2001
Canadian Mathematical Society

Annual Report to Members

April 26, 2002

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President’s Report

A General Reprise

The year 2001 saw the Society as busy as usual. As President, I again wish to remind you how hard and effectively our Executive Office continues to work and in how many activities the Society is engaged. The Executive Director's Report details changes in the Executive Office.

Whether we choose the comparison with other Canadian Academic Societies or with foreign Mathematical Societies, we take some considerable pleasure in both the scale and level of function we provide. Through our annual meetings and prizes, active publication programme, sponsored high school competitions and Math Camps (there were 11 this year (2001) in seven provinces), as well as the Endowment Fund Grants Competition “ which has just completed its third set (first full cycle) of awards funding worthy mathematical projects ... and much else.” Information on the Competition can be found via Camel: www.cms.math.ca/Grants/.

Central, as always, to last year's activities were the Summer and Winter Meetings, again aided by the generous support of the National Programme Committee of the three Canadian Research Institutes (Fields, CRM and PIMS) and the Mathematics of Information Technology and Complex Systems Network (MITACS NCE).

CMS Summer Meeting (Saskatoon)

The 2001 Canadian Mathematical Society's Summer Meeting was hosted by the University of Saskatchewan, from June 2--4, 2001. As we have come to expect, the meetings are not only excellent in the scientific content but are also an excellent way to build and maintain friendships within the mathematical community.

Following our now usual format, the Summer Meeting included ten symposia, contributed papers, four plenary speakers, and two Prize lectures. The Jeffery-Williams Lecture was given by David Boyd, University of British Columbia, the second Coxeter-James lecturer in 1979. The symposium on Number Theory was organized in honour of David who also turned 60 in 2001. The Krieger-Nelson Lecture was given by Lisa Jeffrey, University of Toronto. There were four plenary speakers: Georgia Benkart (Wisconsin), Zoe Chatzidakis (Paris 7), Geoffrey Grimmett (Cambridge), Barry Simon (Caltech) and an excellent public lecture delivered by De Witt Sumners of Florida State University entitled “Calculating the secrets of life: Mathematics in Biology and Medicine”. The ten well attended symposia were as follows:

Abstract Harmonic Analysis (Org: Anthony Lau, University of Alberta and Keith Taylor, University of Saskatchewan); Geometric Topology (Org: Alex Chigogidze and Ed Tymchatyn, University of Saskatchewan); Graph Theory (Org: Brian Alspach and Denis Hanson, University of Regina); Infinite dimensional Lie theory and representation theory (Org: Stephen Berman, University of Saskatchewan); Mathematical Education: Cognition in Mathematics (Org: Florence Glanfield, University of Saskatchewan); Matrix Analysis (Org: Judi MacDonald, University of Regina) ; Model theoretic algebra (Org: Bradd Hart, McMaster University/ Fields Institute, F.-V. Kuhlmann and S.

Kuhlmann, University of Saskatchewan); Number Theory - in honour of David Boyd (Org: Peter Borwein, Simon Fraser University and Michael Bennett, Illinois); Rigorous studies in the statistical mechanics of lattice models (Org: Chris Soteros, University of Saskatchewan and Stu Whittington, University of Toronto) ; Scattering theory and integrable systems (Org: Jacek Szmigielski, University of Saskatchewan).

All scientific talks were held at the University of Saskatchewan. Some pre-meeting activities, the opening reception and the meeting banquet took place at the Delta Bessborough Hotel. The Delegates' Luncheon on Saturday, June 2 and the lunch on Sunday and Monday were included in the registration fee, a feature which received many favourable comments from our participants.

The Meeting Director, Keith Taylor, the Chair of Local Arrangements, Christine Soteros, the session organizers, together with helpers from the local department and the CMS Executive Office, deserve our special thanks. The attendance of 285 was excellent and the consensus was that the conference was first rate.

The CMS Winter Meeting (York)

The Canadian Mathematical Society's 2001 Winter Meeting was held at the Toronto Colony Hotel from December 8 to 10, 2001, hosted by York University. It was very successful both intellectually and socially. As with all our activities, our meetings rely on a great deal of local effort for which I express the Society's gratitude. The Meeting Director, Tom Salisbury, the Chair of Local Arrangements, Juris Steprans, together with Stanley Kochman and the many helpers from the local department, deserve our special thanks. So too does Monique Bouchard and the entire staff of the CMS Executive Office.

The meeting had six plenary speakers, a public lecture, five prizes and prize lectures, eight symposia, a contributed paper session, many business meetings, exhibits, and several social events. A planned poster session unhappily failed to generate enough submissions and had to be cancelled.

We were honoured to have the following distinguished plenary lecturers. Martin Golubitsky (University of Houston), John Ockendon (Oxford University), Arturo Pianzola (University of Alberta), David Pimm (University of Alberta), Richard Schoen (Stanford University), and Dan Voiculescu (University of California, Berkeley). Those talks I had an opportunity to attend were excellent -- in both form and content.

The Society's thanks also go to the many session organizers — not to mention the speakers — who were responsible for the following special sessions (and 3 satellite meetings that took place on December 7th). The organizers were: Dynamics and Symmetry (Org: Bill Langford, Guelph University and Jianhong Wu, York University); Free Probability (Org: Alexandru Nica, University of Waterloo); History of Mathematics (Org: Richard O'Lander and Ronald Sklar, St. John's University, N.Y.); Industrial Mathematics (Org: Huaxiong Huang, York University); Kac-Moody Lie Theory and Generalizations (Org: Nantel Bergeron, Yun Gao, and Geanina Tudose York University); Moonshine (Org: Christopher Cummins, Concordia University); Nonlinear and Geometric Analysis (Org: Robert McCann and Jochen Denzler, University of Toronto);

Mathematical Education (Org: Pat Rogers, University of Windsor, Kathy Kubota-Zarivnij, and Walter Whiteley, York University); Contributed Papers (Stanley Kochman, York University).

This meeting also celebrated the varied accomplishments of five of our colleagues. The CMS Coxeter-James Lecture was given by Kai Behrend, University of British Columbia, the CMS Doctoral Prize Lecture, was given by Nathan Ng, formerly from UBC and now at the University of Georgia. Both were exemplary models of such talks.

The CMS Adrien Pouliot Prize for educational contributions was awarded to George Bluman, University of British Columbia while the CMS Distinguished Service Award was presented to James Timourian, University of Alberta. All prizes were acknowledged at the Delegates' Luncheon as was the G. de B. Robinson award, for an exceptional paper in the Canadian Mathematical Bulletin, which went to Patrick Gilmer, Louisiana State University, for his article "Topological Quantum Field Theory and Strong Shift Equivalence" Canadian Mathematical Bulletin Vol. 42(2), pp. 190-197.

The public lecture *"and nothing else has quite the kick of mathematics"*, a quote from G.H. Hardy, was given by Katherine Heinrich (University of Regina and a recent CMS Past-President). It focussed on the history of mathematical puzzle making and was most entertaining and informative.

The Delegates' Luncheon was held on Sunday, December 9. A ticket to this luncheon was included for each registrant. George Bluman gave a delightful brief talk as the Adrien Pouliot recipient making reminiscences of thirty years in the educational trenches, and we hope to make such a presentation an annual event.

National Educational Forum

The CMS Board has endorsed holding a national educational forum in Montreal from May 16-18, 2003 with a follow up meeting to be held roughly nine months later in Ontario. These may be viewed as continuing an activity started by the 1995 meeting in Quebec City, chaired by Katherine Heinrich.

These Fora will bring together roughly 200 people from all provinces and territories representing the different groups with interest in and impact upon mathematical education at the middle and high school level (roughly grades 6-12). The co-organizers are Christiane Rousseau (UdeM) and George Bluman (UBC), who are building the scientific programme. The Local Organizing Committee (chaired by Louis Charbonneau, UQAM) is already at work.

The intention is for the first meeting to function primarily as an opportunity to compare issues and best practices across the country. It should also identify those issues on which subgroups can prepare more detailed findings to be presented at the second meeting. These findings should be published both in electronic and paper versions and will be distributed widely. Anyone interested in helping design the meeting or merely in participating is encouraged to contact me. It is hoped that the CMS, through these fora and the connections enhanced by them, can function more actively as a facilitator and clearing house on such educational issues. This, we expect, will be facilitated by the active participation of the three institutes.

First Canada-France Meeting

At the initiation of Michel Waldschmidt, President of the Société Mathématique de France, we are now undertaking a multi-society (pure and applied) meeting in Toulouse in July of 2004. This promises to be an exciting opportunity for a primarily francophone mathematics meeting. While in France this past October I met with the Presidents of the two French Societies and we made good progress on the organization of the meeting. Preliminary details will appear during the next six months in the CMS Notes and on the CMS website. It is a reflection of the growing interaction of CMS and CAIMS, that 2004 will also see the second joint CMS-CAIMS Meeting in the Summer in Halifax.

Other Recent Activities

Let me highlight some of the Society's recent activities, for the most part avoiding things described in other Reports. Indeed some of the activities previously included in the annual presidential reports are now better described in the report of the Advancement of Mathematics Committee, also chaired by the President.

International Congress of Mathematicians: Preparation for the next IMU Congress in Beijing in August 20-27, 2002 is well underway and I have been able to arrange a Canadian reception during the Congress, hosted at the reportedly spectacular Canadian Embassy by the Canadian Ambassador. This will be jointly sponsored by the CMS and the three national Research Institutes.

More substantitively, I sit, as deputy chair, on the IMU's *Committee on Electronic Information and Communication.* The CEIC (www.math.ceic.ca) continues to make slow, but steady, progress on its charter, on issues of metadata, digital publishing, copyright and intellectual property. Related statements are given in more detail in Appendix A.

In addition to writing a detailed report for the IMU Executive in Beijing, and producing such "best practice advisories", a principal goal is the development of a world-wide *MathNet* that allows one to obtain information about mathematicians and mathematics. The two primary steps are the installation of "secondary home pages" (institutional, departmental, and individual) and the integration of preprint services.

Taskforces: The long and productive task force review has finished and I wish to thank all who participated. A complete record of recommendations may be found on the CMS website including the culminating report of Taskforce 9 (See www.cms.math.ca/Projects/1998/future.html). Many of the recommendations have either already been implemented or steps are underway to implement them.

Advancement of Mathematics: One of the taskforce recommendations was to establish a Promotion of Mathematics Committee. This has lead to the formation of an Advancement of Mathematics Committee, with fund raising now overseen by a subcommittee of this new committee. It started work at the Summer Meeting.

Publications: The outstanding issue for the CMS is to reorganize its publishing activities. An ad-hoc subcommittee was struck in October 2000 (chaired by Tom Salisbury) to consider these matters further. It triggered design of a business plan (now completed), to lead to a more coherent publication structure to commence in January 2003.

CMS Books and Tracts: *The CMS Books in Mathematics* series with Springer New York now has ten volumes published or in press, and many others under contract. Reviews will I am sure, continue to appear in the CMS Notes. In June 2000, the CMS launched a parallel series of shorter books *CMS Tracts in Mathematics* to be published by the American Mathematical Society, edited by Ken Davidson and Cameron Stewart. Each series hopes to publish broadly and we should directly invite members of other Canadian mathematical science societies to consider publishing their work through these vehicles. (See www.cms.math.ca/Publications/.)

These matters are elaborated in the Executive Director's report.

Executive Director: I'm very pleased to report that at the December Board Meeting, Graham Wright's appointment as Executive Director for a further two years (July 2002 - June 2004) was approved. I want to express my own deep gratitude for all that Graham has offered to the CMS over the past 22 years. It is largely because of his extraordinary commitment to the CMS over that very long period, that the Society is in the robust shape that it is. I also express my thanks, and those of the CMS, to the University of Ottawa which has housed and supported the CMS over the past 22 years.

www.cms.math.ca: The Winter Meeting also marked the public launch of a revised Society website. This has two main components. First, one may choose to navigate in French www.smc.math.ca or English www.cms.math.ca. Second, the 'look and feel' has been revamped. I hope that you are as pleased as I am with the hard work done by our Web Services Manager, Alan Kelm, and his team. While the process is not yet entirely complete --- no web site ever is --- comments and suggestions are always welcome.

Kabol: As a pleasant surprise, one of the CMS web-pages, "Knot a Braid of Links", was picked by Scientific American www.scientificamerican.com, of the May 14th 2001, as one of the top 50 scientific resources on the web. As many of you will know, Kabol has featured a mathematical site every week since 1996 (the web stone age!). Congratulations are especially due to Bob Rosebrugh who started Kabol and Nathalie Sinclair who have overseen it for the last three years.

Some Ongoing Issues

The Executive and Board have discussed three issues of concern for the long-term health of the Society, that I now touch upon.

1) Prize Nominations.

The present nomination process for our prizes elicits many candidates from some Universities but few if any from others with very good potential nominees. We intend to construct posters to better remind the community of the nomination protocol. That said, I think it is worth emphasizing that making a nomination for one of our awards is itself an excellent way of acknowledging the contributions of one's colleagues, whether or not the nomination is successful. Details about all the prizes and something of their history is to be found at: www.cms.math.ca/Prizes/.

2) Membership.
The Society, like many, is experiencing some difficulty in attracting new members. The nature of university affiliation has changed over the last quarter century and we all have many calls on our time and finances. As the retirement of our older members accelerates, this has led us to consider how best to make apparent the value of membership, especially to our newer colleagues. Thus, I would ask each of you to consider doing some recruiting in your own institution.

3) Structure of Meetings.
The Canadian mathematical science community is now exceptionally diverse and vigorous, including not only CAIMS, CMS, Mitacs and the three Institutes, but now also the **Banff International Research Station** which will begin full operation in 2003. I offer my warmest congratulations to Robert Moody (BIRS Director), Nassif Ghoussoub (PIMS) and David Eisenbud (MSRI and AMS President-Elect) who spear-headed this remarkable achievement.

In light of the changing ecosystem, I have asked our Committee Chairs and Executive to consider how, if at all, the structure of our semi-annual meetings might be changed. Should we offer short courses, a survey lecture series, professional development activities, and the like? I would be keen to hear opinions from members.

In Conclusion

As will be clear from my report, the Executive Director's and all the committee reports, the Society is for the most part thriving. I finish by observing, as evidenced above, that 2002 will see a markedly increased emphasis on fund raising, on membership recruitment, and on joint initiatives with other societies and groups.

APPENDIX A: The Work of the CEIC

I sit as Deputy Chair on the IMU's only standing committee: *Committee on Electronic Information and Communication.* The CEIC (www.math.ceic.ca), founded in 1998, continues to make slow, but hopefully steady, progress on its charter, on issues of digital publishing, metadata, copyright and intellectual property. All are designed to offer the world mathematical community the greatest possible access to its own intellectual fruit. We met in Princeton from May 12-13, 2001. The CMS cosponsored a previous meeting in Berkeley in December 1999. The most recent meeting took place in Vancouver, February 15-17, 2002 and contained a workshop at which a number of CMS members interested in such issues also participated. The CEIC membership is Peter Michor (Austria, Chair), Jonathan Borwein (Canada), John Ewing (USA), Jonas Gomes (Brazil), Martin Groetschel (Germany), Wilfrid Hodges (UK), David Morrison (USA), Kapil Paranjape (India), Alf van der Poorten (Australia), Alexei Zhizhchenko (Russia), Qing Zhou (China).

In addition to writing a detailed report for the IMU Executive in Beijing, a principal goal is the development of a world-wide *MathNet* that allows one to obtain information about mathematicians and mathematics. The two primary steps are the installation of "secondary home pages" (institutional, departmental, and individual) and the integration of preprint services. The German prototype is flourishing at www.math-net.de/.

We are now looking for about 40 North American "beta-testers", and the CMS and the Vice Presidents' Departments have agreed to participate by installing these secondary homepages. In principle this is easy. I have also asked the three Institutes, in addition, to begin to prepare their preprints with the necessary metadata to have them easily found by the system. My own secondary pages can be seen at www.cecm.sfu.ca/althome.html and www.cecm.sfu.ca/jalthome.html. Interested individuals are invited to install similar pages. A web interface for the purpose lives at www.math-net.de/project/tools/pagecreator/index.en.html

Copyright: One of the substantial consequences of our last meeting was the following statement, written and recommended by the Committee on Electronic Information and Communication (CEIC) and endorsed by the Executive Committee of the IMU in its 68th's session in Princeton, NJ, May 14-15, 2001).

What do you want from your publisher?

Executive summary for authors of research papers in journals.

"The number of mathematical papers that are stored or circulated as electronic files is increasing steadily. It is important that copyright agreements should keep in step with this development, and not inhibit mathematical authors or their publishers from making best use of the electronic medium together with more traditional media. While most mathematicians have no desire to learn the subtleties of copyright law, there are some general principles that they should keep in mind when discussing copyright for research papers with their publishers.

1) A copyright agreement with your publisher is a bargain struck between his interests and yours. You are entitled to look out for your interests. Most journal publishers have a standard copyright form, and may be unwilling to vary it for individual authors. But nothing prevents you from asking, if you see room for improvement. Pressure from authors may lead publishers to change their standard contracts.

2) Three groups of people have an interest in your paper:

a - You and your employer (who may in some countries be automatically the original copyright holder and hence a party to the copyright agreement);

b - The journal publisher;

c - Users of paper who are not parties to the copyright agreement, including readers and libraries. One of the main purposes of your copyright agreement is to control how your publisher or you make the paper available to this third group. Publishers will hardly allow individual authors to dictate agreements with libraries. But if you know that a certain journal publisher makes life hard for libraries, you can take this into account when choosing where to submit your paper.

3) There is no ideal copyright agreement for all situations. But in general your agreement should contain the following features:

a -You allow your publisher to publish the paper, including all required attachments if it is an electronic paper.

b - You give your publisher rights to authorize other people or institutions to copy your paper under reasonable conditions, and to abstract and archive your paper.

c - Your publisher allows you to make reprints of the paper electronically available in a form that makes it clear where the paper is published.

d - You promise your publisher that you have taken all reasonable steps to ensure that your paper contains nothing that is libellous or infringes copyright.

e - Your publisher will authorize reprinting of your paper in collections and will take all reasonable steps to inform you when he does this.

4) Should you grant full copyright to the publisher? In some jurisdictions it is impossible to transfer full copyright from author to publisher; instead the author gives the publisher an exclusive right to do the things that publishers need to do, and these things need to be spelt out in the agreement. This way of proceeding is possible in all jurisdictions, and it has the merit of being clear and honest about what is allowed or required."

A more complete copyright checklist was written by Wilfrid Hodges. It was approved and is recommended by the Committee on Electronic Information and Communication of the International Mathematical Union (IMU). A 'final' version is lodged at www.maths.qmw.ac.uk/personal/wilfrid/copyright.html. It will be posted in the near future.

The entire document may be viewed as a modest 'shot across the bows' of the publishers.

Opera Uniqua We also addressed the need to keep as much of our (older) literature available as possible. This was also endorsed by the Executive Committee of the IMU in Princeton.

Call to All Mathematicians

"*Open access to the mathematical literature is an important goal. Each of us can contribute to that goal by making available electronically as much of our own work as feasible. Our recent work is likely already in computer readable form and should be made available variously in TeX source, dvi, pdf (Adobe Acrobat), or PostScript form. Publications from the pre-TeX era can be scanned and/or digitally photographed. Retyping in TeX is not as unthinkable as first appears. Our action will have greatly enlarged the reservoir of freely available primary mathematical* *material, particularly helping scientists working without adequate library access."*

Guidelines aimed at making such activity reasonably painless should also be circulated soon.

Pubmed: a warning

Lest we think that these are only academic issues, I recently read the editorial in the Proceedings of the NAS by Nobelist Richard Roberts on PubMed/NIH which aims to have the bio-medical literature freely available within six months of publication . Richard J. Roberts "PubMed Central: The GenBank of the published literature"', Proc. Natl. Acad. Sci. USA, **98**, 2, 381--382, Jan. 16, 2001: www.pnas.org/cgi/content/full/041601398v1. I've been watching NIH's PubMed and similar initiatives develop and so the article was more interesting for its colour than detail. Roberts writes:

"What is a reasonable delay? I would argue that 6 months seems a reasonable time for a journal to monopolize the content. Most of us would not dream of scanning the contents of a journal published 6 months ago unless we were searching for a specific article. Thus it seems unlikely that a large number of subscriptions would be lost if 6-month-old issues were made freely available. I think rather few worthwhile journals would be adversely affected if they were to institute such a policy."

While it is hard to oppose 'open access', his assertions are clearly not true of mathematics and any such successful venture would come close to destroying mathematical publishers like the CMS or the AMS. Without vigorous activity such as the IMU/CEIC are promoting, we are hostage to both the large academic publishers and the myopic views of our medical colleagues.

Jonathan Borwein (Simon Fraser University)

Executive Director's Report

The Task Force Review Program that was begun in 1998 culminated with the Final Report of Task Force Number 9 - Executive and Governance - submitted to the Board of Directors in June 2001. Although, on many different fronts, much has been accomplished during the past three years, and many changes instituted, one important aspect currently being reviewed by the Executive Committee and the Board of Directors is a Publishing Plan for 2003 and beyond.

The 2001 Annual Committee Reports once again demonstrate the extensive range of research, publications and educational activities which are supported by the Society as well as the many members and other volunteers.

All of the Society's activities are coordinated through the Executive Office in Ottawa. The full-time staff includes the Operations Manager - Monique Bouchard, the Membership and Publications Agent - Liliane Sousa, the Administrative Clerk - Suzanne Lalonde, the Assistant to the Executive Director - Caroline Baskerville, and, effective July1, 2001, Alan Kelm - the full-time Web Services Manager. The Society has experienced some difficulty in finding a suitable candidate for the remaining full-time position (the CMS Accountant) but I am confident the position will be filled in early 2002. Many members will have met the staff above at a CMS semi-annual meeting and, on behalf of the Society I wish to express our gratitude to all the staff, both full-time and part-time, for their valuable help and assistance.

Electronic services provide an ever increasing and important tool for our members, subscribers and others. Although the Society has devoted considerable resources to providing good electronic services, the level of work required has increased markedly and it was evident the Society needed a full-time Web Services Manager. I was delighted that Alan Kelm, the part-time Camel East Site Manager, agreed to become the full-time Web Services Manager. The first major re-vamp of the CMS web site took place during 2001 and the new site was launched in December. The web site re-vamp included a better grouping of the various components, much easier and more bilingual navigation tools, overall and section site maps, etc. In 2002, further work is planned including a re-design of certain pages, an improved accounts system and password and access features, and the completion of the migration from the Camel west server in Vancouver to the web server in Ottawa..

Thanks to the support received from the CRM, the Fields Institute, and PIMS, through the National Program Committee, as well as support from the host departments and other sponsors, and the considerable assistance from the meeting directors, session organizers and local arrangement committee members, both of the Society's 2001 meetings were very successful scientifically. The 2001 Summer Meeting in Saskatoon was also successful financially but, unfortunately, the 2001 Winter Meeting in Toronto had a much greater deficit than anticipated. For the Winter Meeting, although expenses were very close to projections, the income from registration fees was well below expectations. It is possible that attendance may have been influenced by September 11th, nevertheless, it demonstrates that for our meetings to be successful, both scientifically and financially, they must attract more delegates. A wide range of sessions is an important component in attracting more delegates. The program for the CMS 2002 Summer Meeting in Quebec City has a large number of sessions and I believe the meeting will be very successful scientifically and financially.

Through the highly successful 2001 Canadian International Mathematical Olympiad team, the 2001 Canadian Mathematical Olympiad, the 2001 Canadian Open Mathematics Challenge, the CMS problem solving journal (CRUX with MAYHEM), education sessions at each semi-annual meeting, public lectures, regional and national Math Camps, and various other activities, the Society provides a wide array of educational enrichment activities. These activities are only possible because of the significant support received from provincial governments, corporations, foundations and CMS members. The Esso/CMS Math Camps Program has been extremely successful and continues to expand. In 2002, after only four years, there will be at least one camp in almost every province.

Our publishing activities continue their very high standards and appear in a very timely manner. The CMS Book Series with Springer-Verlag is progressing very well and 9 books in the Series have appeared so far. Work continues to attract articles for the CMS Tracts in Mathematics (published in cooperation with the American Mathematical Society) and to attract manuscripts for "A Taste of Mathematics" (ATOM), a series of work booklets for high school students. The Publishing Vortal contract with the Advanced Publishing Research Lab (APuRL - SFU) has not developed as planned. The contract included developing four modules but, in view of unforseen circumstances, only the first two (Authentications and Permissions, and System Integration) will be delivered in some form. The cost for these two modules is in accordance with the contract between the CMS and APuRL, and the Society is taking steps to produce the other two modules (Manuscript Management and System Management Integration) either in house or with another partner.

The Society's research, educational and administrative activities are only possible because of the significant revenues obtained from our publication activities. For the past several years, a surplus in the Operations Fund has been achieved and, as policy dictates, the cumulative surplus above $75,000 transferred to the Endowment Fund. Although a surplus in the Operations Fund was projected for 2001, it now appears there will be a significant deficit. A deficit is also projected for 2002. The Society is at a cross-roads and, if the deficit situation cannot be addressed, the Society's ability to continue its current programs will be drastically affected.

The focus in 2002 will be to increase membership and donations revenues and create a Publications Plan that will yield additional publications revenues in the long-term. A major component of the Publishing Plan, that was accepted by the Board of Directors in December 2001, is an expanded Publications Office in Winnipeg. Some existing publications positions will be amalgamated and some eliminated. A new position of CMS Publisher has been created. The position will probably be an academic one and will be advertised early in 2002. This person would be responsible for promoting all of our publications and also for obtaining contract work for the Publications Office. Although the titles of the positions are not the same, it is worth noting that the Publications Plan being proposed is very similar to that adopted by the American Mathematical Society.

In June 2002, I will have completed twenty three years as Executive Director and Secretary of the Canadian Mathematical Society. The Canadian mathematical community has changed considerably during this period. In deciding to accept to continue for a further two years, the tremendous support I have received from the presidents, vice-presidents, and the treasurer, as well as the many directors, committee chairs, members and editors with whom I have had the pleasure to work, contributed greatly to this decision, as did the considerable help from the staff at the Executive Office in Ottawa and the other offices throughout Canada.

I look forward to helping the Society face the challenges and opportunities that are ahead.

Graham P. Wright (University of Ottawa)

Treasurer's Report

A comparison of Operations Fund revenues and expenditures for 2001, against 2000, shows a 3% decrease in total revenue and a 2% increase in total expenses. While this may not be alarming in itself, it is worth some analysis.

There was a modest increase in membership fees, which is encouraging, but a decrease in subscriptions and publications, which is cause for concern. Income from foreign exchange was up, reflecting the relatively weak position of the Canadian dollar. But grants and donations were both down, and this fact is a deterrent to the continuing development of important educational and research projects.

On the expenditures side, the largest increase is in salaries and benefits. This reflects the re-organization and the increase in the number of staff at the Executive Office, in response to the substantially increased workloads induced by the new projects. Boards and Committees expenses also continue to increase, in spite of much-appreciated practices of financial restraint on their part.

The reaction to this brief analysis should not be a pessimistic outlook for the future. Rather, it should be (and indeed is) a challenge to work on our strengths. We should continue to develop programs, while aggressively cultivating the revenue sources that we have. We must also continue to seek new sources of revenue.

Not surprisingly, revenue from investments was also down. In the combined restricted funds, the balance on December 31, 2001 was approximately $115,000 less than it was on December 31, 2000, and $24,000 less than the December 31, 1999 figure. However, there was a net withdrawal of approximately $100,000 in that two year period, to fund World Math 2000 and the Endowment Grants projects. Thus the actual investment performance was better than it appears. Given the state of the world money markets in the last two years, a decrease of $24,000 over that time seems to be quite bearable. We can surely look forward to brighter times ahead.

Arthur Sherk (University of Toronto)

Canadian Mathematical Society
Balance Sheet
as at December 31, 2001

	Operations Fund $	Designated Activities Fund $	Endowment Fund $	Mathematical Olympiads Fund $	**2001 $**	2000 $
ASSETS						
CURRENT						
Cash	267,348	-	62,345	-	**329,693**	265,800
Temporary investments	10,223	-	-	-	**10,223**	145,740
Accounts receivable and accrued interest	218,704	-	6,000	-	**224,704**	216,587
Budget advances	33,500	-	-	-	**33,500**	33,025
Prepaid expenses	15,358	-	-	-	**15,358**	25,827
Interfund receivable (payable)	(3,248)	4,070	(888)	66	**-**	-
	541,885	4,070	67,457	66	**613,478**	686,979
INVESTMENTS	-	-	1,583,809	186,953	**1,770,762**	1,885,978
CAPITAL ASSETS	22,525	-	-	-	**22,525**	18,005
	564,410	4,070	1,651,266	187,019	**2,406,765**	2,590,962
CURRENT LIABILITIES						
Account payable and accrued liabilities	211,106	-	-	-	**211,106**	257,564
Deferred revenue	290,724	-	-	-	**290,724**	305,834
	501,830	0	0	0	**501,830**	563,398
FUND BALANCES						
Investment in capital assets	22,525	-	-	-	**22,525**	18,005
Restricted	-	4,070	1,651,266	187,019	**1,842,355**	1,934,559
Unrestricted	40,055	-	-	-	**40,055**	75,000
	62,580	4,070	1,651,266	187,019	**1,904,935**	2,027,564
	564,410	4,070	1,651,266	187,019	**2,406,765**	2,590,962

Statement of Revenue and Expenditures as at December 31, 2001

Operations Fund

	General Division	Publishing Division	Research Division	Education Division	Total 2001	Total 2000
	$	$	$	$	**$**	$
REVENUE						
Grants	-	-	39,947	70,749	**110,696**	123,063
Donations	2,365	889	4,358	44,647	**52,259**	57,478
Membership fees	86,382	-	-	-	**86,382**	84,588
Registration fees and other sales	115	-	92,927	47,941	**140,983**	149,764
Subscriptions and publications	-	549,414	-	-	**549,414**	567,547
Advertising and promotional sales	7,205	16,864	4,220	-	**28,289**	37,757
Interest and foreign exchange	8,834	257,067	(978)	(908)	**264,015**	247,683
	104,901	824,234	140,474	162,429	**1,232,038**	1,267,880
EXPENDITURES						
National projects	13,204	-	-	139,099	**152,303**	135,859
Speakers and prizes	101	101	62,236	17,821	**80,259**	99,822
Production	-	115,898	5,690	-	**121,588**	112,558
Promotion	3,701	3,538	4,096	4,550	**15,885**	26,892
Salaries and benefits	87,405	259,493	92,684	87,405	**526,987**	461,787
Board and Committees	40,047	72,356	239	5,906	**118,548**	98,633
Legal and audit	1,891	1,891	1,891	1,891	**7,564**	11,768
General administration	38,821	61,396	94,757	34,667	**229,641**	279,522
Amortization	2,422	2,422	2,422	2,422	**9,688**	12,052
	187,592	517,095	264,015	293,761	**1,262,463**	1,238,893
Excess (Deficiency) of Revenue over Expenditures	(82,691)	307,139	(123,541)	(131,332)	**(30,425)**	28,987

Restricted Funds

	Designated Activities Fund	Endowment Fund	Math Olympiads Fund	2001	2000
REVENUE	$	$	$	**$**	$
Donations	-	862	1,155	**2,017**	1,705
Membership fees	-	9,000	-	**9,000**	12,000
Dividend, interest and other income	-	108,402	13,362	**121,764**	97,137
Gain (loss) on disposal of investments	-	(122,837)	(15,182)	**(138,019)**	25,106
	-	(4,573)	(665)	**(5,238)**	135,948
EXPENDITURES					
Lifetime membership fees annual transfer	-	13,104	-	**13,104**	12,120
Projects	283	57,229	-	**57,512**	37,787
Mathematical Olympiad annual transfer	-	-	6,000	**6,000**	6,000
Commissions	-	9,315	1,035	**10,350**	10,344
	283	79,648	7,035	**86,966**	66,251
Excess (Deficiency) of revenue over	(283)	(84,221)	(7,700)	**(92,204)**	69,697
Fund balances, beginning of year	4,353	1,735,487	194,719	**1,934,559**	1,832,593
	4,070	1,651,266	187,019	**1,842,355**	1,902,290
Interfund transfer from Operations Fund	-	-	-	**-**	32,269
Fund balances, end of year	4,070	1,651,266	187,019	**1,842,355**	1,934,559

Budgets - Operations Fund Summary

Division Grand Summaries	Audited prior year end	Budget 2001	Budget 2002
GENERAL			
Total Revenue	120,116	126,391	128,346
Total Expenditure	176,378	198,232	201,769
NET REVENUE/EXPENDITURE	(56,262)	(71,841)	(73,423)
EDUCATION			
Total Revenue	135,373	186,000	212,000
Total Expenditure	268,894	282,682	333,229
NET REVENUE/EXPENDITURE	(133,527)	(96,682)	(121,229)
RESEARCH			
Total Revenue	194,312	174,260	192,931
Total Expenditure	305,604	307,497	316,194
NET REVENUE/EXPENDITURE	(111,292)	(133,237)	(123,262)
PUBLISHING			
Total Revenue	818,079	862,038	870,895
Total Expenditure	488,017	548,051	563,555
NET REVENUE/EXPENDITURE	330,062	313,987	307,340
OPERATIONS FUND			
Total Revenue	1,267,880	1,348,689	1,404,172
Total Expenditure	1,238,893	1,336,462	1,414,747
NET REVENUE/EXPENDITURE	28,987	12,227	(10,575)

Budgets - General and Education Divisions

GENERAL - SUMMARY

	Audited prior year end	Budget 2001	Budget 2002
REVENUE			
Administration	30,528	30,000	29,950
Members	84,588	96,391	97,396
Projects	5,000	0	1,000
TOTAL REVENUE	**120,116**	**126,391**	**128,346**
EXPENDITURE			
Administration	165,498	184,082	184,869
Members	0	5,500	1,600
Projects	10,880	8,650	15,300
TOTAL EXPENDITURE	**176,378**	**198,232**	**201,769**
NET REVENUE/EXPENDITURE	**(56,262)**	**(71,841)**	**(73,423)**

SUMMARY - EDUCATION

REVENUE			
Administration	14,683	20,000	21,000
Competitions	80,190	126,000	123,000
Projects	40,500	40,000	68,000
TOTAL REVENUE	**135,373**	**186,000**	**212,000**
EXPENDITURE			
Administration	122,485	142,222	149,919
Competitions	103,289	110,660	128,560
Projects	43,120	29,800	54,750
TOTAL EXPENDITURE	**268,894**	**282,682**	**333,229**
NET REVENUE/EXPENDITURE	**(133,521)**	**(96,682)**	**(121,229)**

Budgets - Research and Publications Divisions

RESEARCH - SUMMARY	Audited prior year end	Budget 2001	Budget 2002
REVENUE			
Administration	3,168	700	1,650
Meetings	191,143	173,560	191,281
Projects	-	-	-
TOTAL REVENUE	**194,312**	**174,260**	**192,931**
EXPENDITURE			
Administration	111,130	131,122	138,119
Meetings	193,900	174,775	176,475
Projects	574	1,600	1,600
TOTAL EXPENDITURE	**305,604**	**307,497**	**316,194**
NET REVENUE/EXPENDITURE	**(111,292)**	**(133,237)**	**(123,262)**

PUBLISHING - SUMMARY			
REVENUE			
Administration	12,495	2,250	3,250
Journal	508,476	520,762	533,165
Bulletin	164,126	167,026	175,951
Notes	13,659	11,655	23,294
Electronic Services	51,767	84,811	65,305
Crux	53,656	49,234	52,580
Other Publications	13,211	26,300	17,100
Projects	689	0	250
TOTAL REVENUE	**818,079**	**862,038**	**870,895**
EXPENDITURE			
Administration	124,296	139,672	143,819
Journal	134,565	142,050	140,532
Bulletin	61,268	72,550	75,850
Notes	25,412	30,600	30,400
Electronic Services	100,003	110,379	123,114
Crux	35,320	38,400	39,740
Other Publications	6,828	14,000	9,700
Projects	326	400	400
TOTAL EXPENDITURE	**488,017**	**548,051**	**563,555**
NET REVENUE/EXPENDITURE	**330,062**	**313,987**	**307,340**

Advancement of Mathematics

Jonathan Borwein (Simon Fraser) Chair

Christiane Rousseau (Montréal)
Georg Schmidt (McGill)
F. Arthur Sherk (Toronto)
John Whitfield (Lakehead)
Edgar Williams (Memorial)
Robert Woodrow (Calgary)
Graham P. Wright (Ottawa)

One of the consequences of the CMS Taskforce review was the decision to reorient fundraising as a subcommittee (primarily ex-officio) of a new Advancement of Mathematics Committee (AMC). As in 2000, Fundraising was not as successful in 2001 as had been anticipated, in part because of continued unexpected calls on the Executive Director's time and because of the downturn in the economy. The stabilization of CMS publishing activities and the Executive Director's new contract both offer better prospects in 2002. That said, it is my view -- as both chair of the AMC and as President of the Society -- that our fund raising initiatives are not treated seriously enough. The future health of the CMS relies in some mixture of:

(i) preserving and defending our revenue stream from publications;

(ii) initiating and concluding a successful and continuing membership drive, especially in Quebec and with younger academics;

(iii) assuring adequate paying attendance at conferences;

(iv) greater success in raising funds from the private and public sector.

All four of these issues have to become much better enmeshed with the Society's annual cycle. The AMC, in addition to more broadly discussing issues such as the relationship between the Society, the three Institutes (Fields, CRM and PiMS), MITACS and BIRS, has initiated such an annual cycle. It will take vigilance on all parts to successfully integrate these activities.

That said, in 2001 a total of $54,275 was raised from donations from the private sector and 91 members and $111,377 from grants from governments and the research institutes; and a more ambitious national fundraising protocol was initiated. It is anticipated that the Vice-Presidents will play a more prominent role than in the past.

More broadly, various subcommittees (Education and Research included) have been asked to reconsider the structure of our two annual meetings and to position us as well as possible for a changing future, especially given the funding of BIRS. They have also been asked to review the terms and conditions of our prizes and prize lectures.

Four exciting initiatives were undertaken, consonant with `Advancement of Mathematics':
(i) a series of National Educational Fora commencing in May 2003 (see

www.cms.math.ca/bulletins/NEF.html). Their aim is in part to allow the CMS to play a leadership role in educational activities;

(ii) a first joint France-Canada meeting in Toulouse in July 2004;

(iii) a reception at the Canadian Embassy in Beijing (August 2002) to celebrate the awarding of the Fields Medals during the 2002 International Congress of Mathematicians;

(iv) a full-scale reorganization of publishing for the period 2003-2007 -- to assure an up to date publishing environment and a reasonable revenue stream while not over stressing our wonderful but limited human resources.

Education

Edward Barbeau (Toronto) Chair

Jacques Bélair (Montréal)
John Grant McLoughlin (Memorial)
Bernard Hodgson(Laval)
Jennifer Hyndman (UNBC)
Andy Liu (Alberta)
Abraham Punnen (UNBSJ)
Ross Willard (Waterloo)

Sub-Committees:

Camel:
Edward Barbeau (Toronto) Chair
Jennifer Hyndman (UNBC)

Provincial Competitions:
Edward Barbeau (Toronto) Chair
Abraham Punnen (UNBSJ)

Public Appreciation of Mathematics:
John Grant McLoughlin (Memorial) Chair
Edward Barbeau (Toronto)
Andy Liu (Alberta)

The main activity of the Committee is to ensure that there are educational sessions at each semi-annual meeting of the Society. At the June 2001 CMS meeting in Saskatoon, Florence Glanfield and Keith Taylor organized a session on the theme "Cognition in Mathematics", that was open to secondary teachers as well as to members of the Society. The plenary speaker was DeWitt Sumners (Florida State University), who spoke on mathematics in biology and medicine. At the December 2001 CMS meeting in Toronto, two sessions were organized by Pat Rogers, Kathy Kubota-Zarivnij and Walter Whiteley. Both sessions were devoted to posing and answering questions related to teaching and student learning. A number of mathematicians and mathematics educators salted the discussion with brief interventions before discussion was opened to the floor. David Pimm (Alberta) delivered a plenary address on "Interactions between language and mathematics; fluency, understanding and time".

The Education Committee is charged with the task of selecting the recipient of the Adrien Pouliot Award, which recognizes achievement in mathematics education. The 2001 recipient was to George Bluman, currently Head of the Department of Mathematics at the University of British Columbia. He has made significant contributions over thirty years at both the secondary and university levels. In particular, he organized many sessions for school students across British Columbia.

In addition, the Education Committee awarded grants in support of contests held in Alberta, Manitoba, Northern Ontario, Quebec, the Maritime provinces and Newfoundland.

At the annual Canada Wide Science Fair in Kingston (May, 2001), the Chairman was on hand together with Susan Cooper and Morris Orzech from Queen's University and Pierre Gravel, Lucien Haddad and David Wehlau from the Royal Military College. We selected the winners of the three special awards given by the Society. The senior prize was awarded to Robyn Maler, the intermediate prize to Yichuan Wong and the junior prize to Mahmoud Bazargan. In the future, the Society, in conjunction with other professional organizations, hopes to produce materials that might provide ideas to students and teachers, and give them a sense of the standards required for a good exhibit.

At its meeting in Saskatoon in June 2001, the Committee emphasized the desirability of attracting students into teaching while they are yet mathematics undergraduates and permitting them to have experience in the classroom. There is a continuing need to disseminate mathematics related career information, and probably the most productive work of the Committee, in the future, will be through the Society's web site.

Electronic Services

Jason Brown (Dalhousie) Chair

Peter Borwein (SFU)
Edgar Goodaire (Memorial)
Laurent Marcoux (Alberta)
David Rodgers (Argus Associates)
Gail Wolkowicz (McMaster)
Christiane Rousseau (Montréal)

The Electronic Services Committee of the Canadian Mathematical Society oversees the Society's electronic operations and serves as an advisory board to the Director of Electronic Products and Services. It monitors the CMS web site (Camel) and recommends changes when and as necessary. The Committee's responsibilities are considerable because almost every area of concern to the CMS is affected by and makes use of modern technology, from the Executive Office to publications, research, education and outreach.

The Committee considers that the CMS is extremely fortunate, effective July 1, 2001, to have Alan Kelm working as the full-time Manager for the CMS web site. The redesign of the CMS web site has proceeded under Alan's guidance and with the help of excellent part-time student assistance. The new design is much easier to navigate and more attractive. As well, migration of the western services of Camel eastward is continuing, and it is hoped that it will be complete in 2002. The day-to-day management of the web site is under the Director of Electronic Services (Graham Wright) and, in 2001, only occasional issues of policy were brought to the attention of the ESC.

There was some discussion of "password caching" to deal with the frustration of CMS members who forget their passwords. The simplicity of automatically emailing of passwords was supported, provided that security of the process can be maintained.

Unfortunately, it has become apparent that the project from APuRL (a digital publishing research group in Vancouver), which would integrate all aspects of the CMS publishing enterprise into a single "vortal", will not be completed, though there may be some integration of modules into the structure of the CMS publications protocols.

My term as Chair of this committee began on January 1, 2001, and I would like to extend my appreciation to the previous chair, Edgar Goodaire, for his support. As well, I would like to thank the other members of the Committee (Peter Borwein, Tomasz Kaczynski, Laurent Marcoux, David Rodgers, Christiane Rousseau and Gail Wolkowicz) for making my first term as chair of this committee enjoyable and productive.

Endowment Grants

James Timourian (Alberta) Chair

George Bluman (UBC)
Lisa Jeffrey (Toronto)
Thomas Ransford (Laval)
Richard Wood (Dalhousie)

Twelve applications were received for the 2001 Endowment Grants Competition. A total of 8 were received using our online HTML form. The remaining applications were received as e-mail attachments in either Word or Latex.

The total amount applied for was $130,800 and the Endowment Grants Committee (EGC) was allotted $60,000 to grant. Unlike in past years (1999 and 2000), all of the money allocated was awarded.

The EGC made an unusual decision in the case of one application: we decided to make an award for the second year of the program, subject to additional financing being obtained for the first year.

Applicants have been unofficially notified of the results by e-mail, and official letters sent from the Executive Office in Ottawa. Successful applications can be viewed on the web at:

http://www.cms.math.ca/Grants/EGC/.

Once a proposal is funded, the applicants are obligated to report on how things turned out. Not all of the reports that were due in 2001 have been received, but when they are received they will appear on the web and extracts published in the CMS Notes.

The Endowment Grants Program is now three years old and the enabling resolutions called for a review at the end of this period. The new Chair of the Endowment Grants Committee (Kathryn Hare) will take over in January 2002. As part of the review process, as outgoing Chair, I will be submitting a report on the Committee's experience over the past three years. In addition, the opinions of successful and unsuccessful applicants, past and present committee members as well as those who have worked with the program should be sought for a thorough review of the process and the benefits of the Endowment Grants Program.

Finance

Ian Goulden (Waterloo) Chair

Timothy Appelt (Structured Analytics)
David Bates (Maritime Life)
Jonathan Borwein (Simon Fraser)
Michael Lamoureux (Calgary)
Christiane Rousseau (Mopntréal)
F. Arthur Sherk (Toronto)
Graham P. Wright (Ottawa)

The Finance Committee includes among its members the Treasurer, the Executive Director, the President, and the Past-President or the President-Elect. The Committee is responsible for the overall financial activities of the Canadian Mathematical Society, including the annual budget and the Restricted Investment Funds -- the Endowment Fund, the Mathematical Olympiad Fund and the Designated Activities Fund. The Treasurer's Report provides details of the 2001 financial year and the 2002 Budget.

There have been some difficulties in finding a suitable person to fill the full-time CMS Accountant position but it is expected the position will be filled in early 2002.

The Society's Restricted Investment Funds continue to be managed by Toronto Dominion Quantitative Capital, wholly in indexed funds. Thus, for example, no decisions on individual equities are required. Instead, only the mix between funds is considered periodically.

After a review of the current economic situation, and taking into account the opinions of our internal and external consultants, the Finance Committee recommended, and the CMS Board of Directors (December 2001) agreed to change the asset mix to 40 % Bonds, 10 % Canadian Equities and 50 % Global Equities. The Global Equity portion contains about 60 % US Equities. The Society has been greatly helped in such discussions by our two consultants, Tim Appelt and David Bates, both of whom have substantial professional expertise in the financial world.

Human Rights

Paul Gauthier (Montréal) Chair

Zhiguo Hu (Windsor)
Robert van Den Hoogen (St. Francis Xavier)

Unlike previous years, no human rights violations of mathematicians were reported to the CMS Human Rights Commitee in 2001.

The question was raised as to whether the Committee should be considering issues regarding discrimination against women mathematicians, but since the CMS has a committee on Women in Mathematics, it was felt that the Human Rights Committee should not discuss this issue unless the committee on Women in Mathematics requested help on some specific topic. The question was also raised as to whether we should be considering race issues, but no conclusions were arrived at. Moreover, no cases were presented to us.

Following the CMS Taskforce review, in December 2001, the Board of Directors decided to abolish the Human Rights Committee but create the position of a Human Rights Officer whose mandate is similar to the previous terms of reference of the Human Rights Committee.

International Affairs

Peter Fillmore (Dalhousie) Chair

Niky Kamran (McGill)
Edwin Perkins (UBC)
Bernard Hodgson (Laval)
Thomas Salisbury (York)
Catherine Sulem (Toronto)
Nicole Tomczak-Jaegermann (Alberta)
Robert Miura (UBC)

Hodgson's term began in July, and the terms of Fillmore, Miura and Tomczak-Jaegermann ended at the end of 2001.

During 2001, most committee business was concerned with preparations for the upcoming International Congress of Mathematicians, ICM 2002, which will take place August 20-28 in Beijing.

At the beginning of the year, the Committee sent Yuri Manin, Chair of the Program Committee for ICM 2002, a list of potential Canadian speakers. Subsequently the IAC discussed ways to improve the process for the next ICM. The Committee recommended that the CMS make a donation to the IMU's Special Development Fund (to assist mathematicians in developing countries). We oversaw the compilation of Canadian data for the 12th edition of the World Directory of Mathematicians, which is revised in advance of each ICM. The primary source of information is university departments, which in a number of cases failed to respond to repeated requests.

The Committee met during the Winter 2001 Meeting in Toronto. The main items of discussion were a nomination to the Executive Committee (EC) of the IMU and the composition of the Canadian delegation to the IMU General Assembly, which will meet in Shanghai in August 2002. Jim Arthur was a member of the EC from 1990 to 1998. Although there is currently no Canadian member of the EC, Bernard Hodgson is the Secretary of ICMI, and the Secretariat is located at Laval.

Mathematical Competitions

Daryl Tingley (UNB) Chair

Edward Barbeau (Toronto)
George Bluman (UBC)
Peter Cass (Western)
Peter Crippin (Waterloo)
Luis Goddyn (Simon Fraser)
Richard Nowakowski (Dalhousie)
Bill Sands (Calgary)
Christopher Small (Waterloo)
Jean Turgeon (Montréal)
Graham P. Wright (Ottawa)

Sub-Committees:

Asian Pacific Mathematics Olympiad:
Bill Sands (Calgary) Chair
Richard Hoshino (Dalhousie)
Andy Liu (Alberta)
Christopher Small (Waterloo)
Edward Wang (Wilfrid Laurier)

Correspondence Programme:
Edward Barbeau (Toronto) Coordinator

International Mathematical Olympiad:
Bill Sands (Calgary) Chair
Edward Barbeau (Toronto)
Richard Nowakowski (Dalhousie)
Christopher Small (Waterloo)
Daryl Tingley (UNB)

Canadian Open Mathematics Challenge:
Peter Crippin (Waterloo) Chair
Radford de Peiza (Upper Canda College)
Gareth Griffith (Saskatchewan)
Gordon Nicholls (Waterloo)
Daryl Tingley (UNB)

Canadian Mathematical Olympiad:
Daryl Tingley (UNB) Chair
Iliya Bluskov (UNBC)
Richard Brewster (Capilano College)
Luis Goddyn (Simon Fraser)
J. Grossman (MIT)
Richard Hoshino (Dalhousie)
Petr Lisonek (Simon Fraser)
Richard Lockhart (Simon Fraser)
Reza Naserasr (Simon Fraser)
Richard Nowakowski (Dalhousie)
Dorette Pronk (Dalhousie)
Naoki Sato (William M. Mercer)
T. Visentin (Winnipeg)

Introduction

The Mathematical Competitions Committee (MCC) of the CMS is responsible for overseeing activities associated with the Society's involvement in mathematics contests. Two contests, the Canadian Open Mathematics Challenge (COMC) and the Canadian Mathematical Olympiad (CMO) are sponsored and run by the Society. The MCC is also responsible for Canada's participation in the Asian Pacific Mathematics Olympiad (APMO) and the International Mathematical Olympiad (IMO). Other activities of MCC include the Mathematical Olympiads' Correspondence Program, and Mathematics Camps.

Much of the work of the MCC is done by its three subcommittees, namely the Canadian Open Mathematics Challenge Committee, the Canadian Mathematical Olympiad Committee and the International Mathematical Olympiad Committee. Further information, including press releases, on most of the topics in this report can be found through the CMS Competitions web page (www.cms.math.ca/Competitions/).

The Canadian Mathematical Olympiad

The 33rd Canadian Mathematical Olympiad(CMO) took place on April 5th, 2001. The top three students were :

Daniel Brox, Sentinel Secondary School., West Vancouver, BC; Roger Mong, Don Mills Collegiate Institute Toronto, Ont; and Nima Kamoosi, West Vancouver Secondary School, West Vancouver, BC.

Prizes for the CMO were awarded at the CMO Banquet. The Banquet was held at Renison College, on the Campus of the University of Waterloo. At the Banquet, Daniel, Roger, and Nima were awarded prizes of $2,000, $1,500 and $1,000 respectively. In addition, Daniel Brox was presented with the Sun Life Cup, and all winners received book prizes, donated by John Wiley & Sons and Nelson Thomson Learning. Daniel Brox also won the First Prize in 2000. He is the fourth person to have won consecutive First Prizes in the 33 years of the CMO. More information about the 2001 CMO is available at:

www.cms.math.ca/Competitions/CMO/

and the CMO report is also available from the CMS Executive Office.

The Asian Pacific Mathematics Olympiad

The 2001 Asian Pacific Mathematics Olympiad (APMO) was written in March by 39 Canadian students, selected either because they had participated in the Mathematical Olympiads Correspondence Program or because they had placed well in the 2000 Canadian Open Mathematics Challenge. Unfortunately the results of the 2001 APMO were nullified as some of the problems were posted on an internet site before other countries had written the paper. Furthermore, at least one country became aware that their students had access to the problems via email. Since there was absolutely no indication Canadian students were implicated in this unfortunate event, the name of the top four Canadian students are given:

Roger Mong, Daniel Brox, Shu Niu, and Nima Kamoosi.

At the 2000 International Math Olympiad, Canada was asked to be the Chief Coordinating Country for the APMO, commencing in 2002. At the 2001 CMS Summer Meeting, Bill Sands (Calgary) was appointed the Chair of an ad-hoc committee charged with the responsibility of organizing the APMO for the three years (2002 to 2004). The other members of the ad-hoc committee are Andy Liu (Alberta), Richard Hoshino (Dalhousie), Christopher Small (Waterloo) and Edward Wang (Wilfrid Laurier).

The International Mathematical Olympiad

Canada's 2001 International Mathematical Olympiad Team was announced on June 6. It consisted of:

Daniel Brox, Sentinel Secondary School, Vancouver;
Paul Cheng, West Vancouver Secondary School, West Vancouver, BC;
Liang Hong, University of Toronto Schools, Toronto, Ont;
Nima Kamoosi, West Vancouver Secondary School, West Vancouver, BC;
Roger Mong, Don Mills Collegiate Institute Toronto, Ont; and
Shu Niu, Port Moody Secondary School, Port Moody, BC.

The 2001 team was accompanied by the Team Leader, Dr. Christopher Small (Waterloo); the Deputy Team Leader, Dr. Dorette Pronk (Dalhousie University); the Leader Observer, Dr. Edward Wang (Wilfrid Laurier University); and the Deputy Leader Observer, Mr. Richard Hoshino (Waterloo).

The 42nd International Mathematical Olympiad (IMO) was held in Washington DC, USA from July 1 to July 14, 2001, with 83 countries participating. At the Awards Ceremony on July 13th, 2001 in Washington, a Gold Medal was awarded to Daniel Brox and Bronze Medals to Paul Cheng, Liang Hong, Nima Kamoosi and Roger Mong. More information is available at www.cms.math.ca/Communiques/ or www.cms.math.ca/Competitions/.

IMO Training Camps

Two training camps are held each year to prepare students for the annual IMO. The CMS Winter IMO Training Camp, held in January, is used to begin the training for the IMO and to let the team leaders meet those students who have a good chance of making the IMO team. The CMS Summer IMO Training Camp is used for intensive training of the actual IMO team.

The 2001 Winter IMO Training camp took place at York University from January 3 to January 7. Students were selected for the camp on the basis of their work in the Mathematical Olympiads Correspondence Program (below) and their performance on a time limit examination (TLE) which is organized by Richard Nowakowski (Dalhousie). The purpose is to give some indication of a student's performance in a competition like setting. The students write the TLE at their home. They have a total of 6 hours, over two sessions, to do a total of 8 problems. This year, 34 students participated in the TLE.

The 2001 Winter IMO Training Camp featured a group of 15 students from across the country as well as a team of trainers and support people, including the team leaders Christopher Small, Edward Wang, Dorette Pronk and Richard Hoshino, and myself. Tom Salisbury, Chair of the Department of Mathematics at York University, was the local organizer and he also took an active part in the training. Other individuals who provided invaluable assistance were Walter Whiteley (York) Ed Barbeau (Toronto) and Bill Sands (Calgary--Chair of the CMS IMO Committee).

The 2001 Summer IMO Training camp was held at The University of New Brunswick (UNB) from June 17 to July 1. The trainers were : Christopher Small, Edward Wang, Dorette Pronk, Richard Hoshino, Barry Monson (UNB), Roman Mureika (UNB) and myself. Three local students attended the camp for the first 2 days. Some of the highlights of the camp, (not including all the mathematics of course) were a media reception (June 18), lunch with the Lieutenant Governor of New Brunswick, the Honorable Marilyn Trenholm-Consell, (June 20), as well as several bowling trips and movies.

The team left Fredericton on July 1 with the Leader and Leader Observer headed for Washington and the others for Toronto. The team members from Toronto spent a couple of days at home, while those from Vancouver stayed at the home of Richard Hoshino. On July 3, 2001, the students and the deputy leaders also left for Washington.

Mathematical Olympiads' Correspondence Program

The Mathematical Olympiads' Correspondence Program(MOCP) is a problems based correspondence program. It is intended for Canadian (or Permanent Resident) high school students with exceptional mathematical ability who wish to pursue mathematical problem solving at a high level and/or have ambitions to compete in Mathematical Olympiads. Dr. Edward Barbeau has been the Coordinator of this program for many years. In 2001, he was assisted by Dr. Dragos Hrimiuc (Alberta) and Dr. Valeria Pandelieva from Ottawa. Problem sets are sent each month to the students. Students have six weeks to return solutions. The solutions are then marked and returned (with copious comments) to the students. Currently, about 40 students are actively participating in the program.

ESSO Math Camps

The Imperial Oil Charitable Foundation has generously agreed to be the Title sponsor of a series of "ESSO Math Camps"'.

During June 16-23, 2001 the fourth annual CMS National Math Camp took place at Huron College (on the Campus of the University of Western Ontario). With 23 students from across the country in attendance. The camp was organized and run by Tom Griffiths, Marlene Griffiths, Richard Hoshino, Jean Collins, Jeff Shiffrin and Paul Ottaway. A detailed report is available.

In addition to the National Math Camp, Regional ESSO Math Camps were held at the following universities:

Dalhousie University,
The University of New Brunswick,
Brock University,
Simon Fraser University
Sir Wilfred Grenfell College
The University of Western Ontario,
The University of Ottawa (two camps, one French one English),
The University of Regina,
The University of Calgary.

The format and length of these camps varied considerably: from 2 day non-residential to 6 day residential camps. Detailed reports for these camps are available from the CMS Executive Office.

That all of the above institutions plan to hold camps again in 2002 is an indication of their considerable success. Furthermore, in 2002, there will be two new camps: one at the University of Prince Edward Island, and one at the University of Manitoba.

The Canadian Open Mathematics Challenge (COMC)

The COMC is a contest written each year at the end of November. Although it is the last MCC event of the calendar year, and hence of this report, it is the first scheduled MCC event of the academic year. The COMC provides mathematical enrichment for a large number of students and serves as a qualifying paper for the Canadian Mathematical Olympiad (CMO). The results are also used in the selection process for students to the IMO winter training camp. Plaques are awarded to both the students and schools for being a provincial or regional winner and Gold Medals are awarded to up to 9 other students in each province or region.

The Fifth COMC was held on November 29, 2001. About 4500 students participated. For a list of the regional and provincial winners, please see:

www.cms.math.ca/Competitions/COMC/ or www.cms.math.ca/Communiques/.

The COMC is going well and both schools and provincial governments seem to like the opportunity to see how their top students fair on a national basis. The Society's increased interest in students (including the COMC and Math Camps) is reaping significant rewards.

Thanks

As I hope this report shows, the MCC is a very active committee. I wish to thank all of the members of the MCC and its subcommittees for their time and effort. As many know, the CMS is a society of volunteers. Members of the MCC contribute large amounts of time to make our events run smoothly. I must also thank the staff of the CMS Executive Office and the Executive Director, Graham Wright. They perform much of the administrative work for the MCC and its sub-committees and ensure seamless transition as chairs and membership change.

Nominating

Catharine Baker (Mount Allison) Chair

Jonathan Borwein (Simon Fraser)	Anthony Lau (Alberta)
Steven Boyer (UQAM)	Barry Monson (UNB)
Kenneth Davidson (Waterloo)	Christiane Rousseau (Montréal)

The Committee supervised the 2001 election of Officers and Board members. A total of 21 candidates contested the 5 Executive and 11 Board positions; 214 ballots were cast, of which 3 were declared invalid. We would like to thank Michel Racine, Barry Jessup and Graham Wright for acting as Tellers for the election and all the candidates who let their names stand. The results, which follow, were announced at the Annual General Meeting in June in Saskatoon.

President-Elect (2001-2)	
President (2002-4)	
Past-President (2004-5):	Christiane Rousseau (Montreal)
Vice Presidents (2001-3):	
West	George Bluman (UBC)
Ontario	James Mingo (Queen's)
Quebec	Bernard Hodgson (Laval)
Atlantic	Edgar Goodaire (Memorial)
Board of Directors (2001-5):	
West	Malgorzata Dubiel (SFU), Laurent Marcoux(Alberta), Ortrud Oellermann(Winnipeg)
Ontario	Richard Caron (Windsor), Kathryn Hare(Waterloo), Damien Roy(Ottawa)
Quebec	Galia Dafni (Concordia), Tomasz Kaczynski(Sherbrooke)
Atlantic	Gordon MacDonald(UPEI), Abraham Punnen(UNBSJ)
At large	Michael Overton (Courant)

The Nominating Committee recommended several changes to various standing committees:

The Committee, in consultation with the Executive Committee and the Fund Raising Committee, proposed the formation of a new Advancement of Mathematics Committee to oversee the overall activities of the Society for the advancement and development of mathematics, including outreach, publicity, fund-raising and other promotional activities. The Terms of Reference for this committee were approved by the Board in June 2001.

The Committee, in consultation with the Student Committee, proposed the following changes to the Terms of Reference for the Student Committee: that the Student Alternate positions on the Board of Directors be eliminated, effective at the end of the term of the current members; that the term of office for student delegates and for non-ex-officio members of the Student Committee normally be for a 2-year period beginning July 1. This was approved by the Board in December 2001.

The Committee, in consultation with the Executive Committee and the Chair of the Human Rights Committee, proposed that the Human Rights Committee be discontinued, effective December 31, 2001, that the position of Human Rights Officer be established with Terms of Reference that were approved at the December 2001 Board meeting.

The Nominating Committee recommended that the Terms of Reference for the CMS Standing Committees (excluding the International Affairs Committee and the Nominating Committee) be amended so that an individual would be appointed as Chair-Elect for one year followed by two years as Chair. This was approved at the December 2001 Board meeting.

In addition, the Committee nominated twenty-seven individuals to chair or to fill vacancies on various standing committees, to fill a vacant position on the Board and to serve as Treasurer of the Society.

The terms of Steve Boyer, Ken Davidson, Anthony Lau and Catharine Baker ended on December 31, 2001. Richard Kane left the Committee in June when his term as Past President ended. We thank them all for their service on the Committee.

Publications

Keith Taylor (Saskatchewan) Chair

Edgar Goodaire (Memorial)
Peter Hoffman (Waterloo)
James Mingo (Queen's)
Christine Soteros (Saskatchewan)
Anthony Thompson (Dalhousie)

The Publications Committee oversees the publishing activities of the Society. The publications of the Society together with the respective editors-in-chief are:

The Canadian Journal of Mathematics (Henri Darmon and Niky Kamran),
The Canadian Mathematical Bulletin (James Lewis, Arturo Pianzola and Noriko Yui),
Crux Mathematicorum with Mathematical Mayhem (Bruce Shawyer),
CMS Book Series (Jonathan Borwein and Peter Borwein),
CMS Tracts in Mathematics (Kenneth Davidson and Cameron Stewart),
CMS Notes (Peter Fillmore and S. Swaminathan),
A Taste of Mathematics (Anthony Thompson).

The G. de B. Robinson Prize is awarded each year for an outstanding article published in one of the Society's two research journals. In even numbered years, the prize is awarded for an article published in the Journal and in odd numbered years, for an article published in the Bulletin. The 2001 Prize was awarded to Professor Patrick Gilmer, Louisiana State University, for his article "Topological Quantum Field Theory and Strong Shift Equivalence" Canadian Mathematical Bulletin Vol. 42(2), pp. 190-197.

The following editorial appointments were recommended by the Committee and, where necessary, approved by the Board of Directors.

Scientific Editorial Board for the CJM and CMB: A. Geramita (Queen's), V. Kac (MIT), M. R. Murty (Queen's), M. Zworski (UC Berkeley).

Crux Mathematicorum with Mathematical Mayhem Board: John Grant McLoughlin as Book Review Editor, Shawn Godin as Mayhem Editor and Chris Cappadocia as Mayhem Assistant Editor. Bruce Shawyer's term as Editor-in Chief ends as of December 31, 2002 and a search for his replacement has begun.

ATOM (A Taste of Mathematics): Anthony Thompson (Dalhousie) was named Editor-in-Chief.

Research

Douglas Stinson (Waterloo) Chair

Hermann Brunner (Memorial)
Niky Kamran (McGill)
James Mingo (Queen's)
Ian Putnam (Victoria)
Gordon Slade (UBC)
Catherine Sulem (Toronto)

The 2001 Summer Meeting of the CMS was held in Saskatoon, Saskatchewan. The meeting was hosted by the University of Saskatchewan and featured the following research sessions:

Abstract Harmonic Analysis (Org: Anthony Lau, Alberta and Keith Taylor, Saskatchewan); Geometric Topology (Org: Alex Chigogidze and Ed Tymchatyn, Saskatchewan); Graph Theory (Org: Brian Alspach and Denis Hanson, Regina); Infinite Dimensional Lie Theory and Representation Theory (Org: Stephen Berman, Saskatchewan); Mathematical Education Cognition in Mathematics (Org: Florence Glanfield, Saskatchewan); Matrix Analysis (Org: Judith McDonald, Regina); Model Theoretic Algebra (Org: B. Hart, McMaster/Fields , F.-V. Kuhlmann and S. Kuhlmann, Saskatchewan) ; Number Theory - in Honour of David Boyd (Org: P. Borwein, Simon Fraser and M. Bennett, Illinois Urbana-Champaign); Rigorous Studies in the Statistical Mechanics of Lattice Models (Org: Chris Soteros, Saskatchewan and Stu Whittington, Toronto); Scattering Theory and Integrable Systems (Org: Jacek Szmigielski, Saskatchewan)

The 2001 Krieger-Nelson Lecturer was Lisa Jeffrey, University of Toronto and the 2001 Jeffery-Williams Lecturer was David Boyd, University of British Columbia.

The plenary lectures were given by Georgia Benkart (Wisconsin), Zoe Chatzidakis (Paris 7), Geoffrey Grimmett (Cambridge), and Barry Simon (Caltech).

The 2001 Winter Meeting of the CMS was held in Toronto, Ontario, and hosted by York University and included the following research sessions:

Dynamics and Symmetry (Org: Bill Langford, Guelph and Jianhong Wu, York); Free Probability (Org: Alexandru Nica, Waterloo); History of Mathematics (Org: Richard O'Lander and Ronald Sklar, St. John's University, N.Y.); Industrial Mathematics (Org: Huaxiong Huang, York University); Kac-Moody Lie Theory and Generalizations (Org: Nantel Bergeron, Yun Gao, and Geanina Tudose, York); Mathematical Education (Org: Pat Rogers, Windsor, Kathy Kubota-Zarivnij, and Walter Whiteley, York); Moonshine (Org: Christopher Cummins, Concordia); Nonlinear and Geometric Analysis (Org: Robert McCann and Jochen Denzler, Toronto)

The 2001 Coxeter-James Lecturer was given by Kai Behrend, University of British Columbia and the 2001 Doctoral Prize Lecturer was Nathan Ng, University of Georgia. The plenary lectures were given by Martin Golubitsky (University of Houston), John Ockendon (Oxford University), Arturo Pianzola (University of Alberta), David Pimm (University of Alberta), Richard Schoen (Stanford

University), and Dan Voiculescu (University of California, Berkeley).

Looking ahead, the next four meetings of the CMS will be held in Quebec City (Summer 2002), Ottawa (Winter 2002), Edmonton (Summer 2003) and Vancouver (Winter 2003).

The Research Committee has approved four core sessions for the CMS Summer 2003 Meeting, namely; Conformal Field Theory, Infinite Dimensional Dynamical Systems, Applied Harmonic Analysis, and Computational and Analytical Techniques in Modern PDEs and Applications.

The research committee has expressed some concern at the relatively small number of nominations for the prize lectureships that have been put forward in recent years (Doctoral, Jeffery-Williams, Coxeter-James and Krieger-Nelson). Nominations of worthy people are essential to the continued success of the CMS Prize Lectureships; however, a dearth of nominations in the future could lead to undesirable consequences. It is felt that there are many deserving nominees for these prizes, and the Committee encourages the nominations of strong mathematicians from all Canadian mathematics departments.

The Research Committee has discussed ways of improving the accessibility and dissemination of research at the Society's semi-annual meetings. The Committee supports the solicitation of expository papers from plenary speakers and prize lecturers based on the talks that are given at the meetings. Meeting directors are being actively encouraged to emphasize the importance of prize lecturers and plenary speakers giving talks that are truly accessible to a wide audience. Finally, the inclusion of a session of survey talks (as was done at the St. John's meeting in 1999) was suggested as something to be encouraged in the future.

Students

Daniel Piché (Waterloo) Chair

Jean-Phillippe Boulet (Laval)
Susan Cooper (Queen's)
Gabriella Couto (McMaster)
Renato Dedic (Bishop's)
Ana Duff (Ottawa)
Alexandre Girouard (Montréal)
Robert Juricevic (Concordia)
Boris Krivulin (Concordia-Loyola)
Dave Morgan (Memorial)
Lindsey Shorser (Toronto)
Robert Woodrow (Calgary)
Graham P. Wright (Ottawa)

This is the third annual report of the Student Committee. The Committee is responsible for all aspects of mathematics student affairs. Information on the goals of the Committee and its membership can be found on the CMS web site: www.cms.math.ca/Students

1. Change of membership.

The Committee underwent its first change in membership since its inception in 1999. The outgoing members were Tullia Dymarz, Benoit Charbonneau and Andrew Irwin. Incoming members were Ana Duff (Regional Rep), Renato Dedic (Regional Rep) and Boris Krivulin (Student Webmaster). The other Committee members stayed on for an extra year to provide continuity to the Committee's activities.

2. Maintaining a student web site (www.cms.math.ca/Students).

The site contains the Committee newsletter, calendar of events, local activities, grant applications, information on the CUMC, job postings, and a number of other items of interest to mathematics students. Contributions from the community are appreciated.

3. Publishing a national student newsletter.

The first two editions of the student newsletter Student Communicator were published in 2001 (March and October). The newsletters were developed by the Student Editor (Robert Juricevic) with contributions from students in universities across the country and even one article from France. Multiple copies were sent to each math department across the country. The Communicator may be found online at:

www.cms.math.ca/Students/en/Newsletter/

4. Graduate Student Events.

The Committee organized a social event for graduate students at each of the CMS meetings in 2001. The events were well enjoyed by those attending and it is the Committee's plan to continue organizing such events in the future.

5. Providing funding to various regional student events.

Three events were funded in 2001: the IAM-CSC-PIMS Undergraduate Math Modelling Workshop, the ISM Graduate Student Conference and the APICS conference. An amount of $150 was given to each group.

6. Sponsoring the CUMC.

As an ongoing initiative, the Committee provided funding in the amount of $1,000 towards the organising of CUMC 2001. The conference was held at Laval University in July over a period of five days. It was well attended and photos from the conference can be seen at:

www.cumc.math.ca/2001.

CUMC 2002 will be held July 2 to 7 at the University of Calgary (see www.cumc.math.ca). The Committee is also assisting the CUMC in planning its future and enabling its continuity through the development of an operations manual for its organisers. The operations manual is still in development at this time. The webmaster is also developing a new architecture for the CUMC site, including a registration system and database.

7. CUMC Proceedings.

The Committee is continuing efforts to develop a system to create annual proceedings for the CUMC. To this end, the Committee appointed Drew Vandeth as CUMC Proceedings Editor. The Editor has been working on the CUMC 2001 proceedings over the past months, compiling students' papers and developing a format for the proceedings. The goal is to have printed proceedings in a standard scientific format to allow students presenting at the CUMC to publish a first paper. The Editor's plan is therefore to solicit departments to purchase one copy of the proceedings for their libraries to fund its printing.

The Committee also met at each of the CMS meetings to discuss ongoing initiatives and develop future goals and projects.

Women in Mathematics

Malgorzata Dubiel (Simon Fraser) Chair

George Bluman (UBC)
Rob Corless (Western)
Chantal David (Concordia)
June Lester (UNB)
Neal Madras (York)
Frank Zorzitto (Waterloo)

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

The Committee continues to maintain the Directory of Canadian Women in the Mathematical Sciences: a collection of web pages of Canadian women who are actively involved in research or studies in mathematics, or any other aspects of mathematical sciences. The Directory is a valuable source for information about Canadian women mathematicians.

The poster featuring the first six winners of the CMS Krieger-Nelson Prize finalized at the end of 2000, was distributed to all high schools, universities and colleges in Canada, to present these women as role models for female students.

The committee has initiated discussions with the members of the Student Committee to investigate the concerns of female graduate students. The talks led to the idea of organizing a conference for female graduate students in mathematics, focused on networking, career strategies and other areas of interest. The conference is planned to take place in Edmonton, prior to the 2003 CMS Summer Meeting.

In June 2001, George Bluman (UBC) replaced Keith Taylor (Saskatchewan) as the President's Delegate. June Lester (UNB/SFU) and Frank Zorzitto (Waterloo) ended their terms as of December 31, 2001. I will be continuing as the Chair for a further two years and Leah Edelstein-Keshet (UBC) and Dorette Pronk (Dalhousie) will join the Committee in January 2002.

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S. Swaminathan (Dalhousie)

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Monique Bouchard (CMS) - Meetings
Paul Milnes (Western)- Photos
Ian Putnam (Victoria) - Research
Harry White (Toris-Rivières) - Education
Graham Wright (Ottawa) - Managing Editor

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Bruce Shawyer (Memorial)
Graham Wright (Ottawa) - Managing Editor

Contributors

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