



CMS NOTES de la SMC

REPORT OF THE PRESIDENT, AND OF THE ADVANCEMENT OF MATHEMATICS COMMITTEE

Tom Salisbury
York University, Toronto

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Mathematics in 2007

The CMS seeks to advance and support all aspects of mathematics in Canada, in both research and education.

Our research meetings and publications are vital to the flourishing Canadian mathematical community. As the national organization that represents our profession, we speak on behalf of mathematics to industry and government. Our Math Camps and Math Competitions program support mathematics education across Canada, as do our problem-solving publications. These and related efforts aim to stimulate students mathematically, an activity critical to Canada's increasingly knowledge-based economy. Our endowment grants program enables mathematically rooted projects that would not exist otherwise. Our prestigious prizes celebrate excellence in both research and teaching. The community is connected through our newsletters and electronic services, which circulate news, conference announcements, and employment opportunities. Our success in sustaining

The following is an excerpt from the 2007 Annual Report, the full report can be found on page 11.

this broad range of activities is due to the engagement of our community, and to the generosity of our supporters. The Society is immensely grateful to all of our volunteers and sponsors for their commitment to building and strengthening mathematics in Canada. The detailed descriptions of the year's CMS activities, to be found throughout the pages of the annual report, attest to the health of our discipline and to the energy of our members.

Mathematics continued to make news in 2007. Among other things, this left some mathematicians trying to explain the exceptional Lie group E_8 to the news media, after the announcement of the tour-de-force computation of its Kazhdan-Lusztig polynomials. On the domestic front, the Canadian mathematical community continued to plan for upcoming major meetings, including the 2008 Canada-France Mathematics Congress in Montreal, and in Vancouver the 2009 Canadian Mathematics Education forum, the CMS's second meeting with the Sociedad Matemática Mexicana, and the large 2011 International Congress of Applied and Industrial Mathematics. Important new government

support of Mathematics was unveiled, with substantial new funding going to the three major Canadian mathematics research institutes. The reports of the Executive Director and research committee contain details about the two excellent CMS meetings held in 2007, in Winnipeg in June, and in London in December. We look forward to visiting Ottawa for the December 2008 meeting.

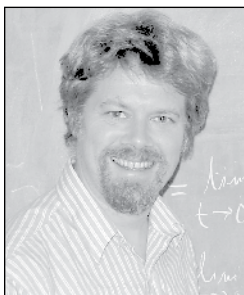
Prizes

The society's prestigious scientific prizes (Coxeter-James, Jeffery-Williams, Krieger-Nelson, Doctoral) continue to recognize outstanding research contributions. Our education prizes (Adrien-Pouliot, Excellence in Teaching) draw national attention to that side of our profession. Further details may be found in the reports of the Research and Education committees. The Publications Committee report describes our prize in that arena, the G. de B. Robinson award.

In 2006, the CMS inaugurated a new prize, the David Borwein Distinguished Career award. It is given out every two years, but in 2007 we took the occasion of the London CMS meeting to present a copy of the striking bronze sculpture

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On Memorizing Proofs

Memorizing mathematics is a topic that polarizes people. Many experts on math education are fiercely against it, although in discussion we often find that the discussion is to some extent semantic, in that the "memorization" that one person supports may in fact be what the other is referring to as "learning". I don't think anybody today would argue

for word-for-word, symbol-for-symbol memorization of a proof, in the sense that substituting A, B, and C for X, Y, and Z would be deemed incorrect. And I'm not sure that anybody ever has.

(An interesting exception here might be the learner with a very strongly auditory or visual learning style. A few students might actually find it easier to recite a proof, or visualize it, in one fixed form, than to remember it conceptually*. Should such a learning style be encouraged in this context? I'm not sure!)

But, in general, how much should one remember, or expect students to? For many theorems, the most one needs to remember is where to find them, should one ever need them. Even where the theorem is important, the proof may often be "left in the book". Generally, even for the most important theorems, it is enough if the student knows it well enough to recreate it.

In the course of a recent email discussion with a colleague, I found myself wondering under what circumstances a stricter level of memorization might be appropriate. Here were some ideas that occurred to me.

(1) There are some "model proofs" that one might wish to memorize in order to learn and emulate the technique, as art students used to copy classic paintings to learn composition and technique. For instance, any calculus student should probably memorize one derivation of a derivative from the limit definition, and know the role of every step. Another example is the family of "linearity theorems" in the theory of linear ODE's. If you know one, you can apply the technique to all the others. (Even Picasso didn't reinvent oil paint!)

(2) There is the very occasional proof (like Erdős' proof of Sylvester's theorem, or Poisson's evaluation of the area under the Gaussian curve) which one might wish to memorize as one might memorize a poem, simply to be able to appreciate its beauty better. For some more examples of these, look at the book "Proofs from The Book" by Aigner and Ziegler (Springer, 2003).

(3) It may be worth knowing five or six proofs of a classic like Pythagoras' theorem, varying in levels of rigor and in style, if one is interested in the history of the theorem and the different approaches to axiomatics.

(4) There are also a few theorems where the proof is even more memorable than the result. It is worth learning these proofs in the hope of finding a second application of them! An example is the Soddy Hexlet. Given three mutually tangent spheres X, Y, Z, choose A tangent to X, Y, Z; B to A, X, Y, Z; C to B, X, Y, Z;

... and F tangent to E, X, Y, Z. Then A is tangent to F. The usual proof is a particularly clever use of inversion, and the trick can be used for other theorems as well.

Another example, where the result is also important, is the proof of the arithmetic-geometric mean inequality by proving the case in which $n=2$, leveraging that to get $n=4$, $n=8$, $n=16$... and then extending to values of n that are not powers of 2 by using "neutral" dummy elements. A subtle and unusual proof, but reusable if you know it well enough.

And, of course, it is safer to know a proof by heart before giving it in a lecture!

(*): To make this plausible, try this simple experiment: give, as quickly as you can, the values of a for which $xa^2 + ca + b = 0$. If you had to pause a little, it was probably because you use auditory or visual memory to recall the quadratic formula, in a form that clashes with the notation used here.

NOTES DE LA SMC

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CMS NOTES

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La mémorisation des preuves

La mémorisation en mathématiques est une question qui divise les gens. Bon nombre de spécialistes en enseignement des mathématiques s'y opposent farouchement, quoique dans les faits, on constate souvent que la divergence d'opinions relève de la sémantique : ce que les uns appellent « mémorisation » est tout simplement de « l'apprentissage » pour d'autres. Je doute que quiconque aujourd'hui croie à la mémorisation pure, mot à mot, ou symbole à symbole, des preuves mathématiques, au sens où le fait de remplacer A, B, C par X, Y, Z serait incorrect. Je ne suis pas certain qu'on y ait jamais cru de toute façon.

(Les élèves ayant un style d'apprentissage auditif ou visuel très marqué pour faire exception. Certains élèves trouvent en effet plus facile de réciter une preuve, ou de la visualiser en une forme précise, que d'en retenir le concept*. Devrait-on encourager un tel style d'apprentissage dans ce contexte? Moi je n'en sais pas.)

En général, toutefois, que devraient retenir les élèves, ou quelle portion devrions-nous nous attendre à ce qu'ils retiennent? Dans le cas des théorèmes, par exemple, tout ce qu'il faut savoir c'est où retrouver le théorème voulu en cas de besoin. Même s'il s'agit d'un théorème important, la preuve peut souvent « rester dans le livre » : il suffit de bien le connaître pour le recréer.

Dernièrement, dans un échange par courriel avec un collègue, je me suis demandé dans quelles circonstances il serait acceptable d'exiger un degré de mémorisation plus élevé. Voici les idées qui me sont venues à l'esprit.

(1) Certains modèles de preuve méritent sans doute d'être mémorisés si l'on souhaite apprendre et reproduire la technique, à l'instar des étudiants en art qui reproduisaient des tableaux classiques pour apprendre la composition et la technique. Un étudiant en calcul, par exemple, devrait probablement mémoriser les détails de calcul d'une dérivée en utilisant la définition de la dérivée avec la limite, et connaître le rôle de chaque étape. Autre exemple : la famille des « théorèmes de linéarité » en théorie des équations différentielles ordinaires. Il suffit d'en connaître un pour appliquer la technique à tous les autres. (Même Picasso n'a pas réinventé la peinture à l'huile!)

(2) Certaines preuves très particulières (la preuve d'Erdos du théorème de Sylvester, ou l'évaluation de Poisson de la surface sous une courbe de Gauss) pourraient être intéressantes à mémoriser comme on mémorise un poème, simplement pour mieux en apprécier la beauté. On trouvera quelques exemples de ce type dans *Proofs from The Book* d'Aigner et Ziegler (Springer, 2003).

(3) Il peut être intéressant aussi de connaître cinq ou six preuves de rigueur et de style variable d'un théorème classique, comme le théorème de Pythagore, si l'on s'intéresse à l'histoire du théorème et à l'axiomatique.

(4) Il y a aussi quelques théorèmes dont la preuve est plus

facile à mémoriser que le résultat. Il pourrait valoir la peine de mémoriser ces preuves si l'on espère y trouver une autre application! Prenons l'hexlet de Soddy par exemple. Si X, Y, Z sont trois sphères tangentes deux à deux, choisissez une sphère A tangente à X, Y, Z ; B , tangente à A, X, Y, Z ; C , tangente à B, X, Y, Z ; ... et F , tangente à E, X, Y, Z . Alors A est tangente à F . La preuve habituelle est une inversion particulièrement brillante, et le truc s'applique aussi bien à d'autres théorèmes.

Autre exemple où le résultat aussi est important : la preuve de l'inégalité de la moyenne arithmétique-géométrique en montrant le cas où $n=2$ puis utiliser cette preuve pour montrer les cas $n=4, n=8, n=16, \dots$ et en étendant le résultat ensuite aux valeurs de n qui ne sont pas des puissances de 2 en utilisant des éléments "neutres". Cette preuve, subtile et originale, est réutilisable si on la maîtrise bien.

Et, bien sûr, il est prudent de mémoriser une preuve avant d'en parler dans un cours!

[Note : Faites ce petit test : donnez, le plus rapidement possible, les valeurs de a pour que $xa^2 + ca + b = 0$. Si vous avez eu besoin de faire une pause pour y penser, c'est probablement parce que vous avez eu recours à votre mémoire auditive ou visuelle pour retrouver la fonction quadratique classique, dont la forme diffère de la notation utilisée ici.]



Letters to the Editors Lettres aux Rédacteurs

The Editors of the NOTES welcome letters in English or French on any subject of mathematical interest but reserve the right to condense them. Those accepted for publication will appear in the language of submission. Readers may reach us at notes-letters@cms.math.ca or at the Executive Office.

Les rédacteurs des NOTES acceptent les lettres en français ou anglais portant sur un sujet d'intérêt mathématique, mais ils se réservent le droit de les comprimer. Les lettres acceptées paraîtront dans la langue soumise. Les lecteurs peuvent nous joindre au bureau administratif de la SMC ou à l'adresse suivante : notes-lettres@smc.math.ca.

Real Analysis with Economic Applications

by Efe A. Ok

Princeton University Press, 2007, 664 pp.
ISBN 0691117683, US\$ 85.00

Review by Yulia Kotlyarova and Barry Lesser, Department of Economics, Dalhousie University.

While studying economic theory, graduate students in economics encounter many problems which require a knowledge of various advanced topics in mathematics. Often, students do not have a sufficiently thorough mathematics background in all these areas and have to fill the gaps in mathematics using technical appendices that are commonplace in economics textbooks. Such appendices usually contain sets of definitions and instructions which help to solve immediate problems but rarely provide sufficient insight to foster real understanding. While there exist many excellent books on mathematical economics for undergraduate students, graduate textbooks tend to be quite narrowly focused (e.g., Stokey and Lucas' work on economic dynamics). Hence, a proper book in real analysis that targets topics necessary to understand current economic theory is most welcome.

The book starts with a review of set theory, real numbers, sequences and functions. Metric spaces, continuity concepts and correspondences are introduced in Part II. This part contains various fixed point theorems, which are widely used to establish the existence of an equilibrium in economic models. Examples in the book include the optimal growth model and a proof of the existence of Nash equilibrium in game theory. Part III focuses on linear spaces, convexity within infinite-dimensional linear spaces, and separation of convex sets. The chapter on economics applications shows how convex analysis and separating hyperplanes help prove the second theorem of welfare economics and analyze cooperative games. Part IV considers metric/normed linear spaces (common in economic theory) and Fréchet differentiation with optimization problems in infinite-dimensional spaces. It revisits separating hyperplane and fixed-point theorems.

We expect the book to be widely used by graduate students in economics as a reference on relevant mathematical topics. It carefully guides the reader through proofs and intuition and offers numerous exercises to test readers' understanding of the subject. For the book to be a self-contained reference, it would be helpful to include some discussion of measure theory and, possibly, Fourier transforms. In the preface, Dr. Ok notes that measure theory has been excluded from the present book in favour of its coverage in a forthcoming book on "probability theory with economic applications". But the fact that measure theory is treated in a companion volume does not alter the usefulness of including it in this book as well; the topic belongs also in the current volume. It would be desirable to expand the list of notation and the index, since some notation tends to be



confusing when the chapters are read independently. For example, the term "null set" is used to describe a set of measure zero, which is not the only way in which the term is used in mathematics, and Y^X is used to represent functions instead of the more conventional $X \rightarrow Y$.

The use of the book as a primary textbook in an economics course (versus its use as a reference book) is less obvious. The sequence and logic of the topics are not driven by economic theory and the economics examples are disconnected and serve mainly to illustrate theorems. For a reference book, this is not a drawback, since a student would typically have a specific application in mind in making use of the book. For a textbook, it could be a problem. The author acknowledges in the preface that the book is not intended for a first graduate course on mathematics for economists but he also says it is suitable for a second graduate course on mathematics for economists. This may be so, assuming a relatively advanced mathematics preparation by the students taking the course, but in this case, the organization of the book becomes problematic. The third course that Dr. Ok suggests the book might be used for is an advanced undergraduate or graduate course on real analysis for mathematics students. This audience, without question, can deal with the level of mathematics in the book. But the presumption that little economics preparation is needed to deal with the economic applications of the mathematics risks reducing the economics content to the role of afterthought to the mathematics. It runs the risk of letting the mathematics drive the economics rather than seeing the mathematics as a tool to enhance our understanding of the economics.

To summarize, the book is appropriate as a reference book for graduate economics students and for a second-level graduate course in real analysis offered to graduate economics students. But in the latter context, it would benefit from a more developed and logically connected set of economic applications.

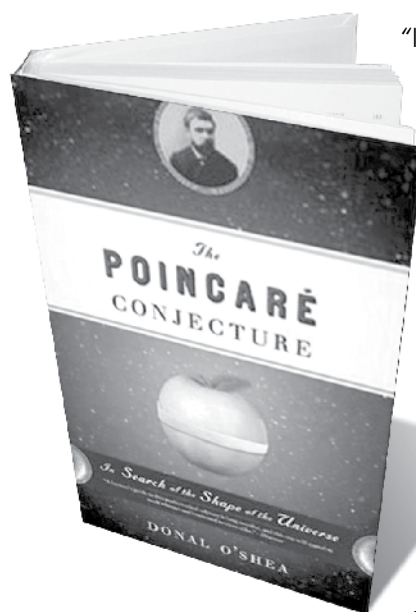
The Poincaré Conjecture : In Search of the Shape of the Universe

by Donal O'Shea
Walker and Co., 2007, pp 304
ISBN 0802716547, US\$ 15.95

Review by Renzo Piccinini, Dalhousie University,
Department of Mathematics.

According to Henri Poincaré, "Topology (or Analysis Situs as he called it) is the science that allows us to know the qualitative properties of geometric figures not only in ordinary space, but also in spaces of more than three dimensions" [1, page 322]. One of the first mathematicians to study geometry in this sense was Johann Benedikt Listing; in 1847 he published a paper where the name "Topology" first appears. Then came Bernhard Riemann who, in his "Habilitationsschrift" of 1854, introduced the all important notion of *manifold*. After that, Henri Poincaré arrived on the scene; in the words of the Russian topologist Pavel S. Alexandrov, "To the question of what is Poincaré's relationship to topology, one can reply in a single sentence: he created it; ..." [1, page 245]. Topology is just a tiny part in Poincaré's vast work in mathematics and physics, yet the dozen or so papers he wrote on the subject set the foundations of algebraic topology, a branch of mathematics that gave a very strong contribution towards the solution of some of the most important twentieth century mathematical problems.

In 1901 Poincaré wrote the essay *Analyse de ses travaux scientifiques* in which he makes a critical review of his own work; this was done at the request of Gösta Mittag-Leffler and was eventually published in *Acta Mathematica* 28 (1921), 36-135 (also reproduced in [1, pages 257-357]). The reading of the part about Analysis Situs is very enlightening and I transcribe some interesting passages. "Je commence pour donner plusieurs définitions des variétés de l'espace de plus de trois dimensions et par introduire la notion fondamentale de l'homéomorphisme qui est la relation de deux variétés qui ne sont pas distinctes du point de vue de leur propriétés qualitatives." Poincaré then proceeded to define the (simplicial) homology groups $H_*(M)$ and the fundamental group $\pi_1(M)$ of a compact triangulated manifold M (see [2]); his intent was to arrive at an algebraic method capable of classifying manifolds. "J'ai cru devoir multiplier les exemples, pensant que c'était le meilleur moyen de familiariser les esprits avec des idées aussi nouvelles" and he soon discovered examples showing that homology groups were not sufficient to characterize a manifold; the most notable of these was the *Poincaré dodecahedral space* V , a compact, connected 3-manifold without boundary (i.e. a *closed* 3-manifold) with the same homology groups as the sphere S^3 , but with $\pi_1(V)$ a non-trivial group of order 120, in contrast to the fact that $\pi_1(S^3) = 0$. This is done in [3], towards the end of which Poincaré asks: "Est-il possible que le groupe fondamental de V se réduise à la substitution identique, et que pourtant V ne soit pas simplement connexe ?; then, the last sentence of the paper is prophetic: Mais cette question nous entraînerait trop loin."



"In other words, Poincaré's question is the following: is a simply connected closed 3-manifold homeomorphic to 3-sphere¹. This is the Poincaré conjecture solved in the positive sense, one hundred years after Poincaré's ominous words, by the Russian mathematician Grigory Perelman, who was awarded the Fields Medal in 2006 for his work. Perelman's solution relied on the differential geometry of the manifold and in particular,

made use of the so called *Ricci flow*, named after the Italian geometer Gregorio Ricci-Curbastro.

What about the book? In my opinion Donal O'Shea wrote a masterpiece. The book is directed to non-mathematicians and requires no particular background, except for some high-school geometry. However, the extensive bibliography and some of the 270 notes which complement the text give references to the relevant mathematical papers which could be eventually read by a person with mathematical training. The author prepared carefully a *Glossary of Terms* as an aid to the reader and also a section he calls *Timeline* in which he sets side-by-side the relevant mathematical breakthroughs, the political events and the institutions (e.g. Universities, Academies, etc.) created at the time. Besides giving a detailed history of the solution of the Poincaré Conjecture, O'Shea also indulges in some of the history of the mathematics between the two world wars and gives an interesting account of the emergence of mathematics in the United States. The book reads smoothly, like a beautiful novel. I strongly recommend this book to anyone interested in science and mathematical questions.

References

- [1] Felix Browder (Ed.) – *The mathematical heritage of Henri Poincaré*, Pure Symp. in Pure Math., vol 39, Part 2, AMS, Providence 1983.
- [2] Henri Poincaré – *Analysis Situs*, J. Ecole Polytechnique 1 (1895), 1-121.
- [3] Henri Poincaré – *Cinquième complément à l'Analysis Situs*, Rendiconti Circolo mat. Palermo 18 (1904), 45-110.

¹It is easy to show that two orientable closed 3-manifolds with the same fundamental groups have the same homology groups (use Poincaré Duality Theorem).

Geometry and Topology

by Miles Reid and Balázs Szendrői
Cambridge 2005, xviii + 196 pp.

Hardback US \$95, Paperback US \$45

Geometry provides a whole range of views on the universe, serving as the inspiration, technical toolkit and ultimate goal for many branches of mathematics and physics. This book introduces the ideas of geometry using simple explanations and examples. The treatment emphasizes coordinate systems and the coordinate changes that generate symmetries. The discussion moves from Euclidean to non-Euclidean geometries, including spherical and hyperbolic geometry, and then on to affine and projective linear geometries. Group theory is introduced to treat geometric symmetries, leading to the Erlangen program. An introduction to basic topology follows with the Möbius strip, the Klein bottle and the surface with many handles exemplifying quotient topologies and the homeomorphism problem. A chapter on geometry of transformation groups follows, with applications to relativity theory and quantum mechanics. A final chapter features historical discussions and indications for further reading.

The book is intended for the early years of study of an undergraduate math course. Each chapter ends with a set of exercises. Further teaching material is made available for teachers via the web, including assignable problems and solutions.

Free Ideal Rings and Localization in General Rings

by Paul Cohn

New Mathematical Monographs 3, Cambridge University Press 2006, xxii + 572 pp, US \$ 140.00

Proving that a polynomial ring in one variable over a field is a principal ideal domain can be done by means of the Euclidean algorithm, but this does not extend to many variables. However, if the variables are not allowed to commute, giving a free associative algebra, then there is a generalization, the weak algorithm, which can be used to prove that all one-sided ideals are free.

Written by a well known algebraist, this book presents the theory of free ideal rings (firs) in detail. Particular emphasis is laid on rings with a weak algorithm, exemplified by free associative algebras. A full account of localization theory is given, which is treated for general rings with special attention to the features arising in firs. Each section has a number of exercises, including some open problems, and each chapter ends with a historical note.

Integral Equations and their Applications

by M. Rahman

WIT Press 2007, xiii + 356pp, \$252.00

The book contains eight chapters, pedagogically organized. It is designed for those who wish to understand integral equations without having extensive mathematical background. Some knowledge of the following topics is expected of the reader: integral calculus, ode, pde, Laplace transforms, Fourier transforms, Hilbert transforms, analytic functions, and contour integration.

Logic Colloquium '02, Lecture Notes on Logic 27, Association for Symbolic Logic

edited by Zoé Chatzidakis, Peter Koepke
and Wolfram Pohlers

A. K. Peters 2006, viii + 359 pp

This volume contains the joint proceedings of two major logic meetings which took place at the University of Münster, Germany, in August 2002: Logic Colloquium '02, the 2002 European Summer Meeting of the Association for Symbolic Logic, and Colloquium Logicum 2002, the biannual meeting of the German Association for Mathematical Logic and the Foundations of Exact Sciences. It includes papers presented at these meetings, tutorials and research articles from some of the world's preeminent logicians. Topics span all areas of mathematical logic, with particular emphasis on Computability Theory and Proof Theory.

A noteworthy article is "One is a lonely number": Logic and Communication, by Johan van Benthem. The abstract reads: Logic is not just about single-agent notions like reasoning, but also about communication between two or more people. What we tell and ask each other can be just as logical as what we infer in Olympic solitude. We show how communication and other interactive phenomena can be studied systematically by merging epistemic and dynamic logic, leading to new types of question.

Bifurcation Theory and Spatio-Temporal Pattern Formation

Edited by Wayne Nagata and N. Sri Namachchivaya
and Wolfram Pohlers

Fields Institute Communications 49, AMS 2006, v + 177 pp

Nonlinear dynamical systems and the formation of spatio-temporal patterns play an important role in current research on partial differential equations. Recent progress in the development of the theories of equivariant bifurcations, mode interactions and deterministic chaos, has made it possible to understand better spatio-temporal patterns in many physical and biological contexts.

This volume contains the proceedings of a workshop on Bifurcation Theory and Spatio-Temporal Pattern Formation in Partial Differential Equations held at the Fields Institute for Research in Mathematical Sciences, Toronto, in December 2003 honoring Professor William Langford for his fundamental work in this area. Twenty seven presentations were made at the workshop, seven of which form the contents of this volume. These seven are expository articles; they include aspects of lattice dynamical systems, convection in fluid layers with large aspect ratios, mixed mode oscillations and canards, bacterial remediation of waste, gyroscopic systems, data clustering, and the second part of Hilbert's 16th problem.

StepAhead at Queen's

by Leo Jonker, Queen's University
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Does a mathematics department have a role to play in the preparation of elementary teachers?

Depending on who you are, the answer will probably seem obvious. If you are a typical member of a university mathematics department you will probably feel that if a teacher is to teach elementary school mathematics well she should have some university level mathematics. She should know why mathematical algorithms work the way they do and how things taught in the early grades serve as preparation for topics introduced in later grades. If you have children in elementary school, or know friends who do, you will probably be of the opinion that some elementary school teachers do not meet the standards that you think are appropriate. Some of the worst stories you hear are probably apocryphal, but there is no doubt that among elementary school teachers, even among the ones who are highly regarded, many harbour a deep fear of mathematics.

If, however, you are a member of a faculty department of education, you are probably aware of colleagues who do not believe that knowledge of mathematics is at all critical in the work of an elementary school teacher. Knowledge is socially constructed. What matters is that a teacher be equipped to enable and monitor that construction. The learning will happen whether or not the teacher has a pre-conceived notion of how it should take place. Also, as a specialist in education you may feel that teaching algorithms is not important, for it can easily inhibit the process of discovery, the bare-handed struggling invited by a rich problem. I do not think that long division is taught at all elementary schools. There are even serious internet discussions by educators about whether or not we should teach fractions!

The research mathematician would like prospective teachers to take university courses in calculus or linear algebra, elementary number theory, or geometry. Faculties of education have almost no mathematics entrance requirements for elementary school teachers.

Who is right here? Well, I hate to admit it, but the evidence is on the side of the education specialists! There have been many attempts to correlate the number of university mathematics courses taken with the quality of the education provided by elementary and high school teachers. These attempts, almost without exception, show that there is no correlation, and that sometimes the correlation is negative¹.

I think that I have an explanation for this paradoxical and inconvenient truth: Students who decide to become teachers are profoundly drawn to the social interaction that characterizes the classroom; they gravitate towards subjects that explore the human dimensions that interest them (the humanities especially); by contrast, they have found mathematics cold, impersonal, demanding much and giving little. Those among them who feel compelled to take mathematics courses even though they do not really enjoy them (read: understand them) form a habit of doing things without understanding and develop a resentment of the subject. Taking more mathematics courses under those circumstances increases dislike without increasing understanding.

I suspect that this type of student is much more common in our university mathematics courses than we care to admit. It is no surprise that this kind of mathematics education does not correlate with good teaching.

I have been working to develop a model for university mathematics courses targeting elementary, junior and intermediate level teachers. These courses do not give up on the belief that it is important to have a deep understanding of some mathematics, and yet they manage to attract, hold and enthuse students who would not normally dare to take a mathematics course. The key is to tie the course to a mathematics enrichment program: students in the course are sent out in pairs to provide mathematics enrichment classes at local schools for students in grades 7 and 8. The mathematics discussed in class is the mathematics they present in their enrichment program. The motivation for learning the course material at a deep level is the potential embarrassment of not understanding the lesson you plan to teach to very bright 12-year-olds.

Over the past two years, I have been using an NSERC PromoScience grant to develop what is now known as the **StepAhead** mathematics enrolment program, even as I have used Queen's University funds to develop and refine the courses. There are two mathematics courses, one focussing on geometry, the other focussing on numbers and number patterns. The PromoScience grant has also been used to launch a science course on the same model. All these courses are described on the StepAhead website http://www.mast.queensu.ca/_stepahead.

The response to the course and to the enrichment program has been overwhelmingly enthusiastic. Math-phobic students feel they understand mathematics for the first time, and local schools love the enrichment classes provided for them.

The website has been constructed in the hope of exporting the course to other schools. I am looking for partners who can help me build the StepAhead program into something that will allow university mathematics departments around the country to play a more active and useful role in preparing the next generation of teachers and in interesting elementary and middle school students in a career in mathematics and science. Check out the website, use the material to start a StepAhead course at your university, and contact me if there is a chance you may be interested in helping me develop my program.

Footnote

¹See references in my upcoming article *A mathematics course for prospective elementary school teachers* in PRIMUS. A preprint of this article is available on my website <http://www.mast.queensu.ca/~leo>.

The subtleties of assessment

by Ed Barbeau

With the current insistence on accountability, assessment is a large factor in modern education. But one can seriously question not only how effective it is, but whether it can be counterproductive. Some facets of mathematical learning are easier to assess than others and constraints of time, money and expertise are bound to affect the nature and use of assessment instruments. This in turn will have a bearing in what goes on in the classroom.

In order to take stock and tease out important aspects of assessment, the Mathematical Sciences Research Institute in Berkeley, CA assembled a diverse group of mathematicians and educators to examine the goals and varied roles of assessment. The major aims of the conference were to

- articulate the purposes of assessment of student performance, and the information required for these;
- clarify the challenges of assessing student learning in ways to support instructional improvement;
- examine ethical issues related to assessment;
- investigate different frameworks and methods of assessment, and compare the information they provide;
- compile a list of useful resources;
- enlarge the group of mathematicians well-informed about assessment and willing to contribute to high-quality assessment;
- articulate a research and development agenda.

This conference spawned an excellent book, with chapters written by individual participants:

Assessing mathematical proficiency, edited by Alan H. Schoenfeld

Mathematical Sciences Research Institute Publications 53,
Cambridge University Press, 2007 xix+391 pages
Hardback 978-0-521-87492-2 \$85.00
Paperback 978-0-521-69766-8 \$30.00

Information about the book can be had by emailing publicity@cambridge.org or telephoning 212-337-5057.

The book is split into six sections that provide an overview, discuss mathematical proficiency, look at what assessment actually assesses, focus in particular on algebra and fractions, and finally examine social context. An epilogue outlines research questions identified by eight working groups at the conference.

Alan Schoenfeld begins with a view of the “assessment landscape”. He points out that all the stakeholders, mathematicians, education researchers, teachers, parents, students, policy-makers, professional development personnel, publishers and test developers, all have their own agendas and imperatives that are not easy to harmonize. He points to unintended consequences that might ensue from assessment, such as test score inflation and illusions of competence, deformation of the curriculum, the stifling of initiatives and “disenfranchisement due to linguistic and other issues”. Judith Ramaley’s essay on the aims of education highlights the tension on the amount of autonomy that can be granted to the learner and the difficulty of deciding on how to assess learning because of the lack of consensus on philosophy of education. The first section closes with a chapter on the *No Child Left Behind* program in the United States.

James Milgram is a mathematician long concerned with and vocal about what he sees as a collapse in mathematical instruction. In the US, he complains that insufficient attention is given to the characteristic features of mathematics, precision and the statement and solution of well-posed problems. He gives examples of Russian texts that handle these features better. North American teachers tend to see “mathematics as lists”, a succession of superficial triggers to evoke stock responses, while downplaying the importance of definitions and lacking a sophisticated sense of problem-solving.

Many parts of the book refer to the Silicon Valley Mathematics Initiative, established in 1996 at San José University, to support

local districts with professional development. To provide a richer assessment vehicle, it formed the Mathematics Assessment Collaborative (MAC), to which 24 school boards subscribe. The MAC launched its first examinations for four grades in 1999. These extended response instruments are marked by the teachers who have been properly trained; the scripts are used for professional development and the improvement of future instruction. In his essay on mathematical proficiency and its assessment, Alan Schoenfeld compares the effectiveness of the MAC tests and the commonly used SAT-9 tests. Proficiency amounts to more than knowledge, but also strategic competence, effective deployment of resources, including the ability to switch registers appropriately, and all of these should be tested for.

Hugh Burkhardt examines the question of what is important in mathematical proficiency and how it can be measured. Like Schoenfeld, he has a broad view of proficiency and warns against assessing what is easy to test rather than what is important. Accordingly, test items should be designed to develop thinkers with a catholic view of mathematics and the ability to model and judge situations. He discusses many examples to illustrate how test items can be effective and informative. More examples amplify the points in the discussion of Jan de Lange on the art of assessment design. In reference to one item involving a simple algebraic formula for the recommended heart rate, he writes that the problem

seems to meet most standards for a good PISA [Programme for International Student Assessment] item. It is authentic; it has real mathematics; there is a good connection between context and content; and the problem is nontrivial. Therefore it was no great surprise that when this item was field tested, it did well as a test of the relevant student knowledge. There was only one small difficulty: fewer than 10% of the students were successful. *This was a reason to abandon the problem.* [Emphasis mine.]

Abandoning such a problem is a problem! We should look into why this item is difficult for so many 15-year-old students! Why are we excluding items of this kind, with a rather low success rate, from these kinds of studies? We are probably missing a valuable source of information, especially if we consider the longitudinal concept underlying the whole PISA study. (p. 104)

To me, this is a clear reference to the dangers of pulling one’s punches if a test threatens only too well in drawing attention to deficiencies that authorities are reluctant to acknowledge.

In the next two chapters, Bernard Madison takes up the question of proficiency for citizenship, while Richard Atkey compares past and present examinations for teachers and finds that, contrary to common opinion, the earlier teachers were expected to teach for comprehension. The examiners for an 1870 test of California grammar school teachers instructed candidates in written arithmetic that “no credits are to be allowed unless the answer is correct and the work is given in full, and, when possible, such explanation as would be required of a teacher in instructing a class: a rule is not an explanation.” (p. 129)

David Foster, Pendred Noyce and Sara Spiegel give a history of the Silicon Valley Mathematics Assessment Collaborative, and discuss several items and the responses elicited from students. In a later chapter, David Foster uses further items to show how students’ understanding and misconceptions in algebra can be revealed. This follows a brief chapter by William McCallum on items to assess

conceptual understanding and strategic competence. For example, students are given five equivalent forms of a quadratic polynomial and asked for the one that is best for showing the maximum value and the value of the variable that yields it.

Ann Shannon has an instructive chapter on how the context of a problem governs the performance of students. Many readers will be familiar with the four card problem: *Each of four cards laid on a table has a number on one side and a letter on the other. The visible sides show the symbols: A, P, 6, 3. They are supposed to be printed to satisfy the rule that if a card has a vowel on one side, it has an even number on the other. Which among the cards **must** be turned over to check that the rule is adhered to?* Students who were given this problem performed very poorly. However, they did much better with the formulation: *You are in charge of a party in a jurisdiction where people under 21 cannot legally drink alcohol. Four people are drinking at a table; you can see the IDs of two of them and note that one is under 21 and the other over 21. As for the other two, you can easily determine that one is drinking beer and the other soda pop. Whom must you check to ensure that the law is obeyed?* A second problem asking for the construction of a linear function shows a similar phenomenon.

"Fractions" is a particularly sensitive topic of the curriculum that can cause enormous difficulties for students, and it would be helpful if assessments can reveal the mental landscape of pupils in this area. In particular, the pizza model for fractions lends itself to confusing fractional parts of area and of numbers of pieces unless the teacher takes meticulous care. Linda Fisher uses several examples of student responses to MAC items to analyze what exactly the respondents know and understand. A distinctive feature of the book is a complete transcript of Deborah Ball interviewing a grade 6 student about fractions (available at <http://www.msri.org/publications/ln/msri/2004/>

[assessment/session5/1/index.html](#)) and its analysis by Alan Schoenfeld.

The final section of the book is entitled "The Importance of Societal Context". Michèle Artigue takes us through two external assessments in France, the traditional Baccalauréat, a national high stakes examination at the end of high school, and a diagnostic test carried out by the national Department of Evaluation and the Future for Grade 6 students. Mark Wilson and Claus Carstensen discuss the instrument developed by the Berkeley Evaluation and Assessment Research (BEAR) Center and its application in a German setting. The BEAR system is founded on four principles, that assessment should look at the development of student understanding of concepts and skills over time, that assessment and instruction should inform each other constructively, that assessment must be amenable to use by teachers and that the evidence must be of high quality. Lily Wong Fillmore and Judit Moschkovich, in separate essays, examine the pitfalls when one assesses students for whom English is not a first language where the influence on the outcome of linguistic difficulties is not clear. Finally, we learn about the recent experiences in two jurisdictions, New York City (Elizabeth Taleporos) and California (Elizabeth Stage).

A brief epilogue enumerates areas for future research. The richness of the material in this book makes it clear that there is no excuse for the facile approach to assessment that is still, unfortunately, often indulged in. The damage that an improper assessment instrument can wreak is considerable in skewing the curriculum, demoralising teachers and discouraging students. A strength of the book is the multitude of examples that show how assessment can involve the teachers, be informative and have a positive effect on what happens in the classrooms and what the student learns there. This is a book that each university faculty of education and each political body concerned with education should heed.

COMING SOON! / À VENIR!

New and exciting CMS promotional items will be available for purchase at the 2nd Canada-France Congress 2008 meeting that will be held from June 1st – 5th in Montreal. Please visit us at the CMS booth.

Des nouveaux produits promotionnels seront disponible pour achat à la reunion 2ième Congrès Canada-France 2008 qui aura lieu du 1 au 5 juin 2008 à Montréal. Veuillez nous visiter au kiosque de la SMC.



CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

The CMS Research Committee is inviting nominations for three prize lectureships. These prize lectureships are intended to recognize members of the Canadian mathematical community.

Le Comité de recherche de la SMC lance un appel de mises en candidatures pour trois de ses prix de conférence. Ces prix ont tous pour objectif de souligner l'excellence de membres de la communauté mathématique canadienne.

Prix *Coxeter-James* Prize Lectureship

2009

The Coxeter-James Prize Lectureship recognizes young mathematicians who have made outstanding contributions to mathematical research. The selected candidate will deliver the prize lecture at the Winter Meeting.

The recipient shall be a member of the Canadian mathematical community. Nominations may be made up to ten years from the candidate's Ph.D: researchers having their PhD degrees conferred in 1998 or later will be eligible for nomination in 2008 for the 2009 Coxeter-James prize. A nomination can be updated and will remain active for a second year unless the original nomination is made in the tenth year from the candidate's Ph.D.

Le prix Coxeter-James rend hommage aux jeunes mathématiciens qui se sont distingués par l'excellence de leur contribution à la recherche mathématique. La personne choisie prononcera sa conférence à la Réunion d'hiver.

Cette personne doit être membre de la communauté mathématique canadienne. Les candidats sont admissibles jusqu'à dix ans après l'obtention de leur doctorat : ceux qui ont obtenu leur doctorat en 1998 ou après seront admissibles en 2008 pour le prix Coxeter-James 2009. Toute mise en candidature est modifiable et demeurera active l'année suivante, à moins que la mise en candidature originale ait été faite la 10^e année suivant l'obtention du doctorat.

Prix *Jeffery-Williams* Prize Lectureship

2010

The Jeffery-Williams Prize Lectureship recognizes mathematicians who have made outstanding contributions to mathematical research. The prize lecture will be delivered at the Summer Meeting. The recipient shall be a member of the Canadian mathematical community. A nomination can be updated and will remain active for three years.

Le prix Jeffery-Williams rend hommage aux mathématiciens ayant fait une contribution exceptionnelle à la recherche mathématique. La personne choisie prononcera sa conférence à la Réunion d'été. Cette personne doit être membre de la communauté mathématique canadienne. Toute mise en candidature est modifiable et demeurera active pendant trois ans.

Prix *Krieger-Nelson* Prize Lectureship

2010

The Krieger-Nelson Prize Lectureship recognizes outstanding research by a female mathematician. The prize lecture will be delivered at the Summer Meeting. The recipient shall be a member of the Canadian mathematical community. A nomination can be updated and will remain active for two years.

Le prix Krieger-Nelson rend hommage aux mathématiciennes qui se sont distinguées par l'excellence de leur contribution à la recherche mathématique. La lauréate prononcera sa conférence à la Réunion d'été. La lauréate doit être membre de la communauté mathématique canadienne. Toute mise en candidature est modifiable et demeurera active pendant deux ans.

The deadline for nominations is June 30, 2008. Nominations should be submitted electronically, preferably in PDF format, to research-prizes@cms.math.ca. Nominators should ask at least three referees to submit letters by **September 30, 2008**, either electronically to the preceding address, or directly to the Chair of the CMS Research Committee at the mailing address below.

La date limite de mise en candidature est le 30 juin 2008. Faites parvenir les propositions de candidature, préférablement en format PDF, à prix-recherche@smc.math.ca. La personne qui présente un candidat doit demander à au moins trois personnes de faire parvenir une lettre de recommandation, au plus tard le 30 septembre 2008, par voie électronique à l'adresse ci-dessus, ou à la présidence du Comité de la recherche de la SMC à l'adresse postale ci-dessous.

Some arms-length referees are strongly encouraged. Nomination letters should list the chosen referees, and should include a recent curriculum vitae for the nominee, if available.

Les lettres d'indépendants sont fortement recommandées. Le dossier de candidature comprendra la liste des personnes choisies à titre de référence ainsi qu'un curriculum vitae récent du candidat, dans la mesure du possible.

Prof. Edward Bierstone
Chair, Research Committee / Président, comité de recherches
CMS Prize Lectureships / Prix de conférence de la SMC
Department of Mathematics, University of Toronto
40 St. George Street
Toronto, Ontario M5S 2E4

The 2008 Krieger-Nelson and Jeffery-Williams Prizes will be presented at the Second Canada-France Congress 2008 in Montréal, Québec, June 1-5.
Les prix Krieger-Nelson et Jeffery-Williams 2008 seront présentés à la Deuxième congrès Canada-France 2008 à Montréal (Québec) du 1-5 juin.

The 2007 reports are in the language provided by the chair. All other reports appear in the April issue of the CMS Notes.

Les rapports sont livrés dans la langue de rédaction d'origine; les autres rapports paraissent dans le numéro d'avril des Notes de la SMC.

REPORT OF THE PRESIDENT, AND OF THE ADVANCEMENT OF MATHEMATICS COMMITTEE

President: Tom Salisbury (Toronto)

continued

on which the award is based, to David and Bessie Borwein.

The 2007 CMS *Distinguished Service Award* was presented in June to our long-serving Executive Director, Graham Wright. Graham has filled that role since 1979, and the importance to the CMS of his dedication and leadership is impossible to overstate. This was in fact the last time the award will be given under that name, since the Board of Directors also decided to rename the prize in future as the *Graham Wright Award for Distinguished Service*. Both these decisions were easy to make - the difficult part was keeping Graham unaware of them prior to the Board meeting!

The achievements recognized by the CMS prizes are truly outstanding. But this high standard relies on a continuing flow of excellent nominations. Please give serious consideration to nominating a deserving colleague.

Advancement of Mathematics

The CMS moved its fundraising activities to a more professional level in 2006, and has been working diligently to enhance the base of individual and corporate support that makes possible many of the activities of the Society. This is a critical task at the present time, given the exposure of the CMS to foreign exchange fluctuations caused by the pricing of our journals in US dollars. Fundraising was handled in 2006 using the CMS's contingency funds, but in 2007 moved into our regular accounting of expenses and revenue.

Progress has been steady though slow. Good supporting materials have been developed (for example, a brochure, the creation of which was spearheaded by David Rodgers), and with the help of Mark Bowman (the CMS Development Coordinator during 2007), the CMS's case has been brought to a wider audience. The ties to long-term supporters, such as the *Imperial Oil Foundation* and *Sun Life Financial* have been strengthened - indeed 2007 saw Sun Life Financial become the title sponsor of our largest mathematics competition. Many Provincial ministries of education have given us support, in recognition of our educational activities. *Nelson Educational Ltd.* renewed its support of the CMS Excellence in Teaching award. The *Jiping (Jim) Liu Memorial Travel fund* was established, which will bring graduate students to Society meetings. An on-line donations facility has been constructed, that has made it simpler for individuals to donate to the CMS. Progress has been made towards forming a US charitable corporation - *Friends of the CMS* - which will make donations to the CMS from the US more tax efficient. As well, active conversations are underway with several other

potential donors and foundations, that we hope will bear fruit early in 2008.

In addition to raising funds, the Advancement of Mathematics committee and the Executive committee both gave serious thought to other ways of expanding and strengthening the activities of the Society. One important task is to engage young mathematicians and students in the work of the CMS. Our ability to sustain our broad range of initiatives relies on continuing to attract the efforts and commitment of a high fraction of the country's mathematical scientists.

Challenges

As usual, the Executive Committee met four times in 2007; at the meetings of the Society, and again in April and October, at the Fields Institute. The CMS executive committee changed over mid-year. It was a pleasure working with Eddy Campbell, Jason Brown, Ram Murty, Ed Perkins, and Bruno Rémillard on the outgoing executive, and I would like to thank them all for their dedicated service to the society. We have an excellent new team in place, consisting of Tony Lau, Michael Bennett, Gordon MacDonald, Yvan Saint-Aubin, and Catherine Sulem. Graham Wright will be stepping down as Executive Director at the end of 2008, and a major challenge in 2007 was to find a suitable person to take over. I am very pleased that Joseph Khoury (currently chair of the Education committee) has agreed to do so.

The funding structure at NSERC is under review, and the mathematical community has struck a new Liaison committee to monitor that process on our behalf. Our President-Elect Tony Lau represents the CMS in that venue. Among the other initiatives the CMS is involved in, not mentioned elsewhere, is a new *CMS/Manitoba graduate fellowship* at the University of Manitoba. Budgetarily, 2007 was a difficult year, between exchange rates and the absence of PromoScience funding. But efforts are being made to improve matters for 2008, and every indication points to success on that front.

Thanks

The society is extremely grateful to its many partners, sponsors, supporters, and volunteers - including meeting organizers, editors, committee members, and the champions of our targeted activities. Special thanks go to the staff of the CMS Executive and TeX Offices, whose excellent work makes our programs possible. I must particularly thank Graham Wright for the support he provided the President through 2007.

RAPPORT DU PRÉSIDENT ET DU COMITÉ POUR L'AVANCEMENT DES MATHÉMATIQUES

President: Tom Salisbury (Université York)

Les mathématiques en 2007

La SMC s'attache à promouvoir tous les domaines des mathématiques au Canada, en recherche comme en éducation.

Nos Réunions scientifiques et nos publications sont essentielles à l'essor de la communauté mathématique canadienne. En tant qu'organisme national qui représente notre profession, la SMC se fait le porte-parole de la communauté mathématique auprès de l'industrie et des gouvernements. Nos camps et concours mathématiques renforcent l'enseignement des mathématiques dans tout le Canada, tout comme nos revues de résolution de problèmes. Ces activités et autres initiatives connexes visent à stimuler l'intérêt des jeunes pour les mathématiques. C'est là une préoccupation de plus en plus importante pour le Canada dans le contexte de l'économie du savoir. Notre programme de bourses du fonds de dotation permet la réalisation de projets mathématiques qui ne verraient pas le jour autrement. Nos prestigieux prix soulignent l'excellence en recherche et en enseignement. Nous maintenons les liens entre les membres de la communauté grâce à nos bulletins et à nos services électroniques, où nous diffusons des nouvelles, des annonces de congrès et des offres d'emplois. Notre capacité d'offrir une gamme si vaste d'activités est largement attribuable à l'engagement de la communauté et à la générosité de nos partenaires. La Société doit une fière chandelle à tous ses bénévoles et commanditaires pour leur engagement envers l'essor des mathématiques au Canada. La description détaillée des activités de cette année à la SMC, que vous lirez dans ce rapport annuel, témoigne de la vitalité de notre discipline et de l'énergie de nos membres.

Les mathématiques ont continué à faire les manchettes en 2007. Entre autres, certains mathématiciens essaient encore d'expliquer le groupe de Lie exceptionnel E_8 aux médias après l'annonce du calcul spectaculaire de ses polynômes de Kazhdan-Lusztig. Chez nous, la communauté mathématique a poursuivi sa planification de grands congrès, notamment le *Congrès de mathématiques Canada-France 2008* (Montréal) et le *Forum canadien sur l'enseignement des mathématiques 2009* (Vancouver), le deuxième congrès de la SMC en collaboration avec la Société mexicaine de mathématiques, ainsi que l'imposant *Congrès international de mathématiques appliquées et industrielles* de 2011. D'importants fonds publics ont été annoncés en mathématiques, notamment pour les trois grands instituts mathématiques canadiens. Les rapports du directeur administratif et du Comité de la recherche contiennent tous les détails des deux excellentes Réunions de la SMC tenues en 2007, l'une à Winnipeg en juin, l'autre à London en décembre. Ce sera avec grand plaisir que nous nous réunirons à Ottawa en décembre 2008 pour la prochaine Réunion d'hiver.

Prix

Par ses prestigieux prix (Coxeter-James, Jeffery-Williams, Krieger-Nelson, Doctorat), la SMC continue de souligner les contributions exceptionnelles à la recherche. Nos prix d'éducation (Adrien-Pouliot, Excellence en enseignement) attirent l'attention sur

la scène nationale vers cet aspect de notre profession. Vous trouverez tous les détails dans le rapport du Comité de la recherche et du Comité d'éducation. Le rapport du Comité des publications décrit pour sa part notre prix dans le domaine des publications (G. de B. Robinson).

En 2006, la SMC a inauguré le prix David-Borwein de mathématicien émérite pour l'ensemble d'une carrière. Ce prix est décerné aux deux ans, mais nous avons profité de la Réunion de la SMC 2007 à London pour remettre une reproduction de la magnifique statuette de bronze, à l'origine de ce prix, à David et Bessie Borwein.

Le Prix pour service méritoire 2007 a été remis en juin à notre directeur administratif, Graham Wright, avec nous depuis 1979. On ne saura jamais trop exagérer l'importance de son dévouement et de son leadership pour la SMC. C'était en fait la dernière fois que ce prix sera attribué sous ce nom, car depuis, le Conseil d'administration a décidé de renommer le prix « Prix Graham-Wright pour service méritoire ». Ces deux décisions ont été faciles à prendre. Le plus difficile aura été de ne rien dévoiler à Graham avant la réunion du conseil!

Les réalisations soulignées par les prix de la SMC sont véritablement hors du commun. Pour maintenir ce niveau élevé, nous avons toutefois besoin d'un riche bassin de nominations. Nous vous incitons à proposer la candidature de collègues méritants.

Avancement des mathématiques

La SMC a rehaussé d'un cran le niveau de ses activités de financement en 2006. Depuis, elle travaille très fort à élargir son bassin de donateurs particuliers et d'entreprises afin de recueillir le soutien qui rend possible un grand nombre des activités de la Société. Il s'agit d'un travail crucial en ce moment, compte tenu de la vulnérabilité de la SMC aux fluctuations du taux de change, le prix de nos revues étant établi en dollars américains. En 2006, la campagne de financement a été réalisée grâce au fonds de prévoyance de la SMC; en 2007, les dépenses ont toutefois été transférées au budget de fonctionnement général.

Nous progressons sûrement, mais lentement. Nous possédons maintenant du matériel promotionnel de qualité (un dépliant par exemple, dont la création a été initiée par David Rodgers) et, avec l'aide de Mark Bowman (coordonnateur du développement de la SMC en 2007), la SMC s'est fait connaître à un vaste public. Nous avons également resserré nos liens avec nos partenaires de longue date, notamment la Fondation Pétrolière Impériale et la Financière Sun Life. Depuis 2007, la Financière Sun Life est d'ailleurs commanditaire en titre de notre principal concours mathématique. Bon nombre de ministères de l'Éducation provinciaux appuient aussi nos activités éducatives. Nelson Educational Ltd. a en outre renouvelé son appui au Prix d'excellence en enseignement de la SMC. La Société a également créé le Fonds de voyage commémoratif Jiping (Jim) Liu, qui procurera aux étudiants aux cycles supérieurs une aide financière pour assister aux Réunions de la Société. Nous avons de plus créé une page web qui facilite la tâche des donateurs de la SMC. Nous avons aussi entrepris des démarches pour créer un organisme à but non lucratif aux États-Unis – *Friends of the CMS* – grâce auquel les donateurs américains auront droit à des avantages fiscaux. Nous avons également entrepris des

pourparlers avec plusieurs fondations et donateurs potentiels, que nous avons bon espoir de voir fructifier en 2008.

Outre ses activités de financement, le Comité pour l'avancement des mathématiques et le Comité exécutif ont réfléchi sérieusement à d'autres moyens d'étendre et de renforcer les activités de la Société. L'une de nos principales tâches consiste à inciter les jeunes mathématiciens et les étudiants à s'engager au sein de la SMC. Notre capacité de poursuivre ses nombreuses activités repose sur le travail et l'engagement d'une forte proportion des mathématiciens du pays.

Enjeux

Comme d'habitude, le Comité exécutif s'est réuni à quatre reprises en 2007, soit à l'occasion des deux Réunions de la Société ainsi qu'en avril et en octobre, à l'Institut Fields. Le Comité exécutif de la SMC s'est renouvelé en cours d'année. Ce fut un plaisir de travailler avec Eddy Campbell, Jason Brown, Ram Murty, Ed Perkins et Bruno Rémillard au sein de l'ancien comité, et j'aimerais les remercier chaleureusement de tout ce qu'ils ont fait pour la Société. La nouvelle équipe, aussi excellente, se compose de Tony Lau, Michael Bennett, Gordon MacDonald, Yvan Saint-Aubin et Catherine Sulem. Graham Wright quittera également son poste de directeur administratif à la fin de 2008. Nous avons travaillé fort en 2007 pour lui trouver un bon remplaçant. C'est avec grand plaisir que nous accueillerons Joseph Khoury (qui préside en ce moment le Comité d'éducation) à la direction de la Société.

Le CRSNG revoit en ce moment sa structure de financement, et la communauté mathématique a formé un nouveau comité de liaison pour suivre ce processus en notre nom. Notre président élu, Tony Lau, représente la SMC à ce comité. Entre autres initiatives auxquelles participe la SMC, mentionnons la création d'une Bourse d'études supérieures SMC-Manitoba à l'Université du Manitoba. L'année 2007 n'aura pas été facile du point de vue financier, en raison de la baisse du dollar américain et de l'absence du financement de PromoScience. Nous nous efforçons toutefois d'améliorer la situation en 2008, et tout nous porte à croire que nous y parviendrons.

Remerciements

La Société est extrêmement reconnaissante envers ses nombreux partenaires, commanditaires et bénévoles, notamment les organisateurs de congrès, rédacteurs, membres de comités et maîtres d'œuvre de nos activités ciblées. Je remercie tout spécialement le personnel du bureau administratif et du Centre de rédaction TEX de la SMC, dont le travail extraordinaire assure la continuité de nos programmes. Je dois remercier en particulier Graham Wright de son aide précieuse envers le président en 2007.

ELECTRONIC SERVICES COMMITTEE REPORT

Chair: Jacques Carette (McMaster)

The Electronic Services Committee (ESC) provides policy oversight for services provided by the Web Services Office (Ottawa) and Publications Office (Winnipeg).

In 2007, through a partnership with Google Inc., some of the CMS's intellectual property is now getting wider worldwide

exposure. The back catalog (1949--1996) of the CMB and CMJ are now available electronically, as well as being fully searchable, from scholar.google.com (with the 1997 to current issues on the CMS site, freely accessible except for the most recent 5 years available to subscribers).

While the current service offered by Google renders scans at a lower resolution than what the ESC would prefer, we are hopeful that this will improve over time. In parallel, Michael Doob has scanned in the back catalog of the CJM and will proceed with the CMB during 2008. The ESC believes that we can provide added-value to the research community by providing more services such as links to MathScieNet and (later) pointers to references, as well as providing much higher resolution electronic versions of CMS publications.

The CMS Web Services Office continues to provide significant (contract) services to the Statistical Society of Canada (SSC). Further to being a source of revenue to the CMS, some of this work will result in benefits to the Society (for example: e-commerce on the CMS site). As well, the on-line meeting registration system created for the SSC in 2007, has the potential to be adapted for future CMS meetings.

The CMS has added the ability to accept on-line donations to its web site. Various technical and staffing-related issues have led to a further delay in deploying the redesigned CMS website. However, significant infrastructure work has been completed towards this goal, and some content has already been reviewed and reorganized.

The Web Services Office continues to keep abreast of developments in software and electronic services, leading to the gradual replacement of home-grown software with either open-source or commercial software, as appropriate.

The CMS Publications Office continues to produce issues of CMS journals on time with few problems, as well as providing editorial and technical assistance to other CMS-supported publications.

Both offices are to be congratulated for their work, a job made especially challenging by the complexities and daunting number of tasks that need to be performed on a timely basis.

NOMINATING COMMITTEE REPORT

Chair: Edgar Goodaire (Memorial)

Most of the work of the Canadian Mathematical Society is carried out by more than 140 people who serve as members of the Board of Directors and thirteen standing committees.

In addition to being responsible for the 2007 election of officers and directors, the Nominating Committee also finds replacements annually for people whose terms expire during the year. The 2007 Elections went smoothly but, unfortunately, the number of members who voted was quite low.

By the end of 2007, we had found upwards of fifteen people, all volunteers, to replace members and/or chairs on eight committees. As well, it was necessary to replace one Board

member who moved into the position of Vice-President for the Western Provinces when it became necessary for the person previously holding this position to resign.

There is an enormous amount of energy and talent within the Canadian mathematical community. What can be difficult for the Nominating Committee is discovering individuals who are willing to lend their expertise to the Society in some capacity or other, especially individuals who have not served before. Given the major turnover in mathematics faculty across the country in the last few years, it is important to involve "new people" and, given the changing gender balance in graduate schools and faculties across the country, it is also important to recruit more women to fill positions. The Committee made a concerted effort to enlist the support of business and other professional people from outside academia because of the special expertise and fresh view points such individuals can provide. The Society is grateful for the contributions to the Board of Directors and committees such as Electronic Services and Finance, of people like David Bates, David Oakden, Klaus Peters, David Rodgers and Walter Stewart.

If any reader of this report knows of anyone within or outside academic circles whom you believe could help the Society, or if you yourself can see an opportunity for service, please contact chair-nomc@cms.math.ca.

It remains only to thank my colleagues on the 2007 Nominating Committee for their outstanding support and advice throughout the year: Eddy Campbell, Jacques Hurtubise, Lisa Jeffrey, Michael Lamoureux, Anthony Lau, Thomas Salisbury and Keith Taylor.

PUBLICATIONS COMMITTEE REPORT

Chair: Juris Steprans (York)

The Publications Committee oversees many of the activities of the CMS that have a bearing on the Society's publications. Editorial board appointments are among the committee's chief concerns.

The editorial duties of the CJM are handled by Robert McCann and Henry Kim of the University of Toronto who are beginning the second year of their term. The CMB Editors-in-Chief, Nantel Bergeron and Jianhong Wu of York University, are beginning the third year of their term. The list of associate editors was not changed in 2007, there having been no nominations in response to the call for associate editors. However, only the term of Walter Craig ended in 2007 and his areas of expertise overlap sufficiently with continuing editorial board appointments that this is not provide reason for immediate concern. However, the Publications Committee will have to focus on finding new associate editors in 2008.

The ad hoc Electronic Submissions Sub-committee of the Publications Committee, formed at the Calgary meeting and headed by David Rodgers, arrived at a decision on the software to be used in processing, refereeing and tracking articles submitted to the CJM or CMB. Robert McCann and Nantel Bergeron produced a report comparing various systems and explaining why they had agreed that *Editorial Express* is most

appropriate for the needs of the CMS. The editors are in the early stages of implementing this system.

Jim Totten's term as Editor-in-Chief of CRUX with MAYHEM will end in 2008 and Vaclav Linek of the University of Winnipeg had been appointed to replace him. There will be a six-month transition period during which Jim and Vaclav will work together. The other CRUX with MAYHEM appointments approved by the Publications Committee are:

- Ian VanderBurgh – Mayhem Editor from 01/01/2008 to 31/12/2012.
- Jeff Hooper – Associate Editor from 01/01/2008 to 31/12/2012
- James Currie - Articles Editor from 01/01/2008 to 31/12/2012
- John Grant McLoughlin - Books Editor from 01/01/2008 to 31/12/2008
- Amar Sodhi - Books Editor from 01/01/2009 to 31/12/2013.

Volume VII of the A Taste of Mathematics (ATOM) Series, *Problems of the Week* by Jim Totten, was published in 2007. The ATOM Series Editor-in-Chief, Bruce Shawyer, reports that there is some progress in the joint publication with the MAA on the Canadian Klamkin Collection.

The CMS–Springer book series published the following books in 2007:

- *Biorthogonal Systems in Banach Spaces*. by P. Hajek, V. Montesion, J. Vanderwerff, and V. Zizler, and
- *The Riemann Hypothesis: A resource for the Afficiando and Virtuoso alike*. by P. Borwein, S. Choi, B. Rooney, and A. Weirathmueller,

Three more books are under contract.

The CMS *Treatises in Mathematics Series* with A K Peters published *Summa Summarum* by Mogens E. Larsen. Two more books in this series are expected to appear next year.

According to the established tradition of alternating between the Bulletin and the Journal, the G. de B. Robinson Prize in 2007 was awarded for the best article (or series of articles) in the CMB in 2005 or 2006. The prize was awarded to Ronald van Luijk for his article *A K3 Surface Associated With Certain Integral Matrices Having Integral Eigenvalues* which appeared in Volume 49, pages 560-577, of the CMB.

The Technical Editor, Craig Platt, has provided regular reports on the backlogs of the CJM and CMB. High quality electronic versions of the scanned CMS journals are now available to the Winnipeg technical office. Work has also started on registering the DOI (Digital Object Identifier) of all CMS journal articles

RESEARCH COMMITTEE REPORT

Chair: J.F. (Rick) Jardine (Western)

The Research Committee oversees the organization of the scientific programs of the Summer and Winter meetings, and selects the recipients of the Jeffery-Williams, Krieger-Nelson and Coxeter-James Prizes. The Committee also participates, to

a lesser extent, in the organization of other special meetings of the CMS.

A sub-committee of the Research Committee participates in selecting the recipient of the Doctoral Prize. The members of the Doctoral Prize Selection Committee are selected by the Research Committee. The members of this committee during 2007 were Izabella Laba (UBC), Bruce Reed (McGill) (Chair), Ram Murty (Queen's), and Ian Putnam (Victoria).

At its meeting in December, 2007, the Research Committee selected Stephen Kudla (Toronto) for the 2009 Jeffery-Williams Prize, Yael Karshon (Toronto) for the 2009 Krieger-Nelson Prize, and Ravi Vakil (Stanford) for the 2008 Coxeter-James Prize.

A summary of the meetings held in 2007 follows.

1) CMS-MITACS Joint Conference, Winnipeg, May 31 - June 3, 2007

Meeting Directors: Don Dawson (Carleton), Fereidoun Ghahramani (Manitoba)
Local Arrangements Chair: Abba Gumel (Manitoba)
There were 450 participants.

Plenary Speakers:

John Baldwin (Illinois/Chicago)
Kristin Bennett (Rensselaer Polytechnic)
Richard Cleve (Waterloo)
Richard Kenyon (UBC)
Charles Read (Leeds)
Arnold Rosenberg (Massachusetts/Amherst)
Dror Varolin (Stony Brook)

The Jeffery-Williams Lecture was given by Nassif Ghoussoub (UBC), and the Krieger-Nelson Lecture was given by Pauline van den Driessche (Victoria).

Sessions, with Organizers:

Algebraic Varieties with Group Actions, Jaydeep Chipalkatti (Manitoba)
Banach Algebras and Abstract Harmonic Analysis, Yong Zhang (Manitoba)
Complex Function Theory, Ian Graham (Toronto) and Eric Schippers (Manitoba)
Computer Algebra and Computer Algebra Systems, Michael Monagan (SFU)
Finite Combinatorics, Robert Craigen and David Gunderson (Manitoba)
Mathematical Algorithms for Medical Imaging, Sima Noghmanian (Manitoba)
Mathematical Biology, Gerda de Vries (Alberta), Frithjof Lutscher (Ottawa)
Mathematical/Computational Finance, Ruppa K. Thulasiram (Manitoba)
Mathematical Immunology, Beni Sahai (Caham Provincial Laboratory), Robert Smith (Ottawa)
Mathematical Physics, Richard Froese (UBC), Tom Osborn (Manitoba)
Mathematics Education, Abba Gumel (Manitoba), Randall Pyke (SFU)
Mathematics of Infectious Diseases, Abba Gumel

(Manitoba)
Model Theory and its Applications, Bradd Hart (McMaster), Thomas Kucera (Manitoba), Rahim Moosa (Waterloo)
Network Algorithms, Evangelos Kranakis (Carleton)
Nonlinear Methods in Computational Mathematics, Kirill Kopotun (Manitoba)
Quantum Information Theory, Richard Cleve (Waterloo)
Representations of Finite and Algebraic Groups, Gerald Cliff (Alberta), Anna Stokke (Winnipeg)
Resource Allocation Optimization, Binay Bhattacharya and Abraham Punnen (SFU)
Statistical Learning, Yoshua Bengio (Montreal)

2) CMS Winter 2007 Meeting

Meeting Director: Rick Jardine (Western)
Local Arrangements Chair: David Riley (Western)
There were 410 participants.

Plenary Speakers:

Marcelo C. Borba (UNESP-Sao Paulo State University)
Erich Kalfoten (North Carolina State)
Mikhail Kapranov (Yale)
Giovanni Landi (Trieste)
Blaine Lawson (SUNY/Stony Brook)
Seth Lloyd (MIT)
Otmar Venjakob (Heidelberg)

The Coxeter-James Lecture was given by Vinayak Vatsal (UBC), and the Doctoral Prize Lecture was given by Lap Chi Yau (Chinese Univ. of Hong Kong).

Sessions, with Organizers:

Algebraic Combinatorics, Representations and Geometry, Lex Renner (Western), Benjamin Steinberg (Carleton)
Algebraic Stacks, Ajneet Dhillon (Western)
Algorithmic Challenges in Polynomial and Linear Algebra, Stephen Watt (Western)
Calculus of Variations in Physics, Geometry and Economics, Robert McCann and Benjamin Stephens (Toronto)
Combinatorics and its Applications to Mathematical Physics, Michael Gekhtman (Notre Dame), Michael Shapiro (Michigan State)
Complex Analytic Geometry, Tatyana Foth (Western), Finnur Larusson (Adelaide), Rasul Shafikov (Western)
Error Control Codes, Information Theory and Applied Cryptography, Aiden Bruen (Calgary), David Wehlau (Queens; RMC)
Graph Theory, Sebastian Cioaba (UC/San Diego), Stephen Kirkland (Regina), Claude Tardif (RMC)
History and Philosophy of Mathematics, Tom Archibald (SFU), Deborah Kent (Hillsdale College)
Homotopy Theory, Kristine Bauer (Calgary)
Iwasawa Theory, Manfred Kolster and Romyar Sharifi (McMaster)
Mathematical Imagination, George Gadanidis (Western)
Mathematics of Finance, Matt Davison, Rogemar Mamon and Mark Reesor (Western)
Non-Commutative Geometry, Masoud Khalkhali (Western)
Nonlinear Wave Equations and Applications, Walter Craig (McMaster), Catherine Sulem (Toronto)
Quantum Information Theory in Quantum Gravity, David

Kribs (Guelph), Fotini Markopoulou (Perimeter Institute)
Contributed Papers, Tatyana Foth (Western)

STUDENT COMMITTEE REPORT

Co-Chairs: Joy Abramson (York) and Antoine Khalil (Concordia) to June 30 and Jenna Tichon (Winnipeg) from July 1

2007 has been a year of great growth for the Student Committee (also known as Studc) with many new members who have brought fresh ideas and projects. We have continued to develop and expand our ongoing projects from previous years as well as create new visions for the Studc. Our main focus continues to be fostering student participation in the greater mathematical community and encouraging students to get involved and contribute early in their career.

Change of Membership

We would like to thank the members whose term has ended over the past year for their contributions to Studc: Al Erickson, Sandra Gregov, and Marcus Barnes. We also welcome our five new members this year: Riyaad Dinath, Iva Halcheva, Olivier Lafleur, Kathryn Mann, and Graham Robertson. You can read about each of them on the newly updated biographies page on our website.

Student Newsletter

The main way the Studc gets our information out to mathematics students and encourages them to engage in our activities is through our semi-annual newsletter "The Student Mathematical Communicator". With the expansion to a 2-page double-sided format, there is a wide variety of activities and material for students to read including information on conferences, book reviews, articles on noteworthy events in the math community, and mathematical diversions and humour. The newsletter is distributed across Canada to all university mathematics departments. Apart from improving content, we have also improved the layout and the newsletter is now more attractive than ever. We plan in 2008 to continue to expand the newsletter and encourage submissions from students outside of the Studc.

CMS Meetings

Following up on our success from 2006 in improving student programming at CMS meetings, the Studc has continued to organize talks and social activities for students attending these meetings. At the summer 2007 meeting in Winnipeg, the committee invited a guest speaker, Nick Pizzi, to give a lecture over the lunch hour about the National Research Council and projects that include the work of mathematicians. In collaboration with the MITACS Student Advisory Committee, a student banquet was held at a local restaurant that included dinner and prizes and was extremely well attended with students from both MITACS and the CMS. For the winter 2007 meeting, the Studc organized a panel discussion for students featuring three professors and a post-doctoral student discussing how to manage the demands and workload of graduate life. Students seemed to particularly enjoy the interactive format and we are considering hosting more panel discussions in the future. The student social was held at a local pub with a large number of students attending. For 2008, we plan to increase the attendance at these events by continuing to include tickets and flyers in the registration packets for students. We look forward

to once again jointly planning events with the MITACS Student Advisory Council for the summer 2008 meeting.

Studc Web Site

During the past year, the website has been updated with a great deal of information that is relevant to math students across the country. For students who missed the newsletter, the website features an electronic copy and several back issues. With the help of our webmaster and Quebec representative, the committee is very proud to now have our portion of the CMS website fully translated into both French and English. In addition to updated biographies of all Studc members, the website now has an alumni page with information on past members as a way to recognize them for all of their contributions. We encourage you to visit the site at: www.cms.math.ca/Students. If you have any comments or suggestions for our website, please contact the webmaster at student-webmaster@cms.math.ca.

Student Email Lists

The Studc webmaster moderates listservs that distribute announcements to math students across the country. There are separate lists for graduate and undergraduate students. There are currently 166 members of the graduate list and 241 members of the undergraduate list. This list continues to be helpful in circulating important announcements to students about a variety of topics including research opportunities, scholarships and summer schools. We are working to increase the frequency of postings to this list.

Canadian Undergraduate Mathematics Conference

CUMC 2007, the 14th annual Canadian Undergraduate Mathematics Conference, was held at Simon Fraser University from July 18 to July 21. The conference was a great success with dozens of talks by students and many great plenary speakers. Being held in Western Canada resulted in the greatest range of universities represented in recent years. The Studc, on behalf of the CMS, once again gave \$1,000 towards the conference and sent a representative to talk to the students about the CMS and our activities. The University of Toronto is currently preparing to host CUMC 2008 which will be held July 16th to 19th. For more details, see www.cumc.math.ca.

As a project for 2008, we will be producing a commemorative plaque for host universities to display in appreciation for their work. We will also create a collection of framed posters from past conferences that can be displayed at CMS events and future CUMCs.

MITACS Liaison

With the joint summer meeting in Winnipeg between the CMS and MITACS, the role of MITACS liaison has taken on even greater importance in coordinating student programming at the joint meetings. Both of our committees share many common goals in fostering participation in the student mathematical community and our continued communication and joint activities is very important to both groups. Our liaison is a member of both committees and reports back and forth to find opportunities for collaboration and make sure that all students are aware of pertinent information from both sides. This summer at the second joint meeting the liaison will play a vital role in

executing the student programming and ensuring success as we integrate the needs of both organizations in the planning.

Studec Poster

Our Studec poster has now been printed and sent to universities across the country to display to promote both our committee and the CMS in general. It displays information about our services as well as our webpage and listservs. The poster has both a French and English version. In the future we will be making a large permanent poster that can be displayed for promotional purposes at CMS meetings as well as at the CUMC.

Attending A Conference Brochure

This past year, the Studec has developed a brochure for students with helpful advice for those who are attending their first conferences. The brochure is fully bilingual, with graphics designed by a committee member. The brochure is available through our website but we will also be including it for conference kits for participants at the CUMC and student participants at the CMS meetings.

TREASURER'S REPORT

David L. Rodgers, CMS Treasurer

In September 2007, the projected deficit in the Operations Fund for 2007 was \$158,099. Through a combination of reduced projected expenses and increased projected revenues, the audited 2007 statement shows a deficit of \$129,674. Most of the 2007 deficit is due to an unanticipated mid-year increase in non-North American postage rates, the dramatically weakened US dollar, and the inability to achieve 2007 fund-raising goals.

For 2008, the following adjustments have been made:

- The Board of Directors, at the December 2007 meeting, approved a supplemental increase in 2008 subscription rates to bring them to an overall 6.6% to cover increased production and postage costs
- Render financially neutral a decision to add pages to the *Journal* by making a slight change to the page size.
- Redouble efforts to approach CMS members, and subscribers for the *Journal* and *Bulletin*, who have not renewed for 2008, and to grow the subscription base for *CRUX with MAYHEM*.
- Eliminate all foreign exchange revenue (~\$75K/year) from the 2008 budget.
- Reduce the fund-raising goal to \$100K in new money and take the fundraising function in-house to reduce significantly the associated fund-raising expenses.
- Institute a formal quarterly review of key financial indicators benchmarked against 2007 results

At the June, 2008, Board of Directors Meeting, the Finance Committee is expected to recommend changes to CMS Meetings in the areas of speaker support and registration fees that will reduce the level of Society subsidy required for meetings beginning with the winter 2008 meeting.

In addition, for 2008, the CMS has **already** received the following commitments¹ that grow out of 2007 fund-raising

initiatives:

- Sun Financial: \$30K (renewal of \$15K → \$30K increase for 2007)
- NSERC PromoScience CMS Math Camps: \$25K/year (3 years)
- Crabtree Foundation: \$25K/year (3 years)
- TD Financial Group: \$10K/year (3 years)
- RBC Foundation: \$10K
- Provincial Governments: \$13,500 (slightly up from 2007)

The state of global markets presents ongoing challenges to fund-raising initiatives by any non-profit organization. Nevertheless, fund-raising materials have been re-written for 2008 goals and contacts with prospective donors are underway.

At their December 2007 meeting, the Board of Directors took the unusual action of approving a deficit budget for 2008, largely the result of *one-time* costs associated with the Executive Director transition from Graham Wright to Joseph Khoury. Every effort will be made to reduce the projected 2008 deficit as much as possible.

¹**Friends of the Canadian Mathematical Society (FCMS)** was incorporated in 2007 to support the CMS mission and its application for 501(c)3 status is under review by the US Internal Revenue Service. Once certification is approved, FCMS is positioned to accept donations tax-advantaged to US citizens and corporations.

RAPPORT DU TRÉSORIER

David L. Rodgers, trésorier

En septembre 2007, le déficit prévu au budget de fonctionnement pour l'année en cours s'élevait à 158 099 \$. En réduisant certaines dépenses et grâce à une augmentation des recettes, nous terminons l'année avec un déficit de 129 674 \$. La majeure partie de ce déficit est due à une augmentation imprévue en cours d'année des tarifs postaux à l'extérieur du continent nord-américain, à la chute vertigineuse du dollar américain et à l'impossibilité d'atteindre les objectifs de financement de 2007.

En 2008, nous avons procédé aux changements suivants :

- En décembre 2007, le Conseil d'administration a approuvé une hausse supplémentaire des tarifs d'abonnement 2008 – augmentation totale de 6,6 % – afin de compenser la hausse du coût de production et d'expédition.
- Nous avons ajouté des pages au *Journal* sans toutefois en augmenter le coût en modifiant légèrement les dimensions de la publication.
- Nous avons redoublé d'efforts pour convaincre les membres de la SMC et les abonnés du *Journal* et du *Bulletin* qui n'avaient pas renouvelé en 2008 de le faire, et pour augmenter le nombre d'abonnés du *CRUX with MAYHEM*.
- Nous avons éliminé tout revenu associé au taux de change (~ 75 000 \$/an) du budget 2008.
- Nous avons réduit l'objectif de la campagne de financement à 100 000 \$ de nouvelles contributions et ramené le travail de financement à l'interne afin de réduire considérablement les dépenses à ce poste.

- Nous avons mis en place un examen trimestriel formel des principaux indicateurs financiers pour les comparer aux résultats de 2007.

À la réunion de juin 2008 du Conseil d'administration, le Comité des finances devrait recommander des changements aux Réunions de la SMC (notamment par rapport aux subventions accordées aux conférenciers et aux droits d'inscription) qui réduiront la contribution de la SMC à ces rencontres semestrielles à compter de la Réunion d'hiver 2008.

Aussi pour 2008, la SMC a **déjà** obtenu les engagements financiers suivants, qui découlent des activités de financement de 2007 :

- Financière Sun Life : 30 000 \$ (renouvellement de 15 000 \$ → hausse de 30 000 \$ pour 2007)
- Camps PromoScience CRSNG/SMC : 25 000 \$/année (3 ans)
- Fondation Crabtree : 25 000 \$/année (3 ans)
- Groupe financier TD : 10 000 \$/année (3 ans)
- Fondation RBC : 10 000 \$
- Gouvernements provinciaux : 13 500 \$ (légère hausse par rapport à 2007)

La situation des marchés mondiaux constitue un enjeu continu pour le financement de tout organisme sans but lucratif. Nous avons néanmoins refait tout notre matériel promotionnel dans l'espoir d'atteindre nos objectifs de 2008, et nous établissons des contacts avec des donateurs potentiels.

Exceptionnellement, à sa réunion de décembre 2007, le Conseil d'administration a adopté un budget déficitaire pour 2008, en grande partie en raison du coût *non récurrent* associé à la transition de Graham Wright à Joseph Khoury au poste de directeur administratif. Tous les efforts seront déployés pour finir avec le plus petit déficit possible en 2008.

¹La SMC a créé l'organisme de charité **Friends of the Canadian Mathematical Society (FCMS)** en 2007 pour soutenir sa mission, et sa demande en vertu de l'article 501(c)3 est à l'étude au US Internal Revenue Service. Une fois cette demande approuvée, l'organisme pourra accepter des dons d'entreprises et de citoyens américains donnant droit à des avantages fiscaux.

WOMEN IN MATHEMATICS COMMITTEE REPORT

Chair: Gerda de Vries (Alberta)

The Committee on Women in Mathematics is charged with monitoring the status of women within the Canadian mathematical community, recommending actions that will help to ensure equitable treatment of women in the community, and encouraging the participation of women in mathematics at all levels.

Currently, the Committee is working with the CMS Executive Committee to establish guidelines for the purpose of increasing gender diversity among speakers (plenary and public speakers in particular) at CMS meetings.

In addition, the Committee is starting to make plans to host the fourth edition of the "Connecting Women in Mathematics Across Canada (CWIMAC)" workshop at the end of 2008. This workshop brings together women in mathematics from many different levels (undergraduate and graduate students, postdoctoral fellows, and women in junior and senior faculty positions), with the aim of supporting women in the early stages of their career in the mathematical sciences.

CAMBRIDGE

Forthcoming and Recent Titles in Mathematics

Symmetry Studies

An Introduction to the Analysis of Structured Data in Applications

Marlos A. G. Viana

Cambridge Series in Statistical and Probabilistic Mathematics

\$62.95: Hb: 978-0-521-84103-0: 248 pp.

Forthcoming!

Numerical Solution of Hyperbolic Partial Differential Equations

John A. Trangenstein

\$83.95: Hb: 978-0-521-87727-5: 616 pp.

NEW!

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C++ Design Patterns and Derivatives Pricing

Mark S. Joshi

Mathematics, Finance and Risk

\$62.95: Pb: 978-0-521-72162-2: 296 pp.

NEW!

Second Edition!

A Primer of Infinitesimal Analysis

John L. Bell

\$62.95: Hb: 978-0-521-88718-2: 140 pp.

Second Edition!

Multimedia Fluid Mechanics

Edited by G.M. Homsy

\$26.95: DVD ROM: 978-0-521-72169-1

Second Edition!

A First Course in Fourier Analysis

David W. Kammler

\$166.95: Hb: 978-0-521-88340-5

\$83.95: Pb: 978-0-521-70979-8: 864 pp.

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G.H. Hardy, Foreword by T.W. Körner

Cambridge Mathematical Library

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Exact and Approximate Controllability for Distributed Parameter Systems A Numerical Approach

Roland Glowinski, Jacques-Louis Lions, and Jiwen He

Encyclopedia of Mathematics and its Applications

\$146.95: Hb: 978-0-521-88572-0: 470 pp.

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William T. Vetterling, and Brian P. Flannery

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\$83.95: CD-ROM Source Code: 978-0-521-70685-8

\$146.95: Hb/CD-ROM: 978-0-521-88407-5: 1,256 pp.

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Appel de sessions – Réunion d'été 2009 de la SMC Call for Sessions – CMS Summer 2009 Meeting

Additional self-supported sessions play an important role in the success of our meetings. We welcome and invite proposals for self-supported sessions for this meeting, taking place in early June 2009 in St. John's, Newfoundland. Proposals should include a brief description of the focus and purpose of the session, the expected number of the talks, as well as the organizer's name, complete address, telephone number, e-mail address, etc. These additional sessions will be incorporated with the other sessions in time blocks allocated by the Meeting Director. All sessions will be advertised in the CMS NOTES, on the web sites and, if possible, in the Notices of the AMS and in publications of other societies. Speakers in these additional sessions will be requested to submit abstracts which will be published on the web site and in the meeting programme. Those wishing to organize a session should send a proposal to the Meeting Director by the deadline below.

Les sessions complémentaires autonomes jouent un rôle important dans le succès de nos réunions. Nous vous invitons à proposer des sessions autonomes pour ce congrès qui se tiendra à St. John's (Terre Neuve) au début de juin 2009. Votre proposition doit inclure une brève description de l'orientation et des objectifs de la session, le nombre de communications prévues et leur durée, ainsi que le nom, l'adresse complète, le numéro de téléphone, l'adresse courriel et les autres coordonnées de l'organisateur. Ces sessions complémentaires seront intégrées aux autres sessions du programme, dans des cases horaires prévues à cet effet par le directeur de la Réunion. Toutes les sessions seront annoncées dans les Notes de la SMC, sur le site Web et, si possible, dans les Notices de l'AMS et les publications d'autres sociétés. Les conférenciers de ces sessions complémentaires devront présenter un résumé qui sera publié sur le site Web et dans le programme de la Réunion. Toute personne qui souhaiterait organiser une session est priée de faire parvenir une proposition au directeur de la Réunion avant la date limite indiquée ci-dessous.

**Deadline: March 31, 2008
Date limite : 31 mars 2008**

The following invited (partially funded) sessions have been confirmed for this conference:

Les sessions suivantes (partiellement subventionnées) ont été confirmées :

Combinatorial Designs and Related Topics Designs combinatoires et sujets connexes

Org: Vaclav Linek (Winnipeg), Nabil Shalaby (Memorial)

Geometric Harmonic Analysis and Partial Differential Equations

Analyse harmonique géométrique et équations aux dérivées partielles

Org: Jie Xiao (Memorial)

Groups and Hopf Algebras Groupes et algèbres de Hopf

Org: Yuri Bahturin, Mikhail Katchetov (Memorial), David Radford (Illinois), Earl Taft (Rutgers)

Mathematical Physics La physique mathématique

Org: Marco Merkli, Chris Radford (Memorial)

Nonlinear Dynamics and Applications La dynamique non linéaire et ses applications

Org: Gail Wolkowicz (McMaster), Yuan Yuan, Xiaoqiang Zhao (Memorial)

Reaction-Diffusion Systems and Their Applications Les systèmes de réaction-diffusion et leurs applications

Org: David Iron, Theodore Kolokolnikov (Dalhousie), Chunhua Ou (Memorial)

Meeting Director / Directeur de la Réunion
David A. Pike
Department of Mathematics and Statistics
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1C 5S7
dapike@math.mun.ca

Call for Manuscripts – ATOM A Taste of Mathematics

The booklets in the series, ATOM, are designed as enrichment materials for high school students with an interest in and aptitude for mathematics. Some booklets in the series will also cover the materials useful for mathematical competitions.

So far, seven volumes have been published - Volume I, Problems from the Olympiad Correspondence Program; Volume II, Algebra - Intermediate Methods; Volume III, Inequalities; Volume IV, Problems for Mathematics Leagues; Volume V, Combinatorial Explorations; Volume VI, Problems for Mathematics Leagues, II; and Volume VII, Problems of the Week. There are two manuscripts under active consideration on Problems for Mathematics Leagues, III, and Homework, the CAUT Problems.

The Editorial Board is interested in receiving proposals for future volumes, either as a specific proposal or as a manuscript. Submitters should note that the booklets are relatively short, not exceeding 64 pages in length. So far we have published only in English because of perceived sales demand.

All proposals and manuscripts should be sent to the

Bruce Shawyer, Editor-in-Chief / Rédacteur en chef

Department of Mathematics | Memorial University of Newfoundland | St. John's, NF | Canada A1C 5S7
email atom@cms.math.ca / par courriel à atom@smc.math.ca.

Demande de manuscrits - ATOM Aime-T-On les Mathématiques

Les Livrets de la collection ATOM sont destinés au perfectionnement des étudiants du secondaire qui manifestent un intérêt et des aptitudes pour les mathématiques. Certains livrets de la collection ATOM servent également de matériel de préparation aux concours de mathématiques sur l'échiquier national et international.

À ce jour, sept tomes ont été publiés - tome I, Problems from the Olympiad Correspondence Program; tome II, Algebra - Intermediate Methods; tome III, Inequalities; tome IV, Problems for Mathematics Leagues; tome V, Combinatorial Explorations; tome VI, Problems for Mathematics Leagues, II; tome VII, Problems of the Week. Deux manuscrits sont en outre à l'étude, l'un sur la théorie des nombres, l'autre sur la trigonométrie (Problems for Mathematics Leagues, III et Homework, the CAUT Problems).

Le Conseil de rédaction sollicite vos propositions pour des livrets à venir, sous la forme d'une proposition détaillée ou d'un manuscrit. Mentionnons que les livrets sont des publications courtes (64 pages maximum). Nous ne les avons publiés qu'en anglais jusqu'à présent en raison de la demande estimée.

Faites parvenir vos propositions ou manuscrits au

CALL FOR PROPOSALS - 2008 ENDOWMENT GRANTS COMPETITION

The Canadian Mathematical Society is pleased to announce the 2008 Endowment Grants Competition to fund projects that contribute to the broader good of the mathematical community. The Endowment Fund is used to fund such projects and the Endowment Grants Committee (EGC) administers the distribution of the grants and adjudicates proposals for projects. Depending on the performance of the CMS Endowment Fund, the funds available for this year's competition may be less than past years. Proposals must address the goal and statement of purpose of the Canadian Mathematical Society.

The goal of the Canadian Mathematical Society is to support the promotion and advancement of the discovery, learning, and application of mathematics. The CMS Statement of Purpose is:

- To unify and support Canadian mathematicians through effective communication, broad membership, sponsorship of diverse activities, and partnerships with like professional societies.
- To support mathematics research through the communication of current research to both the specialist and non-specialist, public recognition of research accomplishments and collaboration with the research institutes and granting agencies.
- To support the advancement of mathematics education through joint projects with mathematics educators at all levels, promotion of educational advancements, and partnerships with provincial ministries of education and organizations supporting mathematics education.
- To champion mathematics through initiatives that explain, promote and increase the general understanding of mathematics, provide extra-curricular opportunities for students, and encourage partnerships with corporate, government and not-for-profit agencies.

An applicant may be involved in only one proposal per competition as a principal applicant. Proposals must come from CMS members, or, if joint, at least one principal applicant must be a CMS member.

The EGC will consider funding proposals for a maximum of three years. However, multi-year proposals must be funded from the funds available to the EGC in the year of application. The EGC will consider funding proposals to a maximum of \$5,000 per year.

The EGC committee tends to favour proposals where CMS funds can be leveraged or where proposals have no other natural funding body to which to apply.

If it is anticipated that a proposal will generate something of lasting financial value, proposers must indicate that this is the case and declare their intent with respect to that value.

Application process. Application forms and templates as well as advice and directions are available at the CMS website www.cms.math.ca/Grants/EGC. Proposals must be received no later than September 30, 2008.

The Chair of the Endowment Grants Committee invites emails expressing interest in the grant as soon as possible

La Société mathématique du Canada (SMC) est heureuse d'annoncer la tenue du Concours de bourses du fond de dotation 2008 pour le financement d'activités qui contribuent à l'essor global de la communauté mathématique. Le Comité d'attribution des bourses du fonds de dotation (CABFD) se charge d'évaluer les propositions et d'attribuer les bourses. Selon le rendement du Fonds de dotation de la SMC, le financement disponible pour le concours de cette année pourrait être inférieur à celui des années précédentes. Les propositions doivent être conformes à l'objectif et à l'énoncé d'intention de la SMC.

La Société mathématique du Canada s'est donnée pour objectif de promouvoir et de favoriser la découverte et l'apprentissage des mathématiques, et les applications qui en découlent. Son énoncé d'intention est le suivant :

- 1. Regrouper et appuyer les mathématiciens canadiens en favorisant la communication et l'adhésion à grande échelle, en commanditant diverses activités et en établissant des partenariats avec des associations professionnelles semblables à la nôtre.
- Encourager la recherche mathématique en diffusant les résultats de recherches en cours aux spécialistes et aux non-spécialistes, en faisant reconnaître publiquement les travaux de chercheurs et en collaborant avec les instituts de recherche et les organismes subventionnaires.
- Favoriser l'apprentissage des mathématiques en réalisant des projets avec des professeurs de mathématiques de tous les niveaux, en faisant connaître les progrès dans l'enseignement et en établissant des partenariats avec les ministères de l'éducation provinciaux et les organismes voués à l'apprentissage des mathématiques.
- Défendre les mathématiques en créant des initiatives visant à expliquer, à promouvoir et à mieux faire connaître la discipline, en organisant des activités parascolaires et en encourageant les partenariats avec les sociétés privées, les gouvernements et les organismes à but non lucratif.
- Un demandeur ne peut présenter qu'une proposition par concours en tant que demandeur principal. Les propositions doivent venir de membres de la SMC. S'il s'agit d'un projet conjoint, au moins un des demandeurs principaux doit être membre de la SMC.

Le CABFD évaluera les projets qui s'étalent sur un maximum de trois ans. Les projets s'échelonnant sur plusieurs années seront toutefois financés en fonction des fonds dont disposera le Comité l'année de la demande. Le Comité se limitera aux propositions dont le financement demandé n'excède pas 5 000 \$ par année.

De façon générale, le CABFD favorise les propositions où les fonds de la SMC peuvent être équilibrés ou les propositions qui ne disposent d'aucun organisme de financement naturel où postuler. Si les demandeurs prévoient tirer une valeur financière durable du projet, ils doivent l'indiquer et expliquer leur intention envers cette valeur.

Processus de demande. Le formulaire de demande et gabarits, ainsi que conseils et instructions sont disponible au site de la SMC www.smc.math.ca/Grants/EGC/.f. Les applications doivent être reçues au plus tard le 30 septembre 2008.

Le président du comité invite les courriels décrivant votre intérêt au fond dès que possible.

Dr. Karl Dilcher

Chair, Endowment Grants Committee | Canadian Mathematical Society | 577 King Edward | Ottawa, ON | K1N 6N5
chair-egc@cms.math.ca

CANADIAN MATHEMATICAL SOCIETY / SOCIÉTÉ MATHÉMATIQUE DU CANADA

Victoria Room, Delta Hotel, Winnipeg, Manitoba, Friday June 1, 2007.

The meeting opened at 12:35 p.m. with 33 members in attendance.

1. Adoption of the agenda.

The agenda was accepted as circulated.

2. Minutes of the previous meeting.

G-07-1 MOTION (Hyndman/Dilcher)

That the minutes of the previous Annual General Meeting, held on June 4, 2006 be accepted. *Carried Unanimously*

3. Matters Arising.

There were no matters arising which would not be covered in the committee reports.

4. President's Report.

Salisbury reported that the next Canadian Mathematics Education Forum will be held in 2009 in Vancouver, with assistance from PIMS. The co-chairs for this forum are France Caron (Montréal), Peter Taylor (Queen's) and Malgorzata Dubiel (SFU).

The mathematics Institutes have had site reviews for renewed NSERC funding under the MRS program.

The CMS supported the applications. All three Institutes have received substantially increased funding.

NSERC is currently reviewing the GSC structure with a view to possible changes. Questions which impact upon the mathematics community include the role of interdisciplinary research, minimum grant sizes, and how to deal with increases in the number of applicants. In the latest competition, the funding for a typical grant renewal was reduced by about 15% in order to provide funding for new applicants.

A new NSERC Liaison Committee has been formed under the leadership of the mathematics GSC Chairs. The CMS President-Elect, Anthony Lau (Alberta), has agreed to be the CMS representative to the Liaison Committee.

Last year a cooperation agreement with the Sociedad Matemática Mexicana (SMM) was signed and a first joint meeting was held in Guanajuato, Mexico. The Mexican IMO team will be training together with the Canadian IMO team at BIRS prior to departing for the IMO in Vietnam. Salisbury noted that support and cooperation from Nassif Ghoussoub and the staff at BIRS made this cooperative initiative with the Mexicans possible, and that Alexandro Adem has spearheaded the overall collaboration with the SMM.

Graham Wright will be stepping down as CMS Executive Director effective January 1, 2009 and discussions regarding a successor are well underway. To acknowledge the exceptional contributions Wright has made during nearly thirty years as Executive Director, he is receiving the 2007 Distinguished Service Award and the Board has passed a motion to rename the award as the Graham Wright Award for Distinguished Service. The Society thanked Wright for his outstanding service to the CMS.

Salisbury summarized recent changes to the way Society funds are accounted for, including the separation of endowed funds and changes to accounting for lifetime memberships.

5. Tellers' Report.

The Tellers' Report was circulated. Wright explained that the nominees for Executive positions had been acclaimed and that Board members for the various regions were elected from the slate of nominees.

G-07-2 MOTION (Nominating Committee)

That the CMS Tellers' Report for the 2007 Election of Officers and Directors be adopted. *Carried Unanimously*

6. Treasurer's Report.

Rodgers drew attention to the Treasurer's Report and Audited Statement for the year 2006, which had been included in the meeting documents. He reported that the Operating Fund deficits of past years seem to have been at least partially stemmed. The impact of the Canada-US Exchange rate and subscriber attrition are continuing concerns.

6.1. Audited Statement.

G-07-3 MOTION (Finance Committee)

That the Audited Statement for the period ending December 31, 2006 be accepted. *Carried Unanimously*

6.2. Treasurer's Financial Report.

G-07-4 MOTION (Finance Committee)

That the Treasurer's Report for the period ending December 31, 2006 be accepted. *Carried Unanimously*

6.3. Appointment of auditors.

In spite of a modest increase in auditing fees, the audit costs are still a good value for the work done.

G-07-5 MOTION (Finance Committee)

That the firm of Raymond Chabot Grant Thornton be appointed as auditors of the Canadian Mathematical Society for the period ending December 31, 2007. *Carried Unanimously*

7. Executive Director and Secretary's Report.

Wright thanked the Nominating Committee for its work in preparing for the CMS elections, and thanked those who stood for election.

In November 2004, the CMS established an agreement with the Statistical Society of Canada (SSC) whereby the Executive Office would provide administrative support for the SSC. Although there were some transitional difficulties, this cooperative venture is working well for both societies. The initial agreement ended on May 31, and Wright was pleased to report that a new agreement has been established to August 31, 2010. The new agreement includes an annual cost of living increase. Since December 2006, the CMS is responsible for on-line registrations and related administrative matters for the SSC annual meetings.

The 2007 summer meeting is the first joint meeting with MITACS and some coordination was needed to address the requirements of both groups. Wright thanked the MITACS staff, and Arvind Gupta in particular, for their help in planning and running the meeting. Much of what has been learned will be of benefit for future meetings, in particular the 2008 Canada-France meeting.

Wright thanked the outgoing vice-presidents for their work, and expressed special and considerable thanks to Eddy Campbell for his excellent leadership and support over the past four years.

Wright thanked the University of Manitoba, and especially meeting scientific directors Don Dawson and Fereidoun Ghahramani as well as local organizer Abba Gumel for putting on a very successful meeting.

8. 2006 Annual Report to the Members.

Law requires that the Society produce and approve an annual report. Copies were available for review.

G-07-6 MOTION (Board of Directors)

That the 2006 Annual Report to the Members be accepted.

Carried Unanimously

9. Reports from Committees.

Advancement of Mathematics:

Thomas Salisbury reported on the fundraising initiative which is underway. Efforts to attract new donors, as well as acknowledge existing donors, are ongoing. Some donors, such as the Imperial Oil Foundation, have renewed and increased their support for the CMS. Sun Life Financial has doubled its support of CMS activities and has become the title sponsor for a competition, the Sun Life Financial Canadian Open Mathematics Challenge. Thomson Nelson has renewed its support of the Excellence in Teaching Award. NSERC Promoscience did not renew their support of the Math Camps program, but a case will be made for the renewal of this funding for next year.

A not-for-profit US corporation, "Friends of the Canadian Mathematical Society" is being launched to enable US donors to make tax-deductible contributions to the CMS. While it is not yet clear whether the aggressive fundraising targets will be reached, there is a sense of momentum.

Education:

Joseph Khoury noted that Brian Forrest will receive the CMS Excellence in Teaching Award at the banquet. Members were encouraged to nominate worthy colleagues for this award and the Adrien Pouliot Award. The Education Committee considers that both these awards should be better known and receive more nominations. The CMS sponsored an award at the Canada Wide Science Fair.

Electronic Services:

David Rodgers mentioned that a redesign of the summer meeting website was completed. It is expected that over the summer Google will make the backfile of the CJM and CMB publicly available through Google Scholar. Michael Doob has scanned the back issues of CJM from 1949 through 1996. It is believed that this will enable the Society to eventually enhance its on-line journals with features such as linkage to Math Reviews, and other features which would not be present in Google's offering.

Endowment Grants:

Karl Dilcher commented on the 2006 Endowments Grants Competition, for which only three applications were received. All three applications were of very high quality and were funded. The funding for the 2007 competition has increased slightly. Members are encouraged to submit proposals for the 2007 Competition.

Finance:

Kenneth Davidson explained that the Finance Committee scrutinizes the reports of the Treasurer and provides input to decisions. An Invested Funds Committee has been formed and has taken over the mandate for investment management from the Finance Committee. Market Value, rather than Book Value of investments will be reported beginning this year.

International Affairs:

Christiane Rousseau noted that Canadian speakers for ICM 2010 need to be nominated. Twenty subcommittees have been formed to cover all of the subject areas of the previous ICM. A call has been issued and the entire mathematical community needs to be involved in identifying those who have made recent research contributions of significant impact on their discipline who could merit this recognition.

Invested Funds:

Salisbury explained that Matt Davison had to step down as Chair of the committee and David Promislow took his place. The major issues which this committee deals with have been commented on elsewhere.

Math Camps:

Math Camps Coordinator Daryl Tingley reported that the Math Camps program has been in existence for eight or nine years. There are now 13 camps and most have been running for six to nine years. The format varies among camps, but most camps retain the same format from year to year. There are weekend camps, week-long camps and day camps. SFU now hosts camps at both of its campuses. About one third to one half of camp funding is provided through the CMS.

Wright noted that there are resources available for establishing new camps. The possibility of holding a meeting of Math Camp organizers was mentioned.

Mathematical Competitions:

Edward Barbeau was not able to be present and Wright noted that the 2006 Canadian Open Mathematics Challenge, organized in collaboration with the Centre for Education in Mathematics and Computing at the University of Waterloo, had over 7,000 students registered. The Canadian Mathematical Olympiad was written in March and Yan (Cynthia) Li of Toronto was the first place winner. Canada received the maximum possible number of awards at the Asian Pacific Mathematics Olympiad.

This year's International Mathematical Olympiad (IMO) will take place in Vietnam and the Summer Training Seminar will be held at the University of Calgary and at BIRS. Bill Sands and Adrian Tang (University of Calgary) will be the Leader and Deputy Leader, respectively. Sands commented that the six members of this year's IMO team span grades 9 through 12 and none has competed at the IMO in the past. As a result of the growing relationship between the CMS and SMM, the Mexican IMO team will be participating in the training at BIRS. The CMS is grateful to BIRS for providing this opportunity.

Nominating:

On behalf of Edgar Goodaire, Salisbury mentioned that the committee had produced the slate for the recent elections. It will soon be looking for replacements for committee members

whose terms expire in December. Members are encouraged to identify colleagues who might serve on a committee.

Publications:

Juris Steprans stated that four Associate Editors on the CJM/CMB Editorial Board were replaced in 2006 and one will be replaced this year. Two ATOM editors have had their terms extended. The candidate for Editor-in-Chief of CRUX with MAYHEM had to withdraw his nomination, and a new candidate is being sought. The CJM page count has been increased by 96 pages per year. Options for an electronic reviewing process are being considered.

Research:

On behalf of Rick Jardine, Salisbury commented on the committee's involvement in preparing for upcoming meetings. Perkins reported on the latest research prize recipients and outlined the nomination process. The sites of future CMS meetings were listed up to 2010, although some are not confirmed.

Students:

Joy Abramson stated that the Canadian Undergraduate Mathematics Conference (CUMC) in McGill last year was successful and that the 2007 CUMC will be held at SFU in July. The student newsletter has been doubled in size. The practice of having student talks at CMS meetings has been initiated. The student website has been bilingualized and a guide has been posted for how to get the most out of a conference. A web forum has been setup for student to communicate with one another

and a new poster has been designed. Three new committee members are needed and CMS members are encouraged to identify enthusiastic students who might be interested.

Women in Mathematics:

Salisbury, on behalf of Gerda de Vries, reported that the Connecting Women in Mathematics Across Canada (CWIMAC) workshop took place in December and that a future CWIMAC is already being planned.

10. Other Business.

Salisbury encouraged members to nominate their colleagues for prizes and to encourage students to apply for the Math in Moscow program. He thanked the outgoing Past President, Executive and Board members, as well as outgoing committee chairs Ed Barbeau, Antoine Khalil, David Rodgers and Bill Sands for the important work which they have done.

11. Adjournment.

The meeting adjourned at 1:38 p.m.

Thomas Salisbury
President
Graham P. Wright
Secretary
Alan Kelm
Recording Secretary

CMS Excellence in Teaching Award

for post-secondary undergraduate teaching in Mathematics

Prix d'excellence en enseignement de la SMC

pour l'enseignement collégial et de premier cycle universitaire en mathématiques

Recognizing sustained and distinguished contributions in teaching. Full-time university, college, two-year college, or CEGEP teachers in Canada with at least five years teaching experience at their current institution can be nominated.

For details regarding nomination procedure, please visit

www.cms.math.ca/prizes

or

<http://hed.nelson.com>

Deadline for nomination:
November 15, 2008



Ce prix récompense des contributions exceptionnelles et soutenues en enseignement. Il s'adresse aux professeures et professeurs d'université, de collège ou de cégep au Canada ayant au moins cinq ans d'expérience dans leur institution présente.

Pour les détails sur la procédure de mise en nomination voir

www.cms.math.ca/prizes

ou

<http://hed.nelson.com>

Date limite pour soumettre une candidature : 15 novembre 2008

Thomson Nelson is a
proud sponsor of this award.

Thomson Nelson est fier
de commanditer ce prix.

Host / Hôte : Carleton University
December 6-8 décembre
Marriott Hotel, Ottawa (Ontario)

Meeting Director / Directeur de la Réunion :
Matthias Neufang (Carleton)
Local Arrangements / Logistique:
Benjamin Steinberg (Carleton)

PLENARY SPEAKERS / CONFÉRENCIERS PLENIERS

David Acheson (Oxford)
Fan Chung (UC San Diego)
Gilles Godefroy (Paris)
Sorin Popa (UCLA)
Laurent Saloff-Coste (Cornell)
Mark Sapir (Vanderbilt)

PUBLIC LECTURE / CONFÉRENCE POPULAIRE

Patrick Hayden (McGill)

PRIZES / PRIX

Coxeter-James Prize
Doctoral Prize
Adrien Pouliot Prize
G. de B. Robinson Award
David Borwein Distinguished Career Award

SESSIONS

Algebraic Combinatorics

Combinatoire algébrique

Org: François Bergeron, Srećko Brlek, Christophe Hohlweg,
Christophe Reutenauer (UQAM)

Algorithmic Mathematics

Mathématiques Algorithmiques

Org: Prosenjit Bose, Evangelos Kranakis (Carleton)

Applied Partial Differential Equations

Equations aux Dérivées Partielles Appliquées

Org: David Amundsen (Carleton), Lucy Campbell (Carleton),
Francis Poulin (Waterloo)

Banach Spaces

Espaces de Banach

Org: Robb Fry (Thompson Rivers), Srinivasa Swaminathan
(Dalhousie)

Combinatorics

Combinatoire

Org: Daniel Panario, Brett Stevens (Carleton)

Commutative Algebra and Algebraic Geometry

Algèbre Commutative et Géométrie Algébrique

Org: Sara Faridi (Dalhousie), Anthony V. Geramita (Queen's)

Cryptography and Coding Theory

Cryptographie et théorie des codes

Org: Isabelle Déchène, Ariane Masuda, Monica Nevins
(Ottawa)

Dynamics of Large Groups and Semigroups

Propriétés dynamiques des groupes et des demi-groupes de dimension

Org: Stefano Ferri (Universidad de los Andes), Alica Miller
(Louisville), Vladimir Pestov (Ottawa)

Geometric Group Theory

Théorie géométrique des groupes

Org: Inna Bumagin, Denis Serbin (McGill), Benjamin Steinberg
(Carleton)

History and Philosophy of Mathematics

Histoire et philosophie des mathématiques

Org: Tom Archibald (SFU), Alexander Jones (Toronto)

Infinite-Dimensional Lie Theory

Théorie infini-dimensionnelle de Lie

Org: Yuly Billig (Carleton), Alistair Savage (Ottawa)

Mathematical Aspects of Quantum Information

Aspects mathématiques de l'information quantique

Org: David Kribs (Guelph)

Mathematical Education

L'éducation mathématique

Org: John Poland (Carleton)

Mathematical Biology

Biologie mathématique

Org: Frithjof Lutscher, Robert Smith (Ottawa)

Mathematics and Classical Mechanics

Mathématique et mécanique classique

Org: Manuele Santoprete, Cristina Stoica (Wilfrid Laurier)

Number Theory

Théorie des nombres

Org: Alina C. Cojocaru (Illinois-Chicago), Damien Roy
(Ottawa)

Numerical Analysis and Computational Mathematics

Analyse numérique et mathématiques computationnelles

Org: A. Bass Bagayogo (CUSB)

Operator Algebras

Algèbres d'opérateurs

Org: Benoit Collins, Thierry Giordano (Ottawa)

Probability

Probabilité

Org: Antal Jarai, Yiqiang Zhao (Carleton)

CMS WINTER 2008 MEETING / RÉUNION D'HIVER 2008 DE LA SMC

Representation Theory of Algebras

La théorie des représentations des algèbres

Org: Dlab Vlasta (Carleton), Ragnar-Olaf Buchweitz (Toronto)

Technology Use in Post-Secondary Mathematics

Instruction

Utilisation de la technologie dans l'enseignement

mathématique post-secondaire

Org: Chantal Buteau (Brock), Daniel Jarvis (Nipissing), Zsolt Lavicza (Cambridge, UK)

Theory and Applications of Functional Differential Equations

Théorie et applications des équations différentielles fonctionnelles

Org: Pietro-Luciano Buono (OIT), Victor LeBlanc (Ottawa)

Contributed Papers

Communications libres

Org: TBC

CONGRÈS CANADA-FRANCE 2008 / CANADA-FRANCE CONGRESS 2008

SCHEDULE / HORAIRE (AS OF APRIL 17, 2008)

	Saturday / Samedi May 31 mai	Sunday / Dimanche June 1 / 1 ^{er} juin	Monday / Lundi June 2 juin	Tuesday / Mardi June 3 juin	Wednesday / Mercredi June 4 juin	Thursday / Jeudi June 5 juin	
all day			8:00-16:15 - Registration / Inscription 9:30-16:15 - Exhibits / Expositions 9:30-16:15 - Poster Presentation / Présentations par affiches		8:00-16:15 Registration / Inscription		
Business Mtgs. Réunions	9:00-17:00 MITACS ISAB Meeting 18:00-22:00 CMS Executive Committee Dinner	8:30-12:30 MITACS RMC Meeting 11:00 AM-13:00 CMS Dev. Group Lunch 13:00-18:30 CAIMS Board of Directors CMS Board of Directors		12:00-17:00 MITACS Board Meeting 12:30-14:00 CAIMS AGM CMS AGM	8:00-10:30 MITACS PL Meeting 9:00-12:00 MITACS SAC Meeting 12:00-13:30 MITACS AGM		
Work shops	all day Security Workshop	all day Security Workshop 17:30-18:30 CRI Presentation	all day Security Workshop Finance & Insurance Workshop 12:30-14:30 Mathematics & Industry Workshop	all day Finance & Insurance Workshop 12:30-14:00 Student Workshop	all day Medical Imaging Workshop 12:30-14:00 NSERC Discovery Grant	12:30-14:00 NSERC Grant Application	
Scientific and Social Events / Activités scientifiques et sociales		9:00-12:00 Poster Setup	8:00-8:30 OPENING OUVERTURE	8:00-9:30 Sessions	8:00-9:30 Sessions	8:00-9:30 Sessions	
			8:30-9:30 Jean-Pierre Serre				
			9:30 – 10:00 Break/Pause				
			10:00-11:30 Sessions	10:00-11:30 Sessions	10:00-11:30 Sessions	10:00-11:30 Sessions	
		12:00-15:00 Poster Judging	11:30-12:30 Alysson M. Costa CAIMS Cecil Graham Award	11:30-12:30 Martin Barlow CMS Jeffery-Williams Prize	11:30-12:30 J. Alan George CAIMS Research Prize	11:30-12:30 Izabella Laba CMS Krieger-Nelson Prize	
			12:30-14:30 Break / Pause	12:30-14:00 Break / Pause			
			14:30-16:00 Sessions	14:00-15:00 Nizar Touzi	14:00-15:00 Yves André	14:00-15:00 Olivier Biquard	
			15:00-15:30 Coffee break	15:00 -16:00 Gérard Laumon		15:00 -16:00 Rick Kenyon	15:00 -16:00 Andrew Granville
		15:30-17:00 Poster Judging	16:00-16:15 Break/Pause				16:00 – 16:30 CLOSING MOT DE LA FIN
			16:15 – 17:15 Jianhong Wu	16:15 – 17:15 Eric Sere	16:15 – 17:15 Luc Devroye		
		18:00-19:00 Registration / Inscription	17:15 – 18:15 Nicole Tomczak- Jaegermann		17:15 – 18:15 Alice Guionnet		
		19:00-19:30 Edward Bierstone CMS Teaching Award		18:30-19:30 Reception and Student Award Ceremony / Réception et cérémonie de remise de prix aux étudiants	18:30-19:30 Yvan Saint-Aubin <i>Désordre et beauté</i>		
		19:30-21:00 Welcome Reception Réception de bienvenue	19:30-22:00 Student Social – Activité sociale pour les étudiants	19:30-22:30 AWARDS BANQUET	19:30-20:30 Reception/Réception		

updated April 17, 2008

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CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

MAY 2008 MAI

- 1-3** Conference in Honour of Keith Geddes' 60th Birthday (Stonehaven Bay, Trinidad and Tobago)
www.orcca.on.ca/conferences/mica2008
- 5-7** Waterloo Workshop in Computer Algebra 2008 (Wilfrid Laurier University, Waterloo, ON)
www.cargo.wlu.ca/wwca2008/
- 1-11** Summer School on Mathematical Modeling of Infectious Diseases (University of Alberta, Edmonton AB)
www.math.ualberta.ca/~irl/summer_school.html
- 10-13** SIAM Conference on Optimization (Boston, MA)
www.siam.org/meetings/op08/
- 12-16** Workshop: Singularities, Hamiltonian and Gradient Flows (CRM, Montreal, QC)
activities@crm.umontreal.ca
- 15-28** Aspects of Moduli (de Giorgi Center; Scuola Normale Superiore, Pisa, Italy)
www.math.stanford.edu/~vakil/pisa
- 16-19** 2nd International Conference, Athens Institute for Education and Research (ATINER), (Athens, Greece)
www.atiner.gr/docs/Mathematics.htm
- 19-21** Conference on Frontiers in Applied and Computational Mathematics (FACM '08) New Jersey Institute of Technology (Newark, NJ)
<http://m.njit.edu/Events/FACM08/>
- 19-24** Lie Theory and Geometry: The Mathematical Legacy of Betram Kostant (Pacific Institute of Math Sciences, Vancouver, BC)
www.pims.math.ca/~dxu/08kostant
- 19-24** Workshop on Floer Theory and Symplectic Dynamics (CRM, Université de Montreal, Montreal, QC)
http://www.crm.umontreal.ca/act/theme/theme_2008_1_en/floer_e.shtml
- 25-28** Seventh Iberoamerican Conference on Topology and its Applications (CITA 2008), (Valencia, Spain)
<http://cita.webs.upv.es>

JUNE 2008 JUIN

- 1-3** Canadian Society for History and Philosophy of Mathematics/Société canadienne d'histoire et de philosophie des mathématiques. The 2008 Annual Meeting will be held in conjunction with the Learned's (CFHSS) (UBC, Vancouver, B.C.). The special session of the meeting will be on "Trigonometry and its applications."
www.cshpm.org
- 1-5** **Second Canada-France Congress (UQAM, Montréal, QC)**
www.canada-france.math.ca
- 2-7** Workshop on Mathematical Aspects of Quantum Chaos (CRM, Université de Montreal, Montreal, QC)
www.crm.umontreal.ca/Mathphys2008/

- 4-7** First Joint International Meeting of AMS with the Sociedade Brasileira de Matematica (Rio de Janeiro, Brazil)
www.ams.math.org/amsmtgs/internmtgs.html

- 9-20** PIMS Industrial Problem Solving Workshop (University of Regina, SK)
www.pims.math.ca/ipsw

- 22-29** 46th International Symposium on Functional Equations (Opava-Hradec nad Moravicí, Czech Republic)
isfe46@math.slu.cz, romanger@us.edu.pl

JULY 2008 JUILLET

- 2-4** Growth and Control of Tumors: Theory and Experiment
www.fields.utoronto.ca/programs/scientific/08-09/mathoncology/control
- 6-13** Eleventh International Congress on Mathematics Education (ICME-11) (Monterrey, Mexico)
<http://icme11.org/node/12>
- 22-26** International workshop on Operator Theory and its Applications (College of William and Mary, Williamsburg, VA)
www.math.vm.edu/~vladi/IWOTA/IWOTA2008.htm
- 30-Aug 2** The Society for Mathematical Biology (SMB) Conference, hosted by the Centre for Mathematical Medicine (CMM),
www.fields.utoronto.ca/programs/scientific/CMM/08-09/SMB

AUGUST 2008 AOÛT

- 2-6** VICBC Summer School on Integrative Cancer Biology
www.fields.utoronto.ca/programs/scientific/08-09/mathoncology
- 25-27** Quantitative Cancer Modelling: Mathematical Models, Imaging and Bioinformatics
www.fields.utoronto.ca/programs/scientific/08-09/mathoncology

OCTOBER 2008 OCTOBRE

- 4-5** AMS Western Section Meeting (UBC & PIMS, Vancouver, BC)
www.ams.math.org/amsmtgs/sectional.html

DECEMBER 2008 DECEMBRE

- 6-8** **CMS Winter 2008 Meeting**
www.cms.math.ca/Events
- 17-21** First Joint International Meeting of AMS with the Shanghai Mathematical Society (Shanghai, China)
www.ams.math.org/amsmtgs/internmtgs.html

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www.mccme.ru/mathinmoscow/

Application details

www.cms.math.ca/bulletins/Moscow_web/

For additional information please see your department or call the CMS at 613-562-5702.

Deadline **September 30, 2008** to attend the Winter 2009 semester.



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Programme Math à Moscou

www.mccme.ru/mathinmoscow/

Détails de soumission

www.smc.math.ca/bulletins/Moscou_web/

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