Vol. 34 #4, June 1996

Ontario Mathematics Gazette

OAME MATHEMATICS AWARDS WINNERS 1996

Mona MacGregor Award

Len Catlough
Texas Instruments Canada

The award is given to recognize an individual who has made a significant contribution to OAME/AOEM, but who is not necessarily an educator or a member of OAME/AOEM.



Kenneth D. Fryer Award

St. Thomas Aquinas Secondary School, London

The award is given annually to recognize a secondary school mathematics department which fosters collegiality, team work, and excellent classroom teaching; contributes to the overall development of students; and demonstrates leadership in the mathematics community.



Don Attridge Award

Jeri Lunney
St. Paul's High School, Nepean

The award is given annually to recognize an exceptional and creative secondary school mathematics teacher who enhances the teaching of mathematics in Ontario.



Morley MacGregor Award

Carol Danbrook
William Grenville Davis Sr. Public School, Brampton

The award is given annually to recognize an elementary teacher who has demonstrated excellence in mathematics education, as well as contributing to the overall development of students beyond the classroom activities.

ONTARIO ASSOCIATION FOR MATHEMATICS EDUCATION
ASSOCIATION ONTARIENNE POUR L'ENSEIGNEMENT DES MATHÉMATIQUES

About the Gazette

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Full page advertisements are to be on 8.5" by 11" paper with a minimum of 1/2" margins and single sided. Each advertisement should be camera-ready and colour advertisements should have no bleeds.

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Articles for the Gazette should be submitted to *incoming editor* John Egsgard at the above address.

Deadlines for information to be included in the Gazette or the Abacus are: June 15 for the September issue, October 15 for the December issue, January 15 for the April issue, and April 15 for the June issue.

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Your articles should be typewritten, word-processed or photocopied from typewritten or word-processed copy double-spaced on 8.5" x 11" paper with 1.5" margins and single sided. Diagrams and figures should be in camera-ready form. Please submit three copies to the editor and keep one as protection against loss. We have all submissions blind-reviewed, so please send your full address and affiliation on a page separate from the manuscript.

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▲ EDITORIAL



"Welcome to Volume 31 of the Ontario Mathematics *Gazette*. I am honoured to be your new editor and ..."

So began my first editorial in September, 1992. So began four stimulating, often painstaking, occasionally difficult, more commonly exhilarating, and always, on publication, gratifying years of work as your editor.

There are many people to thank.

Previous editors Barry Onslow (now, the president!) and Eric Wood eased me into the editorship gently. Presidents Ann Jones, Jeri Lunney, Ron Lancaster and Sue Stuart, the Councils they led, and in particular, the publications committees offered generous support and encouragement. Past and Present Executive Directors Don and Carol Attridge and David and Bonnie Alexander were always a friendly phone call away when problems arose. Terry, Anita and the crew at Pole Printing were professionalism personified.

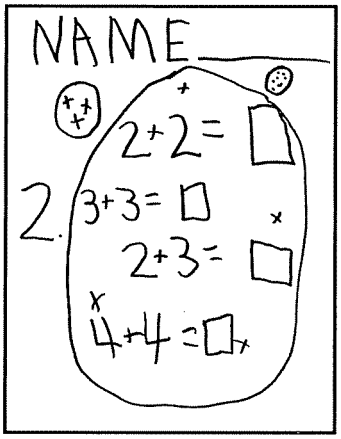
Many of you have complimented me on how wonderful the *Gazette* looks. Well, thanks, but please redirect your praise to the person who deserves it, our graphic artist, Penny Clemens.

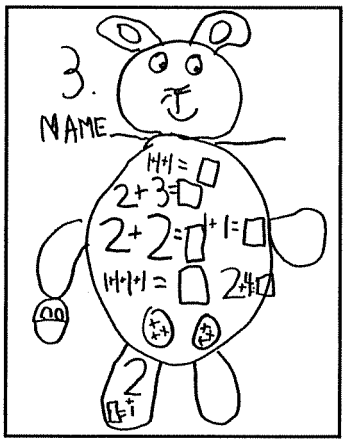
Associate Editors Joe Cunsolo and Gary Spoar provided valuable advice and by sharing the chores, made the workload bearable. They kept my sanity intact. (Some may argue this point.)

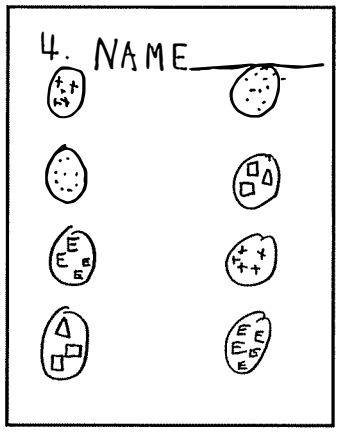
Jennifer Weiner submitted a terrific Abacus before deadline every issue.

Lynn Hamilton and Sue McCormick cheerfully and professionally word processed *Gazette* material and dealt with a myriad of *Gazette* administrative chores.

I have a team of reviewers who adhered to my criteria: make sure the math is right; make sure the grammar is right—with allowances for personal style of course.









Otherwise, none of my editorials would ever have made it to press. This team took good articles and improved them.

Lastly, the authors of our articles and columns. Thank you for honouring the *Gazette* by submitting material for publication. You are the *Gazette*.

Heartfelt thanks to all of these wonderful people. Also, thanks to those wonderful people I have forgotten to mention. I will of course remember who you are moments after we've gone to press.

I wish good luck and success to new *Gazette* editor John Egsgard and to new *Abacus* editor Frances Schatz. I'm a call away if you need me.

To end, I have a good news story.

Kyle Roth, age seven, is in grade 1 at Crestview Public School in Kitchener. His brother Jason, age five, will start Kindergarten in September. Kyle and Jason are the sons of Mrs. Diana Roth, my Department's Administrative Secretary.

Recently Diana showed me some of Kyle's work. It seems he routinely prepares arithmetic worksheets for Jason. On his own initiative. After Jason tries them, Kyle corrects the papers, explaining to Jason what he did wrong when he's made a mistake. Penny and I have reproduced some of these worksheets for you here.

A natural teacher! But for that natural teacher to emerge, there must be a nurturing role model. There is. Mrs. Edie Geistl, Kyle's grade one teacher. There's no fear of math in her class. Learning is fun, friendly and effective.

Kyle only recently turned seven. Diana asked him whom he would like to invite to his birthday party. Who were his friends at school? Kyle replied, "Can we invite Mrs. Geistl? She's my best friend."

Teacher Cliche: "You don't need to be their friend, but you do need to be friendly."

Teacher Truth: You can be a good teacher and a good friend. Like Mrs. Geistl. Thanks, Mrs. Geistl.

Jack

▲ Outgoing President's Message

SUSAN STUART



In planning the future, we must follow the lead of innovative teachers and other change agents who today are trying new tools and breaking out of traditional constraints to improve teaching and learning.

Images of Potential: Learning Tomorrow
The National Foundation for the Improvement of Education

What does the future hold for mathematics education? How will the teaching of mathematics change? Though none of us have a crystal ball that can give definite answers to these questions, the events of the last school year have given us some glimpses into what the near future holds for our mathematics classrooms. Forces outside and within the educational system continually stimulate changes in education. We seem to have felt the political force most strongly in recent months.

Although concerned about the province's efforts to reduce the debt and the deficit by passing on the problem to school boards, schools and teachers, OAME has been focusing on the provincial government's involvement in school structure and curriculum and assessment. By the time you read this column you will probably have seen a copy of the "Graduation Years" draft document. The OAME Specialization Years Committee (guess they will have to change their name to keep up with the times) have studied an earlier "leaked" version of the proposals and have been busy designing and writing. They are tackling the idea of modules to replace "courses" and are wrestling with the outcomes for mandatory courses. We can celebrate the fact the draft supports our belief that all students need to study mathematics throughout their secondary school careers, rather than just to the end of grade 10. What will that mathematics look like? Hopefully, it will incorporate content and strategies that reflect current technological developments, knowledge of learning and high quality mathematics.

The past year has been exciting in the elementary panel as well. We are in the waiting mode at the moment. The consortium which is developing the grade 3 all-classroom materials has a mammoth job on their hands. But so does the group which is awarded the contract to in-service the teachers and mark the resulting materials.

After many months of work, the OAME/OAJE junior assessment writing team is about to release an outstanding assessment booklet that will help teachers explore alternative assessment strategies and implement authentic assessments. Look for it in the fall. Thank you to all the teachers from across the province who worked on the writing and validation teams and who tried many questions with their students. The input was invaluable.

The dust is just settling on budget deliberations in the school boards across the province. Many of our members have been involved in difficult negotiations over the past few months and some are already in "work-to-rule" situations. The changes to the math classroom will continue, despite these pressures. It will take many of the "innovative teachers and other change agents" mentioned in the opening quotation to ensure that the best changes occur in the worst of times. I think that many of these wonderful teachers were to be found at the OAME Annual Conference in London this year. Each workshop leader shared his/her vision of ways to improve math teaching and learning. The keynote speakers inspired us and even presented ideas that may have caused us some disquiet. A rousing thank you to the organizers, members of WOMA, for a stimulating three days. Did anyone win a bundle at the track? I didn't hear about any sudden retirements!

In closing, I want to thank the OAME Board of Directors and the Executive for the effort they have made to improve mathematics education in Ontario. Even though we all enjoy the camaraderie of the meetings, you sacrifice personal time in attending them so frequently. Thank you to those who are not returning to the Board - Todd Romiens, Tim Brown, Lorna Morrow, and Radford De Peiza. Your presence will be missed and we hope that you will continue to share your expertise in math education.

Thank you also to those of you who attended meetings on my behalf. (Can you be here tomorrow morning at 9:00? It's snowing in North Bay!) Best wishes to Barry Onslow and his executive for success in their work next year. I know that they will do their very best on your behalf.

▲ Incoming President's Message

BARRY ONSLOW



As I sit down to write my first President's message on the Sunday morning following our 23rd Annual OAME Conference, the opening lines from one of my favourite books hits home:

It was the best of times,
It was the worst of times.
Dickens, A Tale of Two Cities

The best of times was evident in the energy and excitement which permeated the atmosphere of the London Conference. The Conference Committee and speakers had obviously spent a great deal of time and expertise in their planning and preparation to make the conference informative, motivational and enjoyable. We have many people in our organization who are prepared to work extremely hard so as to make mathematics education in Ontario a successful experience for our students. Mathematics is being placed in contexts which make it meaningful, and assessment is starting to measure those aspects which most teachers say are important. The balance between process and product is emerging.

The other line of Dickens' quote emphasizes the hardship for many teachers during these times. I met recently graduated teachers who are concerned about their future. These teachers have worked extremely hard to be where they are today and now have to consider moving out of our province to find employment. I met others who are facing increased challenges in their classrooms with fewer resources and continued reductions in professional development assistance.

During these difficult times, OAME's leadership in mathematics education will be critical. Overcoming the challenges which lie ahead will require a united resolve from all members. We will need to work together and support one another. I am convinced that our organization has the strength to meet these challenges and be a key player in developing the mathematics curriculum for students of the twenty-first century. Over the past two years, we have worked closely with OMCA and OAJE producing new and innovative assessment strategies for grades 4 through 9. Plans are underway which will allow us to work in partnership with organizations writing materials for students in grades 1 through 3 and 10 through 12. Our Leadership Conference in the fall (see insert for program information and registration details) will provide delegates with materials, information and strategies necessary to conduct workshops on assessment in mathematics in their local boards. If we seize the initiative we can play an integral part in shaping the future of mathematics education in Ontario.

Dee Brasseur, in her opening keynote address at the OAME Conference, used a quote from Henry Ford:

"Whether you think you can
or think you can't, you're right."

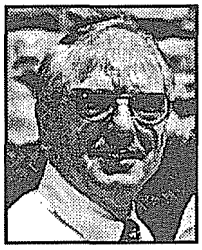
I have every confidence that the members of OAME are people who think, "We can," and because of that optimism we will overcome the "worst of times" and continue to move forward to develop a better mathematics curriculum for our students and teachers.

I feel very proud and privileged to be part of an organization that is ready to face the future and work with colleagues to continue to improve mathematics education in Ontario.

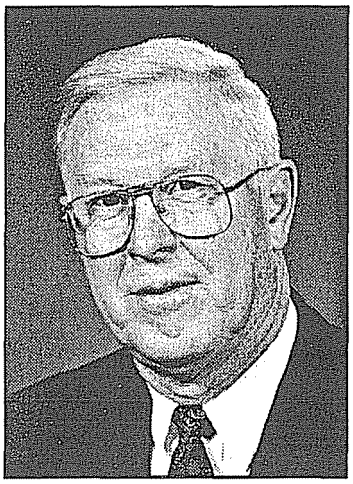
Finally, I wish to say a very sincere thank you to Jack Weiner and Jennifer Weiner who are retiring as editors of the Gazette and Abacus. Both have worked tirelessly in producing a journal that is respected both nationally and internationally. Thank you both for taking the journal to a new level. OAME certainly appreciates your hard work and wishes you both a pleasant "retirement".

▲ Professor Ron Dunkley, Order of Canada, 1996

Editor's Note: *Professor Ron Dunkley of the University of Waterloo was named to the Order of Canada this year, an honour well-deserved and one which will be applauded by thousands of teachers and hundreds of thousands of students. Recently, a reception in Ron's honour was held at Waterloo. Ron Scoins welcomed the guests with a few biographical words about Professor Dunkley. Don Attridge followed with a tribute to Ron Dunkley and the Canadian Mathematics Competition.*



Welcome by Professor Ron Scoins, Faculty of Mathematics, University of Waterloo



On behalf of the Faculty of Mathematics, the Canadian Mathematics Competition, and the Waterloo Mathematics Foundation, I welcome you to this reception being held to honour Ron Dunkley being named a Member of the Order of Canada, one of the highest distinctions possible in this country.

This is more than just a reception. It is a celebration of the importance of dreaming and of having the dedication to make those dreams a reality.

I am going to briefly recall some of the events that have led up to this evening.

Ron was born in Windsor. It is difficult to find out much about his high school days because Paterson Collegiate, the high school Ron attended, has been torn down. It has been replaced by a parking lot. Many say this was an improvement to the neighborhood.

After high school, Ron went to work full-time at the Ford Motor Company. After two years he left Ford and enrolled at the University of Western Ontario. (Contrary to what some might think, it was not that Lee Iacocca beat Ron to the Mustang concept but the lure of mathematics that prompted this decision.)

After receiving his degree, Ron joined the actuarial department at London Life and was on the way to achieving his goal of becoming an actuary. But, mathematics continued to be foremost in his mind with the result that he accepted a position to teach secondary school mathematics at Kingsville. It is here he met Dorothy. They moved to St. Mary's, Ontario, where Ron became head of the mathematics department at St. Mary's District High School. (It was during his tenure at St. Mary's that, along with some colleagues from neighbouring schools, the Junior Math Contest was created in 1963. Don Attridge will pay tribute to Ron's role in the establishment of the JMC.)

In 1967 he accepted an invitation from Ralph Stanton to join the about to be established Faculty of Mathematics at the University of Waterloo.

In the early years of the Faculty, Ron worked closely with Arthur Beaument and Ken Fryer and helped establish many of its innovative programs, including the co-op Teaching Option and the Math Accounting and Business Programs.

A key factor in raising the level of awareness in the schools was the establishment of the Faculty's High School Liaison program.

It was as if there was a decree from on high (R.G. Stanton) - "In the beginning there shall be the Northern Tour."

Each spring, Ken, Ron, Jack Pearse, and a fourth* would pack their gold blazers, Ron's trumpet, and drive on the highways and byways of Ontario. They would work on their routines as they drove from school to school. They entertained and informed assemblies. It was a sixties version of the MacKenzie Brothers. I could go on at length reminiscing but that is best left for another time and another place.

In summary, Ron has played a major part in the development of many of the programs, policies and practices that have resulted in the Faculty of Mathematics being held in such high regard.

On a personal note, I have been fortunate to have had Ken Fryer and Ron Dunkley as mentors. I have appreciated Ron's leadership style. I'm sure my colleagues who work in our unit would echo my thoughts. I was delighted when I heard that Ron was

**Editor's Note: Ron Scoins, of course!*

named a Member of the Order of Canada. I feel fortunate and privileged to be a colleague and a friend.



A Tribute to Ron Dunkley on Receiving the Order of Canada

Don Attridge, Member of the Executive, CMC

Ladies and Gentlemen, it is indeed a real pleasure and honour to be here this day to congratulate Ron Dunkley on his receiving the Order of Canada. I speak today of Ron's connection with the Canadian Mathematics Competition, a connection that Ron helped initiate and develop over the past 34 years.

It all started out in 1962 when four mathematics teachers from rural central Ontario high schools were discussing the difficulties their students were having with the then grade 13 problems paper and the International Actuarial Mathematics Competition. We had plenty of eager and bright students but they were not faring well. In fact they were becoming very frustrated. It was Ron who suggested that perhaps we should attempt to prepare the students earlier in their school career, say in grades 9 to 11. For this reason the OSSTF District 10 Junior Mathematics Contest was developed.

Ken Fryer and Ralph Stanton at the University of Waterloo were approached for their support and suggestions. They in turn brought in Wes Graham for his computer assistance and the first contest was born in 1963. The high school teachers were Ron Dunkley from St. Mary's, Ed Anderson from Wingham, Bill Nediger from Seaforth and myself from Orangeville. The Andersons and the Dunkleys came to Orangeville to package the first paper in our living room. Our families were just starting to develop and we had little two and three year olds carrying pieces of the contest to and from the adults present. That year the first contest was written in 19 different high schools by 300 students in grades 9, 10 and 11.

Its success grew - in fact it flourished - and shortly it became available to all schools in Ontario and eventually grew to include all provinces in Canada. It later reached a few schools in other countries around the world. This original single contest has evolved into the Canadian Mathematics Competition today which includes seven different contests, one for each of the grades from 7 to 13. In fact, over 210 000 students from over 3500 schools wrote these contests in 1996. Last year University of Waterloo Mathematics Professor Peter Ponzo helped write a history of the Canadian Mathematics Competition, a copy of which I have here. We've come a long way!

Another feature of these competitions is that the top students from across Canada are invited to attend a week's seminar at the University of Waterloo in June. What a wonderful opportunity for these mathematics students to rub shoulders with equally bright colleagues and excellent university professors. The contest format assists the University of Waterloo in attracting and enticing some of the best mathematics scholars to do post-secondary education right here at Waterloo.

The Competitions brought about some wonderful connections with the mathematics teachers of Canada, particularly Ontario. Organizers of mathematics contests in other countries are amazed that the Canadian Mathematics Competition has literally hundreds of teachers who freely and willingly give up their private time to come to Waterloo to not only set the contests but also to mark them. This has been going on for thirty years and is definitely a successful extension of the contests.

Certainly Ron Dunkley had a major part in the contests' development and over the last several years he has chaired the Executive. He is a leader with creative ideas and strong administrative ability. The contest personnel sometimes over-extend themselves. But Ron personally loves the challenge of problem solving. He constantly says that "This is fun!" He often has spoken of his connections with the Canadian Mathematics Competition personnel as almost "family". He sets an example of dedication to his staff and others who hold the future of mathematics in their hands.

Ron, this is a wonderful honour. We, your peers, are indeed proud of you and know that this pride is shared by Dorothy and your extended family. Over these thirty or so years, the contests have given us the opportunity to have many wonderful times together. We have worked hard and we have played hard. Congratulations on this honour. You deserve it. Savour the pride which goes with it. Walk tall!

▲ 1996 OAME Awards

Carol Danbrook, 1996 Morley MacGregor Award

Each August I do a STOP, START, CONTINUE exercise with myself to make some New School Year Resolutions. This year my list will look like this -

1. I will begin the school year again with an interesting project so students can showcase their math skills and develop self-confidence.
2. Each period will begin with a math warm up of four challenging review questions.
3. There will be a daily estimation activity to apply percent and ratio concepts.
4. I will include more cross-curricular themes, especially in arts and science.
5. I will offer more problem solving, games and puzzles.
6. There will be an atmosphere of investigation, good humour, co-operation, and hard work in my classroom.



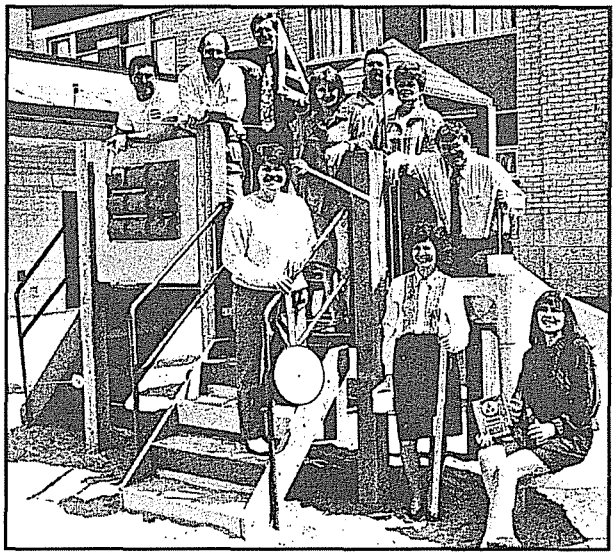
If I expect my students to do their best, I also must do my best.

St. Thomas Aquinas Mathematics Department (London, Ontario), 1996 K.D. Fryer Award

The St. Thomas Aquinas mathematics department strives to foster a positive learning environment both inside and outside the math classroom. Manipulatives, hands-on investigations, math field trips and alternative assessment methods are regularly used to make math understandable and fun.

Competitions and practice sessions are held for students who excel at math. A Math Help Centre, staffed by teachers and peer tutors is available daily at lunch for students who are struggling with math.

This year, STA math teachers are actively involved in **coaching,** (basketball, volleyball, badminton, track, football), **conducting** (junior band, vocal jazz group, school musical) **advising** (yearbook and photography clubs), **instructing** (school Reach team), **contributing** (to graduation, mentor and awards committees), **developing** (each other through local and provincial P.D.), **organizing** (school store, math conferences, sports tournaments), **supervising** (weight training room, dances), **tutoring,** (at Math Help Centre and contest preparation sessions), **mentoring,** (student peer tutors and faculty of education students)...



Top Row L to R: *Frank O'Connor, Ralph Deluca, Bob Koczwara, Lousie Misczak, Kevin Parr, Lynda Ducharme*
Lower Row: *Anne Marie Novacich, Mary Rose Vanheule, Mary Howe (Dept Head)*

1996 OAME Awards

Jeri Lunney, 1996 Don Attridge Award

I am delighted to be the first recipient of the Don Attridge award and I would like to thank OAME for this honour. Over the years, Don has exemplified the qualities which are important in an educator: a passion for mathematics, a love and respect for students and the ability to nurture and inspire his colleagues. His role in the formation of mathematics contests and his involvement and leadership within OAME are examples for all mathematics teachers to admire and emulate.



I would like to take this opportunity to thank the wide variety of professional dedicated and talented people with whom I have worked in OAME and COMA, who helped me to grow as an educator and leader in mathematics education. I look forward to going to work each day and I love doing mathematics problems. In fact, writing the Descartes contest with my students is my favourite event of the year. As a teacher, I believe that I have an obligation to continually seek personal professional development but that I must also contribute towards the professional development of my colleagues. My involvement with OAME, COMA, the Canadian Mathematics Competition and NCTM has provided this for me. Teachers should enjoy doing mathematics and inspire others to enjoy doing mathematics.

But we are teaching in challenging times. Funding for education is being withdrawn; standards have lowered; and the public has withdrawn its automatic support for educators. We must once again earn this support by working together to promote quality education for our children. Let's get involved. We don't want the Boards to "do their own thing"! We need a provincial curriculum with standards. Standing by passively as politicians make more bad decisions or working only for our teacher contracts is very short-sighted. We are playing games without own future. These children are the future.

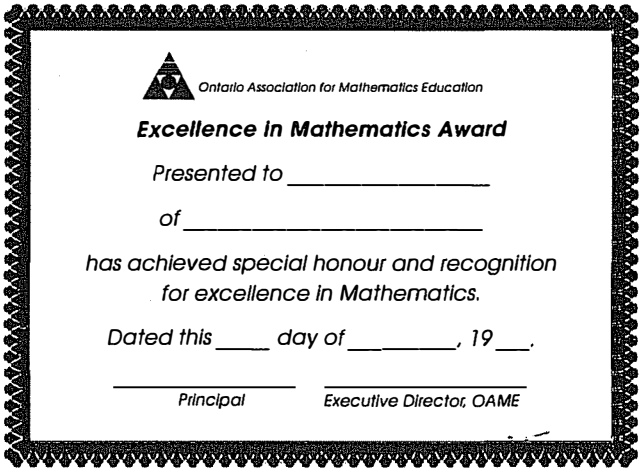
Mona M. MacGregor Award
Len Catlough, Texas Instruments

Editor's Note: No Life Membership was awarded this year.

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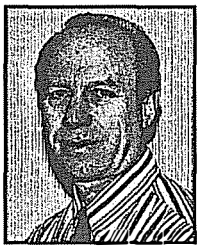
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1996 OAME Prime Minister's Awards

The Prime Minister's Awards for Teaching Excellence in Science, Technology, and Mathematics



BILL MORRISON
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The Prime Minister's Awards for Teaching Excellence in Science, Technology, and Mathematics honour elementary and secondary school teachers who have had a major proven impact on student interest and performance in these disciplines. Over the three years of the program more than 400 outstanding educators have been recognized by their principals, peers, students and local Members of Parliament.

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Recipients are recognized for their work in many areas such as cooperative education, peer tutoring, mentorship and innovative course development. Specific criteria include exemplary teaching practices, student interest and participation, student achievement, commitment and leadership. Exemplary teaching practices may include development and/or implementation of innovative teaching methods; projects of innovative assessment methods; creative integration of science technology and mathematics with each other and/or with other disciplines; use of hands-on problem-solving activities in the classroom; exceptional capacity to adapt provincial/territorial policies and curricula to meet student needs; provision of a stimulating learning environment beyond normal expectations both during and outside the formal school day; development of education partnerships or relationships with business, local colleges/universities and Science, Technology and Mathematics (STM) professionals; development of activities demonstrating the relationship of STM to society; timely and relevant feedback to students; and support provided to special needs students.

The selection criteria also considers

- Student Interest and Participation are increased student interest and enthusiasm for STM both inside and outside the school environment;
- Sustained or increased proportion of girls, members of socially or economically disadvantaged groups, or students in general continuing in STM courses and/or opting for advanced or specialized courses or programs in higher grades or at the post-secondary level;
- Enhanced movement from school to work in STM areas as a result of innovative industry/school partnerships or apprenticeship programs.

The following OAME members are recipients of Prime Minister's Awards in 1996:

NATIONAL

Andre Ladouceur, Ottawa

REGIONAL

Katie Branvacki, Windsor
Rob McLeish, Ottawa

LOCAL

Ron Mayeda, North York
Dean Murray, Milton

There are many talented and innovative mathematics teachers who would be worthy recipients of a Prime Minister's Award. Take the time to nominate a colleague for this award. Additional information is available in your school or through the Science and Technology hotline (800) 268-6608 or on e-mail at pmaward@ic.gc.ca

▲ Introducing our New Ontario Mathematics *Abacus* & *Gazette* Editors

Frances Schatz, *Abacus* Editor

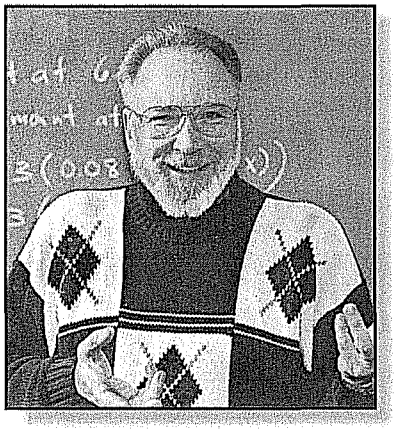
Frances began her teaching career at Oshawa Central Collegiate where she taught grades nine to eleven mathematics. Soon after, she became a tutor to private students as well as shut-ins who were on The Waterloo County Board of Education home instruction list.

In 1981, she became an associate with the Independent Learning Centre (ILC). Her responsibilities included marking 120 correspondence lessons each month and organizing meetings with 40 private students. One of her colleagues has noted that "her success as a private tutor defies belief, with a success rate approaching one hundred percent." She also provided Braille transcription, tactiles, and tapes for blind students, and coached a number of students for mathematics competitions.

In 1988, she successfully completed two refresher courses in mathematics teaching at the Faculty of Education, University of Toronto. In 1989, she won the Descartes Teacher Recognition Award presented by the University of Waterloo. During the presentation of the award, Frances was described as a "remarkable person and a truly innovative instructor whose skills include assisting and motivating all kinds of students."

During the OAME '95 Annual Mathematics Conference, Frances was interviewed by the K-W Record about her philosophy of mathematics education. To appreciate her full commitment to helping students achieve success in mathematics, one needs only to read the following quote from that interview:

"Every student deserves a teacher or tutor who has made a conscious decision to teach for understanding, to train students to approach problem-solving with



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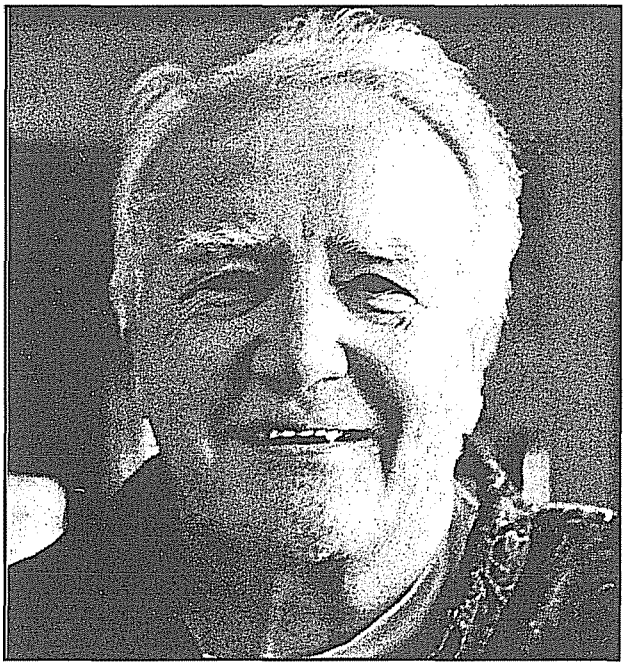
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confidence, and to help students develop number sense and a feeling for theory."

Frances now assumes responsibility for editing the Abacus, the elementary portion of the Ontario Mathematics *Gazette.* Members of OAME are fortunate to have an editor of such high quality. Best wishes, Frances!!

RON SAUER, CO-ORDINATOR OF MATHEMATICS, SCIENCE AND TECHNOLOGY
THE WATERLOO COUNTY BOARD OF EDUCATION



John Egsgard, *Gazette* Editor

Most of you will know John from the many texts he has co-authored and from his presentations at OAME and NCTM meetings. His excellence as a teacher was recognized by a Rene Descartes Medal in 1968.

John, in his years as an executive member of the Ontario Association of Teachers of Mathematics and Physics, was instrumental in the success of the first NCTM Regional Meeting to be held outside the United States (Toronto, August 1960). This led to a continuing association with NCTM resulting in his becoming the first Canadian Director and the first Canadian President. Throughout his years of leadership with NCTM he was successful in initiating policies which made it easier for classroom teachers to serve on NCTM committees and as Directors.

It is a measure of John's commitment to OAME that he ran for office when the organization was formed in



1973 and became the first President-Elect. That year was also his first year of marriage. Lyn and John met through NCTM and his year as President of OAME coincided with the birth of their first child - exciting times!

John has also been active with the International Congress on Mathematics Education, attending all seven of the International meetings (held like the Olympics, every 4 years) and serving on the Executive Committee of the Quebec meeting in 1992.

While involved in all these organizational activities, he considered teaching was his prime responsibility and delayed his retirement as long as possible.

John is an enthusiastic skier and was coach of his school's cross country team until last year. He enjoys a good wine and in recent years has been the Area Secretary for the Opimian Society, organizing wine tasting experiences for its members.

I know that, as usual, John will undertake the task of editor with a dedication that will continue the great tradition of previous editors. It is a pleasure to welcome John back to a leadership role in OAME.

DAVE ALEXANDER
EXECUTIVE DIRECTOR, OAME

▲ About Problem Solving: The Importance of Context

JOHN GRANT MCLOUGHLIN
EDUCATION PROGRAM
OKANAGAN UNIVERSITY COLLEGE
333 COLLEGE WAY, KELOWNA, BC V1V 1V7



Recently I was introducing a geometry unit to a group of first-year students. Most of the students aspire to teach in elementary schools at a future date. This math course has the flavour of a survey course which is intended to develop mathematical skills related to fundamental concepts. It may serve as a prerequisite for entry into the education program.

Throughout the course it was important for me to incorporate problems that facilitated making connections between mathematical ideas. Instead of commencing geometry with a review of common terms, the following problem was posed to the class:

The lengths (in cm) of a triangle are integers. The perimeter of the triangle is 12 cm. How many distinct (non-congruent) triangles satisfy these conditions?

While walking around the room, it became apparent that the context was being ignored by most students. The lists were getting longer as they identified various triples in which the sums were 12. Surprisingly enough there are only 3 possibilities that correspond to plausible triangular configurations, namely, 3-4-5, 4-4-4, and 2-5-5. My suspicion is that many students in many classrooms would have also responded by creating lengthy lists including 1-1-10, 1-2-9, ...Why? The context is so important and is not understood here. The list of feasible integer solutions must take into account the constraints presented by the triangular component of the problem. That is, it is not sufficient to simply find three positive integers that sum of 12. We require that the largest of these is not greater than 5. Generally speaking, the largest side must have a length less than one-half of the triangle's perimeter (i.e., the semi-perimeter).

Let us take this problem a little further. Suppose that the perimeter is N cm, N > 2. Consider all possible triples of positive integers that sum to N. Subsequently identify those among them that make triangles.

Beginning with N = 3, the only possibility of 1-1-1 does form a triangle. For N = 4, the only possible triple is 1-1-2. This triple does not produce a triangle. For N = 5, we must consider 1-1-3 and 1-2-2, the latter of which corresponds to a triangle. How about N = 6, 7, 8,...?

My own curiousity led me to examine this question further. The table summarizes the results for values of N from 3 to 12 inclusive. All of the triples are listed for each value. Those in bold print represent feasible dimensions for triangles. They shall be referred to as triangular triples for the remainder of the discussion.

N	TRIPLES
3	**1-1-1**
4	**1-1-2**
5	**1-1-3, 1-2-2**
6	**1-1-4, 1-2-3, 2-2-2**
7	**1-1-5, 1-2-4, 1-3-3, 2-2-3**
8	**1-1-6, 1-2-5, 1-3-4, 2-2-4, 2-3-3**
9	**1-1-7, 1-2-6, 1-3-5, 1-4-4, 2-2-5, 2-3-4, 3-3-3**
10	**1-1-8, 1-2-7, 1-3-6, 1-4-5, 2-2-6, 2-3-5, 2-4-4, 3-3-4**
11	**1-1-9, 1-2-8, 1-3-7, 1-4-6, 1-5-5, 2-2-7, 2-3-6, 2-4-5, 3-3-5, 3-4-4**
12	**1-1-10, 1-2-9, 1-3-8, 1-4-7, 1-5-6, 2-2-8, 2-3-7, 2-4-6, 2-5-5, 3-3-6, 3-4-5, 4-4-4**

Observe that the number of triples increases as N gets larger. This is not surprising. However, the number of triangular triples seems to defy this intuitive sense. Consider the sequence formed by taking the number of triangular triples for each value of N beginning with N = 3. The initial terms 1, 9, 1, 1, 2, 1, 3, 2, 4, 3 suggest that something else is happening here. My own conjecture is that odd

values of N produce more triangular triples than even values that are one greater (i.e., N + 1). The concept of the semi-perimeter seems to play a critical role. For odd values of N, the semi-perimeter is not an integer. On the other hand, even values may include several triples in which the largest integer is the semi-perimeter, thus, violating the triangle inequality. For example, N = 12 has three triples that include 6. These triples cannot possibly form triangles.

My own observations are quite preliminary in nature. The underlying idea seems to provide fertile ground for further investigation. The aforementioned sequence suggests that N = 13 and 14 might produce 5 and 4 triangular triples respectively.

Indeed, these figures can be verified. At this stage, it seemed reasonable to make a conjecture. It pertained to odd values of N only.

For odd values of N > 4, there would be k triangular triples where N = 2k + 3.

The first test was to consider N = 39. According to the conjecture, there should be 18 distinct triangles having a perimeter of 39 cm and sides of integral lengths. The actual number turns out to be 37 (ranging from 1-19-19 to 13-13-13). The conjecture is obviously flawed. Revising conjectures, posing new problems, and reframing prior information in search of patterns are pieces of the mathematical picture. More work needs to be done on this particular investigation.

Your insights on this problem are welcomed. Perhaps Jack Weiner will have a better chance to consider this problem given that he is handing over the editorial reins. It's been a pleasure working with Jack throughout his tenure as editor. His efforts have been very much appreciated by this contributor to the Gazette.

Editor's Note: *It has been more than a pleasure working with you. You have educated, entertained and challenged our readers, John. And you always submitted on schedule! Good luck and please continue your excellent column.*

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COUNCIL COMMENTS



PETER SAARIMAKI
COORDINATOR OF MATHEMATICS
TORONTO BOARD OF EDUCATION

These notes were taken at the OAME Council meeting held Saturday March 30, 1996. My thanks to Sandy Woodcock for her afternoon assistance in note taking. Comments about Council and its activities should be directed to the President. Comments about my comments can be sent to the editor.

General

One aspect of Council meetings that may not be obvious from these reports is the great amount of committee work that goes on Friday night and at other times. All members of Council, whether they be elected councillors or appointed chapter reps, are also members of our various committees. The reports that follow are but brief glimpses of the tremendous range of dedicated, creative work your representatives do. An innovation tried out at this meeting had committees meeting on the Friday night for two or three hours and also spending an hour or more before general Council on Saturday morning. This format received general approval since it allowed members to accomplish a lot more in the extra time than was possible before.

Grade Three Provincial Test

In March of 1997, all grade 3 students in the province will undergo a two week unit *test* for literacy and numeracy. The actual activities, assessment items and evaluation rubrics are being developed by a consortium of school boards under the supervision of the Education Quality and Assessment Office. Are you interested, concerned, worried, anxious?

To address our interests and concerns, OAME will be represented on the EQAO Academic Advisory Committee as it oversees the validation of the test items, the field testing next fall, and the in-service plans for grade 3 teachers next year.

The EQAO has also been holding teacher consultation meetings in each region of the province and OAME was invited to send a representative to each one for discussions and input to the grade 3 and 6 tests. (Yes, there will also be a grade 6 numeracy test next year, but only to a sampling of students.)

Special Presentation

Councillors saw some innovative assessment items from the York Region Board when Barry Scully, their exemplary mathematics coordinator, shared materials from their grade 3 Learning Assessment Packages. These are comprehensive units built around themes (such as Underwater Creatures, The Environment, Whales) that include activities for students, instructions for teachers, worksheets, connections to the math strands and learning outcomes of the Provincial Standards, and evaluation rubrics (i.e., criteria determining what level of performance has been observed).

A Good News Story

After lunch, councillors heard the good news that *Rockwell International* has agreed to contribute a very generous donation to OAME to underwrite the costs of the Ontario Mathematics Olympics. Rockwell was ably represented by Peter Rose who described many cooperative ventures involving schools and Rockwell employees. If you would like to get your school involved, contact your OAME councillor for the local Rockwell contact.

OAME conferences

Sandy Woodcock reported on planning for the 1997 Annual, May 8 - 10, at the Sheraton Centre in Toronto. The theme is *"The Name of the Game"*.

Council gratefully accepted the offer of NOMA to host the 1998 conference in North Bay.

The *"Leadership Conference"* is on again, so mark your calendars for *November 7 to 9, 1996*. To help reduce the pain of time-release (to 1 day), it will run this year from Thursday evening till Saturday afternoon. Registration forms were to be available in London. The line-up of presenters and facilitators is impressive. A definite DO NOT MISS event.

Retirees and returnees

Council paid tribute to several members finishing terms, including Elaine Harvey, Peter Lenczewski, David Zimmer, Tim Brown, Radford de Peiza, Barry Ferguson and Lorna Morrow. A special *trophy* was presented to Todd Romiens, retiring past-president, in recognition of his years of hard work and leadership on the executive.

The winners of the OAME awards were announced.

They are described elsewhere in this *Gazette* and were presented at the London conference.

New councillors are now listed on the back cover and will be welcomed to the fold (without spindles) at the June Council meeting .

Special Projects

There are now two OAME/OMCA Assessment documents. The Transition Years is selling well, and the Junior division is undergoing field-testing and is expected to be ready for release in the fall. The Special Projects committee is planning to initiate the Primary document next year - something for everyone!

COMMITTEES

Mathematics Equity

Elaine Harvey reported on the committee plans for the Equity breakfast at the London conference, with keynote speaker Nicholas Deleary, Principal of the Wiji Nim-Bawiyaang Elementary School speaking on Anishinabe Mathematics. Committee make up and functions were also presented for consideration. Suggested focuses for next year include: Canadian heritage and the Anishinabe, students with special needs, resource people regarding cultural and ethnic diversity, and equity in administration.

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Early/Formative Years

- preparing a list of potential resource people for provincial assessment projects.

Transition Years

- submitted three articles to the Gazette on Problem Solving, Portfolios, and Rubrics for Problem Solving, which were published in the April 1996 Gazette.

Way to go, gang!

Specialization Years

- planned some responses to the proposed provincial reorganization of the secondary program and planned to meet with a Ministry rep between Council meetings. The committee will prepare resources to help teachers and schools redefine the secondary mathematics program as it moves from 5 to 4 years.

Promotion

- cooperating with the *Science Teachers Association of Ontario* (STAO) to recognize the multiple subject demands on elementary teachers. The committee recommended OAME set up a World Wide Web page. They also are going to encourage (possibly with tax incentives) home and school organizations and local businesses to purchase OAME memberships for their local school.

Publications

- The *Gazette* and *Abacus* are undergoing a change of editors (see elsewhere).

  Readers are reminded to mention to companies they contact that they "saw it in the *Gazette,"* or that they "would like to see them supporting the *Gazette."*

  Articles and worksheets are especially needed for the *Abacus.*

CHAPTERS

Ontario Mathematics Olympics

Most chapters have developed their own mini-olympics or competitions to select their student team(s). As well, by the time you read this, most will have had their spring conference and/or AGM - were you at yours?

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Chapter	Conference	AGM
CHAMP	April 11	
COMA	April 15	May 27
GOLDEN	March 30	
GVMA	April 11	
ISOMA		May 10
SAME	April 15	
SWOAME	May 30	
TEY2MS	Oct 24	
WOMA	May 9 - 11, OAME Annual	
Y4MA	Oct 26	May 30

Notable highlights of a few chapters follow:

COMA

- their newsletter, COMAMOC, is well laid out, full of interesting articles, news and math challenges, and includes quotes from: Susan Stuart's letter from OAME to Minister of Education Snobelen regarding the Secondary Education Reform process; and Jeri Lunney's letter to the editor from the Ottawa Citizen. They have a large selection of Internet websites and Usernet groups listed, such as the Math Forum at http://forum.swarthmore.edu, and SchoolNet at http://schoolnet2.carleton.ca

GOLDEN SECTION

- their March 30th conference was in celebration of a 25 year tradition. For that length of time, *Golden* and the *Niagara-Brock Mathematics Interface Group*, including Eric Muller, have been presenting professional development opportunities. A fun time was had by all. Congratulations and keep up the good work!

ISOMA

- has quite a flourishing newsletter, with CD reviews (that's software not music), resource books and an interesting web site to visit. (If you want to try it, the URL is: http://elib.zib-berlin.de:88/Math-Net/Links/math)

Appendix

There were also the usual discussions on finances and membership, but you won't have the time to read about those because you'll be talking to a colleague about joining OAME, or going to a local chapter PD opportunity, won't you?

Councillors also spent some time discussing the issue of possible university entrance math exams, which

pointed out the need for dialogue and collaboration between the secondary and post-secondary levels.

As you look forward to a summer break, consider volunteering to your local OAME chapter next year. They could certainly use your help and if you plan for it now, you will be able to budget your time and reap the benefits for the whole year.

"Mathematics: Everybody's Heritage, Everybody's Future"

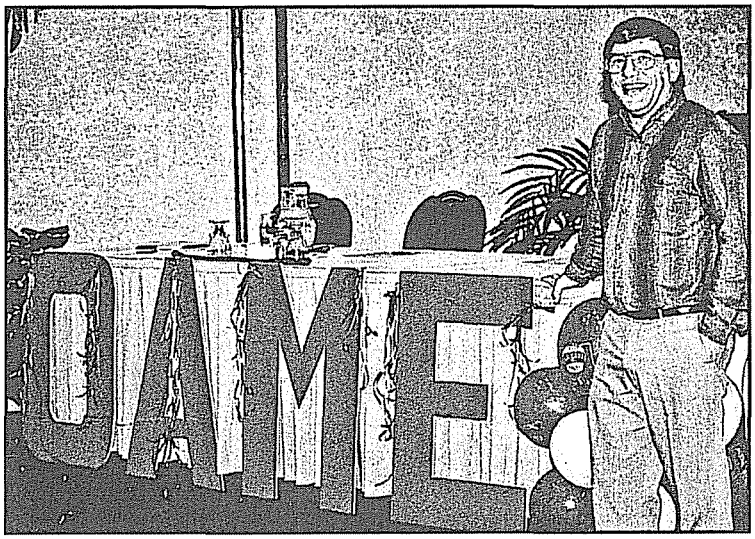
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(rarely: petesaar@enoreo.on.ca)

A SUMMARY OF OAME '96

Balloons and banners, 900 mathematics educators, a CF18 fighter pilot, a Canadian author/activist, a crystallographer, 148 sessions, friends and fun!!

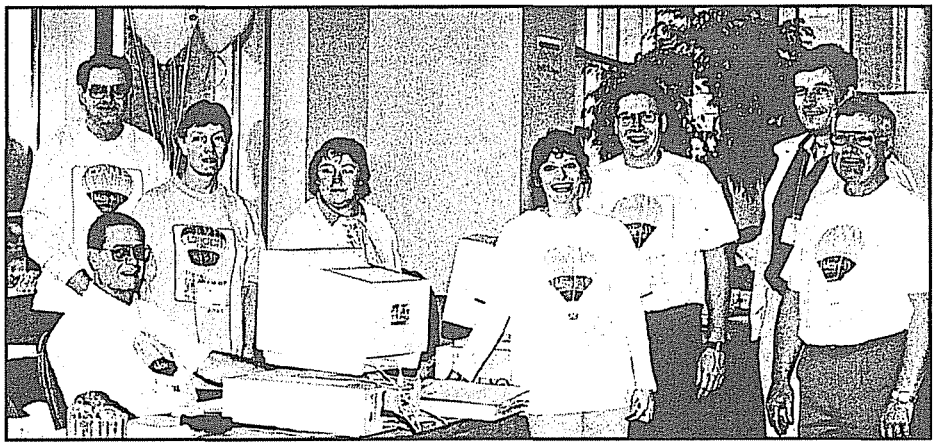
The annual conference of OAME, hosted by WOMA, at the London Convention Centre & Raddisson from May 9-11 was, by delegate evaluation, a resounding success. The organizing committee had paid attention to many details which ensured a pleasurable, useful experience for conference participants.

A smorgasbord of workshops and speakers allowed participants to create a high quality program to fit their own interests and needs. Approximately sixteen sessions ran concurrently in each time period so that conference delegates could decide to attend a workshop, enjoy the displays, take lunch at their chosen time or listen to a speaker. Keynote speakers addressed three varied facets of educational importance and the brand new display of student work offered a glimpse into programs around Ontario. Copies of session handouts were available to all delegates.



Despite inclement weather preventing balloon liftoff the facilities chosen by WOMA kept participants comfortable. The Tostals, Casino night and Race night provided opportunities to discuss applied mathematics and the display of commercial materials which was easily accessible during the conference.

OAME award winners were honoured each morning immediately preceding keynote address. For the first time the Don C. Attridge Award was presented to an outstanding secondary teacher.



At the annual meeting Susan Stuart passed the provincial gavel to Barry Onslow as this year's OAME President. Next year's conference will be in Toronto at the Sheraton Centre -plan to join us!!!

Above left: Barry Onslow.
Left: Part of the '96 organizing committee.



















OAME '96

1. *Taf Lounsbury & Susan Oleniuk with displays of student work.*
2. *Casino night.*
3. *Barry Scully, Marjorie Senchal, Susan Stuart, Ron Reesor Saturday Night Keynote session.*
4. *London's Childrens' Museum Program.*
5. *Dave & Bonnie Alexander, at the OAME booth at OAME '96.*
6. *Casino night.*
7. *Mike Dawes, Linda Reesor, copy centre service.*
8. *Lee Barnes, Gayle Rodger, Bob Newman publishers'/suppliers' display area.*
9. *Past Presidents' Breakfast.*

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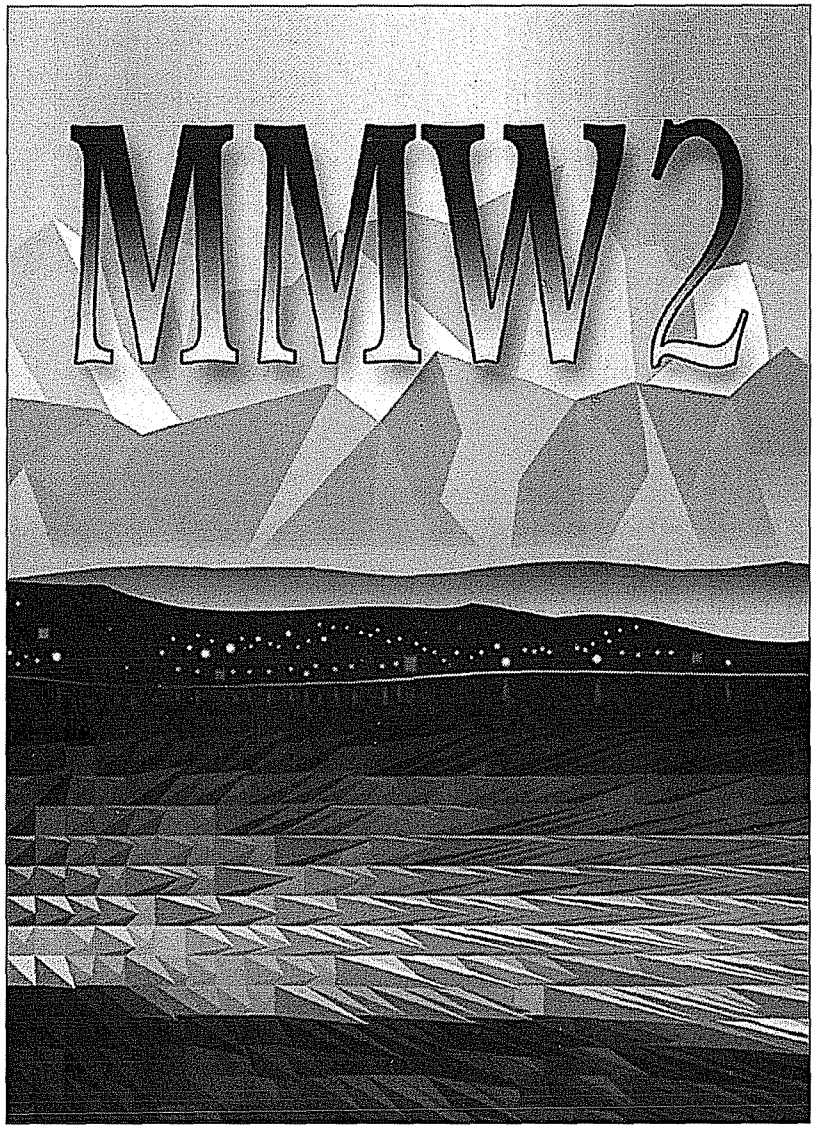
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