.

There are significant collections open to the public by appointment in a variety of places: the Huntington Library in Pasadena, CA,¹ the Linda Hall Library in Kansas City, MO,² the Dibner Institute and Library in Cambridge, MA,³ the University of Oklahoma,⁴ the Library of Congress, and the Smithsonian Institution Libraries,⁵ to name just a few. There are also interesting books in the Maryland Room at the University of Maryland Library, College Park.⁶ Unfortunately, there is no “rare books room” at AACC, so this activity will make use

¹www.huntington.org

²www.lhl.lib.mo.us

³dibinst.mit.edu/BURNDY/BurndyHome.htm

⁴libraries.ou.edu/hsci/collections/about.html

⁵www.sil.si.edu

⁶www.umd.edu

of books from the instructor’s modest (and specifically targeted collection).”

Each group is charged with answering seven questions about the book it chooses: 1) Provide bibliographic information for your book. 2) What type of book do you have? Why was it written? 3) Are you able to ascertain where the author(s) of this book worked? Did he/they write other books? 4) Who would have read this book? How would they have used it? 5) Was this book probably expensive or inexpensive? Why do you think so? 6) Why might a historian be interested in this book? 7) Is there anything about the physical nature of this book or the material contained within that surprises you? After each group completes its worksheet, we come back together so that each group can present what it learned about its book to the class. After the presentations, I tell a little bit about the authors. (No way would I pass up an opportunity to talk about Charles Davies!) The students are often stunned that I spent \$50 on one of the books they have been handling (these volumes range from \$5 to \$50). My small collection is, nonetheless, comprehensive enough that I can also point out differences between publishing around 1850 (leather bindings, linen paper) and around 1900 (covered cardboard bindings, pulp paper). We also discuss how mathematics teaching has and has not changed in the past 150 years. The students tend to share memories about their experiences with mathematics education and their previous encounters with old books. I really enjoy this exercise because it reinforces the appreciation for books as purveyors of ideas that I have been trying to instill all semester. It also turns out that I get to know the students better as they talk about their families’ book collections. Finally, it creates a calming atmosphere in the classroom at a time when many of the students are wound

pretty tightly. The exercise ought to be easily adaptable to other subjects and disciplines; one could also expand it to include special collections librarians and/or a field trip if resources were available.

Amy Ackerberg-Hastings

Book Review Corner

Rhymes with Carathéodory

Maria Georgiadou has produced a volume on the mathematician Constantin Carathéodory (*Constantin Carathéodory: Mathematics and Politics in Turbulent Times*). Published by Springer this year, it sets the subject against the background of his ancestry and early surroundings, not just the German mathematical politics with which one is likely to be more familiar. The author is not a mathematician, but she has written on physics and the history of science and can explain Carathéodory's mathematical work for the general reader.

One of the issues that always comes up in discussing Carathéodory's life is the extent of his implication in the Nazi mathematical community during the Second World War. In Sanford Segal's recent volume *Mathematicians under the Nazis* (Princeton University Press, 2003), he observes that Carathéodory 'essentially removed himself from political involvement during the Nazi years'. Georgiadou does a thorough job of trying to identify the community with which Carathéodory most identified himself during his life, and the sense in which his growing up Greek in an Ottoman world gave him a sense early on of being an outsider who achieved his value to the world through his mathematical work.

When one sees Carathéodory end a letter

with the Nazi salutation ('Heil Hitler'), that does not by itself indicate any sort of ideological attachment on the part of the writer. On the other hand, it's not such a great sign of independent action, either. Georgiadou does not always manage to get inside Carathéodory's motivations, but she does paint a vivid picture of what it was like trying to walk several lines simultaneously. Her account is a valuable portrait in detail of what the challenges were of practicing mathematics in the Nazi environment and she allows the reader to draw conclusions about the morality of such behaviour. The American treatment of Carathéodory after the war is a reminder that we have not invented the art of resolving difficult questions on the borderline of politics and mathematics.

Thomas Drucker

Geometrical Landscapes

This review concerns a book on philosophy of history of mathematics illustrating by example how it is that mathematics is imbedded in its ambient culture—not that there need be only one way. The book is in the Stanford University Press series 'Writing Science' and is *Geometrical Landscapes: The voyages of discovery and the transformation of mathematical practice* by Amir R. Alexander. (2002. ISBN 0-8047-3260-4. Cloth.)

Alexander has seen what he thinks is a new way to historicize mathematics by which he seems to mean to portray mathematics as more closely and importantly involved in its historical context than merely taking place in historical time. After a cursory indication of attempts by others to do this, he puts forward his distinct approach, which fully accepts the pure and abstract nature of

mathematics, in terms of narrative. Alexander wants to have his historicization without diluting the characteristic features of mathematics; this he does by finding in mathematics a narrative to bridge ‘the divide between the abstract and social views of mathematical practice’. The mathematician and the novelist are taken to proceed similarly in developing their premises through the plot while respecting different restrictions on what they can say.

The difference is obvious, although it has been denied, and its degree is dependent on time. It is no accident that Alexander’s case study is four hundred years old. The similarity is not novel, even the claim that ‘the premises of the story, its development, and even the type of inner logic it follows’, the narrative structure of a work of fiction, ‘can be detected in mathematical works as well’.

It is what Alexander wants to do with the similarity and his idea of how it arises that is the novelty:

Once a particular narrative has been located in a mathematical work, it can be used to establish the fundamental relationship between the mathematical practice and its specific historical setting.

It is structurally odd in that the mainspring of the book, the material I have just discussed, is relegated to Appendix A, never referred to in the main text.

The rest of the book is a case study to illustrate the thesis with the mathematical work of Thomas Hariot (1560–1621), in particular his thoughts on the continuum and his study of the equiangular (logarithmic) spiral. This work, Alexander claims, was fundamentally shaped by the historically specific non-mathematical tales of the exploration of the new world then going on. It

is at the very least convenient that Hariot himself wrote one such, *A Briefe and True Report of the New Found Land of Virginia* (¹1588), the only work of his published in his lifetime.

I turn to the book as a whole. The first chapter sets the non-mathematical scene with a discussion of the origin of such tales of discovery as Hariot’s pertaining to the West Indies, the North-West Passage, and El Dorado, a particularly suitable example of the narrative of interest, since there were essentially no data, just the template for a tale of exploration because the place was wholly imaginary. These tales are explored in some detail in the second chapter, the book’s longest. The third chapter shows that mathematicians of the period were much involved in the goings-on of the previous chapter, sometimes personally as with Hariot but more often professionally, since navigation across the Atlantic was something not just done but studied. Chapter four turns specifically to Hariot and his credentials as an empiricist mathematician. There was his study of Virginia, his study of the refraction of light (Alexander claims the law of sines for him ‘perhaps as early as 1597’ in a throw-away line on p. 116.), his consequent reflections on the physical continuum, about both of which he corresponded with Kepler, and his study of the collision of balls of unequal mass. Chapter five is the centre-piece of the case study, Hariot’s use of infinitesimals to study the equiangular spiral by closer and closer approximations by triangulated polygons. Hariot took on board the explorers’ aim, to see both the secrets of nature and mathematical structure. He was careless of the geometric orthodoxy of his day, freely speculating about the continuum in ways that were not necessarily wholly consistent and using infinitesimals when he could. The point is made that Si-

mon Stevin (1548–1620) and Bonaventura Cavalieri (1598–1647) were similarly free. It is quite credible that they regarded themselves as explorers, like physical scientists, modelling their behaviour on that of the geographical explorers of their day. That this view was not peculiar to Hariot is the theme of chapter six on others in the period up to John Wallis (1616–1703). A brief conclusion recapitulates the focus of the discussion on the rhetoric of exploration as present in and relevant to the mathematics of the seventeenth century. The book concludes with 52 pages of endnotes, a large bibliography, and a useful index.

What of Alexander’s thesis, so copiously illustrated in the main text? Perhaps mathematicians are not immune to grand narratives. Is the interest in the history of mathematics itself perhaps buying into the Darwinian grand narrative? The timing is right.

Robert Thomas

A History of Analysis (auf Englisch)

Geschichte der Analysis, edited by Hans Niels Jahnke, was originally published in German in 1999. It included contributions from a number of members of the CSHPM (Tom Archibald and Craig Fraser, for instance, as well as Rüdiger Thiele, who has spoken to the Society on more than one occasion). It is possible, however, that some members who are more enthusiastic about making their way through languages other than German did not investigate the contents thoroughly.

The American Mathematical Society and the London Mathematical Society have published an English translation as *A History of Analysis* (appearing in 2003). As a scholarly community, we may all be able to read German, but it can still take native speakers of

other languages longer than we should like. The translation has certainly made our task easier.

Tom Archibald’s contributions are two chapters, one on boundary-value problems and one on differential equations in general up until the start of the twentieth century. Craig Fraser tackled the subject of the calculus of variations. Submissions by others include Guicciardini on Newton and Leibniz, Lützen on the foundations of analysis in the nineteenth century, Bottazzini on complex function theory, and Siegmund-Schultze on functional analysis.

The collection does not tell every aspect of the story of analysis, but it offers helpful guides to many of its strands. Some of the authors are more successful than others in rendering their German originals into English, but it is not surprising that Archibald’s and Fraser’s pieces do not read like translations. As part of a memorial to David Fowler, who served as chair of the Editorial Board from the London Mathematical Society for the series in which the volume appears, English speaking readers can turn to this volume for guidance from antiquity to the twentieth century.

Thomas Drucker

Cambridge Scientific Mentalities

It is possible that readers of this publication may have missed some of the essays in the anthology *Cambridge Scientific Minds*, edited by Peter Harman and Simon Mitton, and published (not surprisingly) by the Cambridge University Press in 2002. The selection of contributors is impressive, and mathematics is well represented. A. Rupert Hall has an essay on Newton as creator of the Cambridge scientific tradition, Anthony Hyman tack-

les Babbage, David B. Wilson looks at Stokes and Kelvin, Ivor Grattan-Guinness appraises Russell and Whitehead's work on foundations of mathematics, Robin Wilson presents Hardy and Littlewood, Andrew Hodges deals with Turing, and Tom Körner discusses Mary Cartwright. Cartwright is the only female to whom an entire essay is consecrated.

The above enumeration does not even take into account the figures whom we might term physicists, but who were surely trained in the mathematical environment. William Gilbert is the earliest individual studied, perhaps because even Cantabrigians don't argue that their scientific preeminence extended back into the mediaeval period. Some of the pieces are little more than biographical sketches (e.g., the concluding essay on Stephen Hawking, by one of the book's editors), but others are substantial estimates of the work of their subjects. Grattan-Guinness, for example, looks at the logicist attitudes of Russell in both *Principles of Mathematics* and *Principia Mathematica*.

For the historian of mathematics, it is interesting (if not entirely fair) to compare the mathematical sketches in this volume with the essays in *Oxford Figures*, which appeared in 2000. The Cambridge volume indicates that it has a heavier concentration of material on the more recent periods of time as a reflection of the increasing importance of science in the university. The Oxford collection tends to pursue a more even pace, including a touch of autobiography. While there is some autobiography in the Cambridge volume, it is not on the mathematical side. In any case, the essays in that volume do in many cases make for instructive reading.

Thomas Drucker

Statistics and Society

Theodore M. Porter's *The Rise of Statistical Thinking, 1820-1900* (Princeton University Press, 1986) was one of a group of books that emerged at about the same time that helped to bridge the gap between technical advances in statistics and their social influence. Now he has followed up his earlier survey with a more detailed look at the life of Karl Pearson (Princeton University Press, 2004). The variety of areas in which Pearson was interested ensures that the biography will not have a limited appeal. It is also a rather richer portrait than that afforded by E.S. Pearson of his father back in 1938.

Porter has done an exemplary job of documenting a life, and has followed up questions in considerable detail. He devotes an epilogue largely to the task of trying to explain why Pearson never himself composed an autobiography. Since he was so excruciatingly careful in trying to document the life of Galton, it is natural to ask why Pearson did not try to do himself the same service. Porter suggests that Pearson may have seen in the lives of others a kind of unifying principle that he did not find within himself. One suspects that while we may not be heroes to our valets, we are bound to appear more unified to others than to ourselves.

The societal and intellectual questions to which Pearson devoted his life are part of English, European, and world history at the turn of the twentieth century. Porter's volume supplies a picture of how statistics (or at least quantification) could be brought to bear on many of these issues. Pearson's *Grammar of Science* had an influence well beyond the appeal it makes to readers these days. Porter explains how that influence worked itself out both in the creation of disciplines and in promoting public discussion

of issues.

Thomas Drucker

From the Secretary

Why Has My Check Not Been Cashed Yet?

As Secretary, I frequently receive inquiries from members who have noticed that their check (or cheque) sent for membership and journals has not yet cleared the bank. This concern is understandable, since the check you send passes through the not-so-caring hands of the US postal service, possibly the postal service of another nation or two, and then through the mailroom of my College before it reaches me. Surprisingly, only one check has been lost in the mail during my tenure as Secretary — and that one was the check from our President!

To allay members' concerns and to convince everyone that neither the Secretary nor the Treasurer is a slacker, I'd like to explain how we handle your checks.

Once a week, I open all the newly arrived envelopes and enter into the database the requests for memberships and journals, as well as donations. Periodically, I send the checks to the Treasurer in Canada. For security, we use registered mail, which is quite costly. (The decision to use registered mail came about several years ago; the Treasurer and I were on the verge of panic when it took six weeks for a packet of checks to reach him.)

Even though we use airmail, it takes a week or more for the checks to reach the treasurer. Once the Treasurer has the checks, he prepares them for deposit. The deposited checks, especially those in \$US, take some

time to clear the Canadian bank and to make their way back to your bank.

Responses to some of the obvious questions:

If Secretary/Treasurer were as a single position, the step of sending checks from one to the other would be eliminated. Once upon a time, such was the case. However, the workload proved to be daunting — check processing is not the only responsibility of either the Secretary or the Treasurer — and the offices were separated.

For both legal and financial reasons, we cannot have bank accounts in the US.

We are not yet able to arrange for payment by credit card, but we are continuing to explore the possibility.

Members can help by sending payment in the late December-mid January renewal period. Checks received during that period will be processed quite promptly; stragglers may have to wait until their number reaches a critical mass. The present and all future Secretaries and Treasurers thank you for your patience and understanding.

Pat Allaire

New Members

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

David Anderson
Southampton U.K.

Bill Branson
St. Cloud, MN USA

Scott Brown
Montgomery, AL USA

Fran cois Charette
Dibner Institute, MIT
Cambridge, MA USA

Janet Delve
Southampton U.K.

Jason Douma
University of Sioux Falls
Sioux Fall, SD USA

Graham Guest
London U.K.

John Hannah
University of Canterbury
Christchurch New Zealand

Barry Hunt
Greensboro, NC USA

Deborah A. Kent
Charlottesville, VA USA

Mathieu Marion
Université du Québec a Montréal
Montréal, QC Canada

Susan Milner
University College of the Fraser Valley
Abbotsford, BC Canada

Michael O'Leary
Concordia University
River Forest, IL USA

Paolo Palmieri
University of Pittsburgh
Pittsburgh, PA USA

Jean-Jacques Rousseau
Toronto, ON Canada

Galo Ruiz
Mexico, D.F. Mexico

Dan Sonnenschein
Vancouver, BC Canada

Alan Vlach
St. Mary's College
Notre Dame, IN USA

From the Editor

The forthcoming meeting in Cambridge promises to be one of the most spectacular in the history of the Society. The setting is obviously a good place to start, and the extent to which the programme is made up of speakers from this side of the Atlantic is impressive. Thanks are due to Adrian Rice for having so ably represented the Society in negotiating and planning over the last year (and even before). It would also be remiss not to express appreciation for everything that John Earle from the British Society for the History of Mathematics has done to accommodate requests for time, space, and sofas.

The programme for the meeting appears elsewhere in this issue. Notice that the annual general meeting for the CSHPM will take place before the joint meeting gets under way. Council recognized that this was not the ideal timing for those who might be arriving just before the start of the talks, but finding any time in a crowded weekend took some effort. Please bring ideas about future meetings (joint or otherwise) to the AGM if you are planning to be in Cambridge. If you are not able to make the trip, members of Council would be glad to hear any suggestions and to bring them up at the meeting.

Once again the pressure of teaching during the semester has left this issue to come out later than would be optimal, although the delay in getting the fall issue out was bound to push this issue back somewhat. Contributors to this issue are crucial for you to be having anything to read, and

Amy Ackerberg-Hastings' entertaining piece on the use of old books as a pedagogical tool was submitted in response to an editorial plea for additional material. Robert Thomas' review has especial appeal for those working at the borderlines of history and philosophy of mathematics. Chris Baltus has promised something for the next issue, which gets us off to a good start.

I should also apologize once again to Peter Griffiths for failing to make the time to do editorial justice to his contribution on the Riemann Hypothesis. He makes some serious accusations about the shortcomings of Riemann and Hilbert and directs our attention to some contemporary publications as well. More time is required to do justice to his taking issue with such distinguished mathematicians, and I have not rewarded Peter well for his promptness.

Comments by John Dawson, current editor of the journal *History and Philosophy of Logic*, at the annual meeting of the American Mathematical Society in January have led to members of the Society being eligible for a discounted rate for individual subscriptions to the journal. Those who know John's work and the quality of the journal have been well aware of its value to the community of historians of logic. If the price tag has been a deterrent, consult the Society's web page for how much of a reduction is available. We are grateful to John for suggesting the idea and to Taylor and Francis for making it available.

Newton attributed his success to having stood on the shoulders of giants, an image whose history Robert Merton documented in detail in his volume with that title. Those who are in Cambridge this summer may not exactly be standing on the shoulders of giants but will have the chance to rub elbows with their ghosts. If those at the conference have the chance to glance at the moon over-

head of an evening, they will be bathed in the light of the lune de Clare.

Tom Drucker

About the Bulletin

The *Bulletin* is published each May and November, and is co-edited by Tom Drucker (druckert@mail.uww.edu) and Eisso Atzema (atzema@math.umaine.edu). Material without a byline or other attribution has been written by the editors. Les pages sont chaleureusement ouvertes aux textes soumis en français. Comment and suggestions are welcome, and can be directed to either of the editors; submissions should be sent to Tom Drucker and Eisso Atzema at the above e-mail address, or by snail mail to Tom Drucker, Department of Mathematical and Computer Sciences, University of Wisconsin-Whitewater, Whitewater, WI 53190.