

The NEWSLETTER is a publication of the Canadian Mathematics Education Study Group

CMESG is a group of mathematicians and mathematics educators who meet annually to discuss mathematics education issues at all levels of learning. The aims of the Study Group are:

- 1) to study the theories and practices of the teaching of mathematics
- 2) to promote research in mathematics education
- 3) to exchange ideas and information about all aspects of mathematics education in Canada
- 4) to disseminate the results of its work.

Ce BULLETIN est une publication du Groupe canadien d'étude en didactique des mathématiques

Le GCEDM est composé de personnes oeuvrant en mathématiques et en didactique des mathématiques et qui se réunissent une fois par année pour étudier diverses questions relatives à l'enseignement des mathématiques à tous les niveaux. Les buts du Groupe sont les suivants:

- 1) susciter une réflexion critique sur la théorie et la pratique de l'enseignement des mathématiques
- 2) encourager la recherche en didactique des mathématiques
- 3) faciliter l'échange d'idées et d'information sur tous les aspects de l'éducation mathématique au Canada
- 4) faire connaître les résultats de ses travaux.

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PRESIDENT'S MESSAGE DE LA PRÉSIDENTE

Malgorzata Dubiel, Simon Fraser University
(dubiel@cs.sfu.ca)

Bienvenue à l'édition du printemps 2003 du bulletin du GCEDM/CMESG.

Ce bulletin est le dernier édité par Doug Franks, notre éditeur depuis bientôt cinq ans. Doug a travaillé fort pour nous, que ce soit lors de notre aller vers une version électronique, de notre retour à une version papier augmentée d'une version sur le site du groupe, ou encore par son assiduité à encourager les contributions des membres. Doug, merci beaucoup pour ton travail acharné !

Comme aucun successeur ne s'est encore signalé pour remplacer Doug, je vous réitère l'invitation lancée dans le bulletin d'automne en vous invitant à me faire signe d'ici à notre rencontre à Acadia, ou au plus tard lors de celle-ci.

Je tiens à remercier Elaine Simmt, présidente de notre comité de nomination, qui a travaillé fort afin de s'assurer de la bonne marche des élections pour l'Exécutif du GCEDM ainsi que pour le Conseil d'administration de FLM. Voici les résultats de ces élections.

Olive Chapman est élue par acclamation au poste de trésorière du GCEDM.

Ralph Mason est élu membre de l'Exécutif du GCEDM pour deux ans.

L'Exécutif a aussi nommé Caroline Lajoie et Luis Radford comme membre désigné de l'Exécutif pour un an.

Rina Zazkis est élue membre du Conseil d'administration de FLM.

Félicitations et merci aux personnes élues, et merci aux membres qui ont accepté de se présenter pour l'un ou l'autre des postes.

Notre rencontre à Acadia approche rapidement et, comme à chaque année, j'ai hâte à notre rencontre annuelle. Cette année, je songe aussi à l'impact qu'ont les événements dans le monde sur nous et sur nos rencontres. Récemment, j'ai appris que Steve Thornton, qui devait mener un groupe thématique, ne pourra être avec nous à cause du SARS et des restrictions imposées aux voyageurs australiens en visite au Canada.

Une autre rencontre importante se déroulera du 16 au 18 mai 2003 à Montréal : le Forum canadien sur l'enseignement des mathématiques. Plusieurs de nos membres seront à cette rencontre qui réunira quelque 200 personnes oeuvrant en enseignement des mathématiques, à tous les niveaux et de partout au pays. Les participants discuteront de plusieurs thèmes relatifs à l'enseignement des mathématiques et à la formation des maîtres, compareront des pratiques d'enseignement et discuteront de moyens à mettre en oeuvre pour améliorer l'enseignement des mathématiques au pays ainsi que promouvoir l'importance des mathématiques au Canada. Pour plus d'information, voir <http://www.smc.math.ca/Reunions/FCEM2003>.

Welcome to the CMESG/GCDEM Spring 2003 Newsletter.

This is the last CMESG/GCDEM Newsletter edited by Doug Franks, who has been editing our newsletters for the past five years. He has been with us through our experimental transition from paper to electronic form, and then back to a combination of a paper and web-based newsletter. Throughout this period, he has been working hard to generate contributions from our members. Thank you, Doug, for your hard work!

We don't have a volunteer to replace Doug as yet, so I want to repeat my call from the Fall Newsletter: if you are interested in being our new editor, do let us know no later than our annual meeting at Acadia!

I want to also thank Elaine Simmt, chair of our Nominating Committee this year, for her hard work on finding candidates and conducting elections for members of the Executive, and one member of the FLM Board of Directors. Here are the results of these elections:

Olive Chapman was elected by acclamation as our Treasurer.

Ralph Mason was elected for a two year term on the CMESG/GCDEM Executive Committee, and Caroline Lajoie and Luis Radford were invited to one year terms.

Rina Zazkis was elected a member of the FLM Board of Directors.

Congratulations and thanks to all those elected, and thanks to all members who allowed their names to stand for the elections.

As I am writing this introduction, our Acadia meeting is fast approaching, and I am looking forward to it, as every year. This year, I am also reflecting on how recent world events are affecting us and our meetings. Recently, we have learned that Steve Thornton, leader of one of our Topic Groups, will not be able to join us because of the SARS scare, and restrictions put in Australia on travel to Canada.

Another important event will be taking place May 16 - 18th, 2003, in Montreal: Canadian School Mathematics Forum. Many of our members will be participating in the three day meeting, which will bring together almost 200 mathematics educators from all levels, from across Canada. The participants will look into issues relevant to teaching mathematics and teacher training, compare best practices and discuss how we can work together to enhance the quality of mathematics education in the country and to increase the recognition of Mathematics throughout Canada.

For more information about the forum, see: <http://www.cms.math.ca/Events/CSMF2003>

OTHER CMESG NEWS / AUTRES NOUVELLES DU GCEDM

Member Profiles: Try to Match!

Many thanks to the CMESG/GCEDM members listed below who completed the "Member Profile" at last spring's meeting in Kingston, or in response to an email request sent out in March. Rather than just print each person's full "profile," however, the editor is throwing out a challenge to other members to try to correctly match the member with his or her "Favourite Mathematics Saying," "Preferred Mathematical Philosophy," "Pithy Thought for the Day" and so on. The members have been listed alphabetically; of course, their statements have been thoroughly mixed! Also, not all categories have responses from everyone, so a process of elimination will not always work (very well)! Answers will be emailed to anyone who requests them after the Wolfville conference.

Members:

Paul Betts (Brandon University/University of Regina)

Allan Brown (University of Calgary)

Sandy Dawson (Pacific Resources for Education and Learning)

Gord Doctorow (Toronto District School Board)

Ann Kajander (Lakehead University/Lakehead School Board/Kindermath)

Miroslav Lovric (McMaster University)

Ralph Mason (University of Manitoba)

Elaine Simmt (University of Alberta)

WHO SAID...?

Favourite Mathematician (or Mathematics Educator)

* Mandelbrot maybe? It's nice to discuss with students how he 'stepped out of the box'.

* Sandy (see below)

* Caleb Gattegno, John Trivett. They were the most insightful mathematics educators I've ever met. They were years and years ahead of their time.

* The person who invented zero.

* I want to read more of Mary Boales' writing.

* Erdős – I met him – he's "out there".

* Galois – a brilliant democratic radical who died for his beliefs at age 21, yet succeeded in creating a lasting and important body of mathematical knowledge.

* There are many candidates. I'll name two. Henri Poincaré for his breadth, clear writing, and insight. I also like W.W. Sawyer as mathematics educator because his books clarify mathematics intelligently.

Preferred Mathematical Philosophy

* Something other than formalism. My students wanted to know, is there 'kindercalculus' as well as 'kindermath'?

* ENACTIVISM

* Social constructivism...still thinking about preferences.

* The verbing of cognition.

- * I like Vygotsky's approach wherein the role of the teacher is to lead students adroitly to conceptual knowledge.
- * Less is more; better deep than broad.
- * Mathematics and music are related in some deep way, and both contribute to intellectual satisfaction and emotional well being. The mystery is that mathematics also functions as a useful tool. I believe that mathematics and music represent something deep and fundamental about the nature of human beings and their relationship to the universe.

Favourite Mathematics (or Math Teacher) Saying

- * Show how you know.
- * Straight lines are inventions of the devil.
- * You seem like a strange attractor.
- * "I'm into search, not research." (Sandy, grade 3)
- * How does it happen that there are people who do not understand mathematics? – Poincaré, Science and Method, 1914.
- * Gravity cannot be held responsible for people falling in love (Einstein).
- * Math is not a spectator sport!

Interesting Mathematics Problem/Activity

- * 4, 16, 37,...what is the next number in the sequence?
- * Anything indirect and complex and yet still accessible at many levels.
- * Inductive proofs
- * Anything that clearly brings out the essence of an idea...a fractal card as a way to think about a limit, for example.
- * The problem of interesting mathematics activity!
- * 1. Handshake problem; 2. Diagonal intruder
- * Much to enjoy. I enjoy reading and thinking about complex analysis, topology, measure theory and abstract algebra. Most interesting activity is to find ways to awaken interest in mathematics by evoking wonder.
- * Thinking about a good math problem!!!

Pithy Thought for the Day

- * In an infinite fog, I crystallized a path. I am uncertain.
- * Goal in life...to 'keep my head above water' [A good idea to take this literally!--DF]
- * See Sandy, above
- * Be the change that you want to see in the world.
- * There are only two kinds of people: those who like mathematics, and those who don't know they like it!

Favourite Drink

- * Red wine
- * The local beer at CMESG.
- * Sakau. Now, figure out what that is!!
- * Glenlivet single malt scotch. Chianti Ruffino wine. Grapefruit juice (But not in combination!)
- * Café Latté
- * Coke

WHAT'S HAPPENING IN MATHEMATICS EDUCATION CE QUI SE PASSE EN DIDACTIQUE DES MATHÉMATIQUES

Response to: Ralph Mason – Re: 0.999...

Ed Barbeau

barbeau@math.toronto.edu

In the December 2002 issue of the Newsletter, Ralph Mason wrote an article, "Getting Cognitive about Rational Numbers," and asked for advice on how to turn his data into a journal article. This is Ed Barbeau's response.

Ralph: I was very interested in your article about the infinite decimal expansion $0.999\dots$. This seems to be a popular conundrum among school students, and one that I have been approached about on several occasions. Unfortunately, the discussion of this does not always go beneath the surface to something more substantive, so that at the end of the day, the students still remain confused or unconvinced about what the value of this infinite decimal is. There is a real epistemological issue that has to be addressed at some stage - what does such an expression mean?

Underlying the response of the pupils that you quote is the idea that since you can write the expression down, it automatically has some meaning, and that in discovering its value we can be guided by our rules applicable to finite decimal expansions. There is a vast historical precedence for this. For example, there was a big dispute in the early eighteenth century between Leibniz and Bernoulli about the value of $\log(-1)$; both mathematicians assumed that the logarithm function, defined for positive numbers, had an automatic extension to negative numbers as well, and simply took it for granted that you could extend its properties without any qualification with results that were contradictory. Euler in a very nice paper in the middle of the century reviewed this controversy and addressed the nub of the matter: showing that it was possible to note properties of logs of positive numbers and with a *suitable* extension make sense of logs

of negative numbers. Similarly, mathematicians in the nineteenth century imputed properties to arbitrary continuous functions that they observed in the specific examples that they dealt with (such as possession of a derivative). In all of the mathematical disputes that arise in this way, the realization eventually sinks in that they are not going to be resolved until what we are talking about is carefully formulated. In other words, someone has to make a decision about how something is going to be defined and then follow out the implications of this decision. In the case of logarithms - to a multivalued function on the complex plane; in the case of continuous functions - to the possibility of a function that has a derivative at no point; in the case of infinite decimals - the recognition that a limiting operation is involved. (If on intuitive grounds, you are unhappy with the implications of your definition, then you might want to define subcategories; for example, if you really want to talk about continuous functions that are not too pathological, then you might define smooth (or differentiable) functions, or analytic functions (which have power series expansions and so can be treated like infinitely long polynomials).)

To appreciate that finite and infinite decimal expansions might differ in quality, I think that pupils need to be clear what a finite decimal expansion is. When we write, say, 0.356 , we mean $3/10 + 5/100 + 6/1000$, and its value is $356/1000$, which we can obtain by adding finitely many vulgar fractions. Thus, the

evaluation of this number involves an addition of *finitely* many terms, a process that we can complete in a finite amount of time, and we can regard 0.356 as a particular way of expressing an ordinary vulgar fraction.

When we write an infinite decimal number: 3.1415926..., we bring to this a certain amount of freight from our experience with finite expansions. We think we can place it in the number line: it is bigger than 3.1 and smaller than 3.2, and so on. But if, in analogy with the finite case, we try to write it out: $3 + 1/10 + 4/100 + 1/1000 + \dots$ we realize that we are asked to determine a sum of infinitely many terms, and this we cannot achieve in a finite amount of time.

Again, we can turn to history as a guide. The exact meaning of the sum of an infinite series is something that was argued over in the eighteenth century; I wrote a paper on this many years ago (Euler subdues a very obstreperous series, *American Mathematical Monthly* 86 (1979), 356-372). One choice is to take it as a closed already completed expression, manipulate it and determine its values by the relationships it forms algebraically.

For example, if we assume that

$$1 + x + x^2 + x^3 + \dots$$

means something and we can treat it like a jumbo-sized polynomial, then when we multiply it by $1 - x$, a lot of terms cancel out and we get

$$(1 - x)(1 + x + x^2 + \dots) = 1 - x + x - x^2 + \dots = 1 \text{ and so } 1 + x + x^2 + x^3 + \dots = 1/(1-x) .$$

Thus, for example, when $x = 2$, we find that $1 + 2 + 4 + 8 + 16 + \dots = -1$.

This sort of approach leads to paradoxes and inconsistencies, and so is mathematically unsatisfactory. As you know, the way settled upon was to look at the partial sums and see what happens as their length becomes larger and larger. In some case, we have to say that

the infinite series simply does not have a sum, despite any appearances to the contrary.

This has its analogue in the 0.999... question. If we simply assume that it has a meaning as a number, and let $s = 0.999\dots$, then $10s = 9.999\dots$ (which we can infer from the corresponding thing for finite decimal expansions). We subtract (just as for the finite case) to get $9s = 9.000\dots$ and $s = 1$.

But this is unsatisfactory, as it begs the question of how you know that 0.999... has a value, let alone what that value is.

So we start with the meaning of a decimal expansion, $0.999\dots = 9/10 + 9/100 + 9/1000 + \dots$ and start adding one at a time. Now we will never finish, but at least we can stop after each summand and see where we are: $9/10 = 1 - 1/10$; $9/10 + 9/100 = 99/100 = 1 - 1/100$, and so on, at the n th stage getting the sum $1 - 1/10^n$.

We can go no further without introducing a new ingredient, that of a limit. We note that, no matter how small an interval we take about 1, $1 - 1/10^n$ is eventually inside that interval. So we can *define* the limit of this expression to be 1 and then define the infinite decimal expansion to have a value equal to the limit of its partial sums.

There is a mathematical point to be made here. Until this stage, pupils have been operating on the basis of intuition and extrapolation from processes with finite decimal expansions. But now we have an honest-to-god definition as an arbiter; having made the decision about how to define an infinite decimal (made indeed in a reasonable way that allows us to handle infinite decimal expansions using the regular rules of arithmetic and locating them where they should be in the number line), we must now subject our vague ideas to its discipline. Some students find this hard to do, even in university, and will still try to argue that

0.999... is still just a "little bit less" than 1, even though the definition requires it to be exactly 1.

From the pedagogical point of view, the question is how soon you can get into this sort of thing with pupils, as it may be that some kids start to wonder about this in the middle school (I have recently fielded a query from a grade 8 girl in Vancouver on this very question). My feeling is that there is a lot of benefit in being very honest and straightforward with pupils, so it is not a question of whether you can introduce the idea of limit at this stage but how best to do it. It may be, for example, useful to start the discussion with $1 + 1/2 + 1/4 + 1/8 + \dots = 2$ which is easy to illustrate on the number line. The limit concept is deep (depending as it does on a conception of the number system as a continuum) and one cannot expect most kids to "get it" right away, but at least you can get the mental juices flowing. One argument for getting an early start is that you might address

the issue before students have solidified into viewpoints that are erroneous and unproductive, which I am afraid has occurred for many of them by the time they reach first year university. Certainly, on a one-to-one basis, this seems to work.

[In two papers, Euler looks seriously at the issue of meaning of mathematical expressions. The first, entitled "De seriebus divergentibus" can be found in his Opera Omnia, Series 1, Volume 14, pp. 585-617. The second, in French, may be more accessible. Dealing with the extension of the logarithm function beyond the positive reals, it is entitled "De la controverse entre Mrs. Leibniz et Bernoulli sur les logarithmes des nombres négatifs et imaginaires", available in the Opera Omnia, Series 1, Volume 17, pp. 195-232.]

Ed Barbeau



Recent Member Publications

In this issue we introduce a new section of members' recent publications. This was suggested by the Executive at Kingston, 2002. Members are encouraged to send in references and abstracts – DF

Gila Hanna
(OISE)

- ✍ Hanna, G. & Barbeau, E. (2002). What is Proof? In Baigrie, B. (Ed.). *History of Modern Science and Mathematics*. (4 volumes). Charles Scribner's Sons, Vol. 1, 36-48. ISBN 0-684-80636-3.
- ✍ Hanna, G. & Jahnke, H. N. (2002). Arguments from physics in mathematical proofs: An educational perspective. *For the learning of mathematics*, 22(3) 38-45.
- ✍ Hanna, G. & Sidoli, N. (2002). The story of ESM. *Educational Studies in Mathematics*, 50 (2), 123-156.
- ✍ Hanna, G. & Jahnke, H. N. (2002). Another approach to proof: Arguments from physics. *International reviews on mathematical education*, ZDM, 1/02, 1-8.
- ✍ Hanna, G., Jahnke, H. N., DeBruyn, Y. & Lomas, D. (2001). Teaching mathematical proofs that rely on ideas from physics. *Canadian Journal of Science, Mathematics and Technology Education*, (1), 2, 183-192.

- ✍ Hanna, G., DeBruyn, Y., Sidoli, N. & Lomas, D. (2002). An application of concepts from statics to geometrical proofs. In Rogerson, A. (Ed.) *Proceedings of the International Conference on the Humanistic Renaissance in Mathematics Education*, 166-171, Palermo, Italy.



Carolyn Kieran
(Université du Québec à Montréal)

Kieran, C., Forman, E. A., & Sfard, A. (Eds.). (2003). *Learning discourse: Discursive approaches to research in mathematics education*. Dordrecht: Kluwer Academic Press. ISBN 1-4020-1024-9.

Abstract: The authors of this volume claim that mathematics can be usefully re-conceptualized as a special form of communication. As a result, the familiar discussion of mental schemes, misconceptions, and cognitive conflict is transformed into a consideration of activity, patterns of interaction, and communication failure. By equating thinking with communicating, the discursive approach also deconstructs the problematic dichotomy between "individual" and "social" research perspectives. Although each author applies his or her own analyses to the discourse generated by students and teachers grappling with mathematical problems, their joint aim is to put discursive research into the limelight and to spur thinking about its nature and its possible advantages and pitfalls. This volume is therefore addressed both to those interested in specific questions regarding classroom communication, and to those who are looking for a general conceptual lens with which to tackle the complexity of mathematical teaching and learning.

Table of contents: Guest Editorial. Acknowledgements.

There is more to discourse than meets the ears: Looking at thinking as communicating to learn more about mathematical learning (A. Sfard).

Educational forms of initiation in mathematical culture (B. van Oers).

Cultural, discursive psychology: A socio-cultural approach to studying the teaching and learning of mathematics (S. Lerman).

The multiple voices of a mathematics classroom community (E. Forman, E. Ansell).

"Can any fraction be turned into a decimal?" A case study of a mathematical group discussion (M.C. O'Connor).

The mathematical discourse of 13-year-old partnered problem solving and its relation to the mathematics that emerges (C. Kieran).

Making mathematical meaning through dialogue: "Once you think of it, the Z minus three seems pretty weird" (V. Zack, B. Graves).

Commentary Papers:

From describing to designing mathematical activity: The next step in developing a social approach to research in mathematics education? (C. Hoyles).

Research on discourse in the mathematics classroom: A commentary (F. Seeger).



Edudata Canada Newsletter Now Available

The first issue of "Edudata Reports," a one-page newsletter that Edudata Canada plans to produce several times each year, is now available online. The publication is intended to highlight educational research findings, and, in so doing, to illustrate some of the kinds of research that can be done using data that Edudata can make available for research.

In this first issue, the focus is on some basic information about teachers of mathematics and science at the elementary and junior secondary levels. Subsequent issues will explore other parts of the TIMSS database as well as results from other large-scale surveys of student outcomes.

"Edudata Reports" is available in electronic form from the Edudata website at www.edudata.educ.ubc.ca. Please feel free to distribute copies of the report in either printed or electronic form to anyone you think might be interested. The TIMSS-Canada data is also available from the same website.

If you have any comments or suggestions to offer about the newsletter or possible topics for future issues, please send them to me.

David Robitaille (University of British Columbia)
david.robitaille@ubc.ca



UPCOMING PROFESSIONAL MEETINGS

<p>CMS. June 14-16, 2003. University of Alberta./SMC. Du 14 au 16 juin 2003. University de l'Alberta. www.cms.math.ca</p> <p>PME. July 13-18, 2003. Honolulu./PME. Du 13 au 18 juillet. Honolulu. www.hawaii.edu/pme27</p> <p>Seventh International History, Philosophy & Science Teaching Conference. July 30-August 3, 2003. University of Winnipeg. www.ihpst.uwinnipeg.ca</p> <p>Mathematics Education into the 21st Century Project Conference. September 19-24, 2003. Brno, Czech Republic. e-mail: arogerson@vsg.edu.au.</p>	<p>Intégration des technologies dans l'enseignement des Mathématiques. Du 20 au 22 juin 2003. Reins, France. www.reins.iufm.fr/Recherche/Cadre_recherche.htm En lien avec le 3ième Symposium CAME (Computer Algebra in Mathematics Education). 23 au 24 juin 2003.</p> <p>Integrating Technologies into Mathematics Education. June 20-22, 2003. Reins, France. In relation with the 3rd CAME Symposium (Computer Algebra in Mathematics Education). June 23-24, 2003. http://www.itssn.mathstore.ac.uk/came/index.html</p> <p>ICME-10. Du 4 au 11, juillet, 2004, Copenhagen. ICME-10. July 4-11, 2004, Copenhagen.</p>
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1. **L'ordre du jour est adopté tel que distribué (Sandy Dawson, Medhat Rahim).**
2. **Le procès-verbal de l'assemblée générale annuelle de 2001, tenue à Edmonton, est adopté (Frédéric Gourdeau, Doug Franks).**
3. **Suites au procès-verbal**
Aucun suivi
4. **Rapport de la trésorière [Olive Chapman]**
- **Les états financiers sont adoptés. (Carolyn Kieran, David Pimm)**
- Un membre demande si la réunion d'octobre de l'exécutif est nécessaire. On explique l'utilité de la rencontre pour les nouveaux membres ainsi que pour la cohésion de l'exécutif. Malgorzata précise que l'on ne prévoit pas avoir de rencontre additionnelle cette année. Un membre suggère de considérer d'autres formes de rencontre, plus économiques (conférences virtuelles, appel conférence). On émet aussi l'idée d'adopter un budget annuel.
- La trésorière aborde la question du spectacle qui a été annulé : que faire de l'argent?
PROPOSITION (Eric Muller, Florence Glanfield) Que les sommes recueillies pour le concert servent à appuyer les étudiants, mais que les participants qui le demandent soient remboursés.
Une discussion s'ensuit, portant principalement sur les reçus à émettre.
Demande de vote préalable (David Lidstone, David Pimm). Adoptée.
On procède au vote : **la proposition (Muller/Glanfield) est adoptée.**
- Gord Doctorow propose la mise sur pied d'un Fonds David Wheeler qui pourrait recueillir des dons, déductibles d'impôt. Une discussion s'ensuit. On mentionne le travail

1. **Approval of agenda: Moved** (Sandy Dawson, Medhat Rahim). **Carried.**
2. **Approval of 2001 Annual General Meeting minutes. Moved** (Frédéric Gourdeau, Doug Franks). **Carried.**
3. **Business arising from the minutes.** None.
4. **Treasurer's report** (as distributed by Olive Chapman).
Acceptance **moved** (Carolyn Kieran, David Pimm). **Carried.**
- 4a. Sandy: Is an October executive meeting necessary?
Frédéric: The executive benefits through cohesion.
Malgorzata Dubiel: There is no anticipated need for an extra executive meeting this year.
Elaine Simmt: The meetings have made a difference to the executive members.
Jon Borwein: There are more economical forms of communication than face-to-face.
David Reid: The new executive is learning new tasks each year. Continuity makes relearning tasks less necessary.
Florence Glanfield: Perhaps we as an organization will need in the future to propose and approve a budget at the annual general meeting.
- 4b. Olive: How should we handle the credit from the cancelled performance?
Moved (Eric Muller, Florence Glanfield) that the concert fund go toward graduate student support, unless a participant notifies the treasurer in person or by e-mail.
Morris Orzech: It is awkward that receipts now bundle all parts of what is paid.
George Gadanidis: Universities may or may not reimburse for entertainment. Perhaps we should make the default choice the reimbursement of the money.
Bill Higginson: The volunteer executive work hard. Avoid adding clerical details.

additionnel, l'appui potentiel de la SMC pour la gestion du fonds, les coûts financiers et les formalités administratives reliées au statut d'organisme reconnu pour dons de charité. Un comité formé par l'Exécutif devrait étudier cette question.

-Finalement, en réponse aux questions soulevées à ce sujet, Olive donnera la possibilité de reçus séparés pour rendre compte plus précisément de la nature des dépenses relatives à la participation à la rencontre annuelle.

5. Rapports des éditeurs

Actes [Malgorzata; Elaine Simmt]

- Malgorzata remercie les éditeurs passés et présents des Actes : Yvonne Pothier, John Grant McLoughlin, Elaine Simmt et Brent Davis.

- Elaine édite les Actes avec Brent Davis. Elle invite à consulter le site pour les renseignements relatifs au format et indique que la date de soumission est fixée à la fin septembre. Les documents des actes de la rencontre de 2000 ont été transmis par John Grant McLoughlin et il ne manquerait que deux séances ad hoc. Le coût des Actes de 2000 et 2001 est 12\$.

- Olive indique qu'il y a des copies des actes des années passées disponibles à l'Université de Calgary, et rappelle aux membres que deux copies des Actes sont remises aux Archives Nationales annuellement.

- Il est suggéré de considérer un prix différent pour les bibliothèques.

- Il est signalé que l'année de publication et le lieu d'impression ne sont pas indiqués dans les Actes, ce qu'il faudrait corriger.

Newsletter [Doug Franks]

Doug indique qu'il n'y a eu qu'un seul bulletin depuis mai dernier, un de moins que souhaité. Il y en aura deux dans l'année à venir, disponibles sur le site et sur papier. Il invite les contributions.

Site internet [David Reid]

David remercie Nathalie Sinclair qui s'occupe de la version française du site, qui n'est pas une traduction du site anglais. Notamment, les documents ne sont pas traduits d'un site à l'autre. Il indique que les photos de Marty Hoffman seront ajoutées au site. David

David Lidstone: Let's deal with one motion at a time.

Question (David Lidstone, David Pimm)
Carried. Motion **Carried**

4c. Gord Doctorow: It would be good to set up a David Wheeler Memorial Support Fund, with donations tax-deductible.

Sandy: Good idea—It could be put on the registration form.

Florence: A subcommittee would be better for this suggestion. The executive already has enough to do.

Eric: Perhaps CMS could handle the fund.

Jon B: Charitable status requires particular details with regard to bookkeeping.

Carolyn K: There is a dollar cost to achieving charitable status too.

4d: Olive: Morris's concern will be addressed by giving people the option of separated receipts.

5a. Editors' report: Proceedings.

Malgorzata: Thanks to Yvonne Pothier, John Grant McLoughlin, Elaine Simmt, and Brent Davis.

Elaine: See the website for format instructions, but if in doubt keep it simple. Due date is the end of September. John Grant McLaughlin passed on the 2000 documents to Elaine, and only one or two ad hoc files appear to have been lost. The purchase price is \$12 for either 2000 or 2001.

George G: How can libraries order proceedings?

Olive: There are extra copies at U of C to be distributed. Two copies go to the National Archives every year.

David P: A different price for libraries would be a good idea.

Walter Whiteley: We could bundle the past ones with a current one.

Roberta Mura: The year of publication and city of printing are missing from the information page.

5b. Editor's report: Newsletter

Doug: There was one issue this last year, which is one less than intended. There will be two in the upcoming year, hard-copy and e-copy. Submissions are requested.

5c. Editor's report: Website

David R: Merci à Nathalie Sinclair who edits submissions received in that language. No translations are done. Marty Hoffman's photos

mentionne aussi que la mise éventuelle sur le site des actes précédents impliquerait temps et coûts, problèmes qu'il faudrait alors considérer.

Dans la discussion portant sur les Actes, Joel Hillel indique qu'il fera parvenir à Carolyn Kieran les copies de trois des quatre premières années des Actes pour fin de conservation.

6. Rapport du comité local [Peter Taylor]

Peter informe les membres que 88 personnes sont inscrites à la rencontre, en plus de 2 personnes qui accompagnent.

7. Rapport du Conseil d'administration de FLM [Lesley Lee]

- Le Conseil d'administration de FLM est formé de Brent Davis, Carolyn Kieran, William Higginson, Joel Hillel, Malgorzata Dubiel, Olive Chapman, et comprend aussi Geoff Roulet (éditeur à la production), Nathalie Sinclair (éditrice du site) et Eddie Campbell de l'université Queens (membre externe). Les mandats de Lesley et de Tom Kieren sont terminés. La santé financière du journal est bonne.
- David Pimm quittera le poste d'éditeur après avoir complété la 22^e édition et après 5 ans dans ce poste. Un comité sera formé afin de trouver un nouvel éditeur et un appel de candidatures sera lancé en juin. La nouvelle structure de fonctionnement comprendra une équipe formée d'un éditeur et de deux éditeurs associés. Un processus a été mis en place afin de traiter les articles en attente. De plus, Eric Muller est en charge d'une équipe qui verra à la mise sur pied d'une constitution.
- Eric rappelle aux membres que FLM est associé au GCEDM mais n'est pas sous sa gouvernance.

8. Forum de la SMC

Jonathan Borwein informe les membres qu'un forum sur l'éducation mathématique organisé par la SMC aura lieu à Montréal du 16 au 18 mai 2003, avec une seconde rencontre en 2005 à Toronto. La participation est uniquement sur invitation et les membres intéressés peuvent contacter Christian Rousseau ou George Blumen.

are going on the site. If early proceedings go on the site, there are time and cost questions to address.

Joel Hillel: Copies of three of the first four years of proceedings will be passed to Carolyn K for safekeeping.

6. Local organizer's report.

Peter Taylor: There are 88 participants and 2 accompanying persons.

7. Courtesy report from FLM board of directors

Lesley Lee: Board members include Brent Davis, Carolyn Kieran, Bill Higginson, Joel Hillel, Malgorzata Dubiel, Olive Chapman, Geoff Roulet as managing editor, Nathalie Sinclair as website manager, and Eddie Campbell of Queens as external member. Lesley and Tom Kieren are retiring from the board. The journal is financially sound. David Pimm is resigning but is committed to completing edition 22, which will complete five years as editor. A search committee will be formed and there will be a call for applications in June. There will be an editorial team of an editor and two editorial assistants. Procedures are in place for dealing with a backlog of submissions. Eric Muller is leading a team to establish a constitution.

Eric: FLM is run at arm's length from CMESG.

8. CMS Forum

Jon B: The forum is in Montreal, May 16-18, 2003, with a follow-up in early 2005 in Toronto. Participation is by invitation, but contact Christian Rousseau or George Blumen if interested.

9. Introduction of new executive.

Malgorzata: Thank you to Elaine, retiring from the executive, and to Ralph Mason, joining. The continuing members are Malgorzata, Olive, Bill, David R, and Caroline Lajoie.

10. Future conferences

2003 will be in Acadia, at the end of May.
2004 will be in Quebec, probably at Laval.
2005 will be on the prairies or the west coast.

11. Other Business

Eric, ICME report: The next ICME is set for 2004 in Denmark. There will be two ICMI meetings soon: Modeling to be discussed in Germany in February 2004, and teacher

9. **Présentation du nouvel Exécutif**
[Malgorzata]
Malgorzata remercie Elaine, qui quitte l'Exécutif, et accueille Ralph Mason. Olive Chapman (trésorière), Bill Higginson, David Reid et Caroline Lajoie complètent l'Exécutif.

10. **Prochaines rencontres annuelles**
2003 à Acadia, à la fin mai
2004 au Québec, probablement à l'Université Laval
2005 dans l'ouest du pays (Prairies ou Colombie-Britannique)

11. **Divers**
Eric Muller présente un bref rapport sur la CIEM. Le prochain ICME sera en 2004 au Danemark. Deux études de la CIEM sont en préparation : modélisation, dont la rencontre est prévue en février 2004 en Allemagne, et formation des enseignants (dates et lieu à venir).

12. La réunion est levée. (David Lidstone)

- education at a place and time to be announced.
12. **Adjournment: Moved**(David Lidstone)
Carried.

CONTACT INFORMATION / COORDONNÉES DES PERSONNES À CONTACTER
CMESG Editors / Les Éditeurs de GCEDM

Proceedings editors / Les éditeurs des Actes: Elaine Simmt (elaine.simmt@ualberta.ca), Brent Davis (brent.davis@ualberta.ca)

Webpage editors/Responsables du site sur l'hypertoile: David Reid (david.reid@acadiu.ca), Nathalie Sinclair (nathalie_sinclair@sfu.ca)

Newsletter Editor / Éditeur du Bulletin

Please submit contributions to / Veuillez envoyer vos contributions à:

Doug Franks
Faculty of Education
Nipissing University
North Bay, ON P1B 8L7

Phone: (705) 474-3461 ext. 4457
Email: dougf@nipissingu.ca
Fax: (705) 474-1947

I would like to thank member Frédéric Gourdeau for his major contribution as translator, reviewer and editor of all French language text. - Doug Franks

L'EXÉCUTIF DU GCEDM/CMESG EXECUTIVE 2002-2003

The members of the executive extend an invitation to you to contact us about any item of interest. If you have something you want to suggest, if you have a concern you wish to raise, if you want more information, etc., please let one of us know. In order to be of service to the membership, we need to be aware of what your interests are.

Les membres du Comité exécutif vous invitent à leur faire part de votre point de vue concernant n'importe quel aspect de la vie du GCEDM. Que ce soit pour transmettre suggestions ou commentaires, ou encore pour être mieux informé, n'hésitez pas à entrer en contact avec l'un d'entre nous. En nous faisant connaître vos intérêts, vous nous aidez à mieux vous servir.

Malgorzata Dubiel, President
Department of Mathematics and Statistics
Simon Fraser University
Burnaby, BC V5A 1S6
email: dubiel@cs.sfu.ca
Fax: (604) 291-4947

Olive Chapman, Treasurer & Membership Secretary
Faculty of Education
University of Calgary
2500 University Drive NW
Calgary, AB T2N 1N4
email: chapman@ucalgary.ca

Ralph Mason, Recording Secretary
Curriculum, Teaching & Learning
272 Education Bldg.
University of Manitoba
Winnipeg, MN R2C 0A1
email: masonrt@ms.umanitoba.ca

David A. Reid, Co-Conference Coordinator
School of Education
Acadia University
Wolfville, NS B0P 1X0
email: david.reid@acadiu.ca
Fax: (902) 585-1071

Bill Higginson, Member at Large
Faculty of Education
A235 McArthur Hall
Queen's University
Kingston, ON K7L 3N6
email: higginsw@educ.queensu.ca
Fax: (613) 544-6580

Caroline Lajoie, Co-Conference Coordinator
Département Mathématiques
Université du Québec à Montréal
CP 8888, Succ. Centre Ville
Montréal, PQ H3C 3P8
courriel: lajoie.caroline@uqam.ca