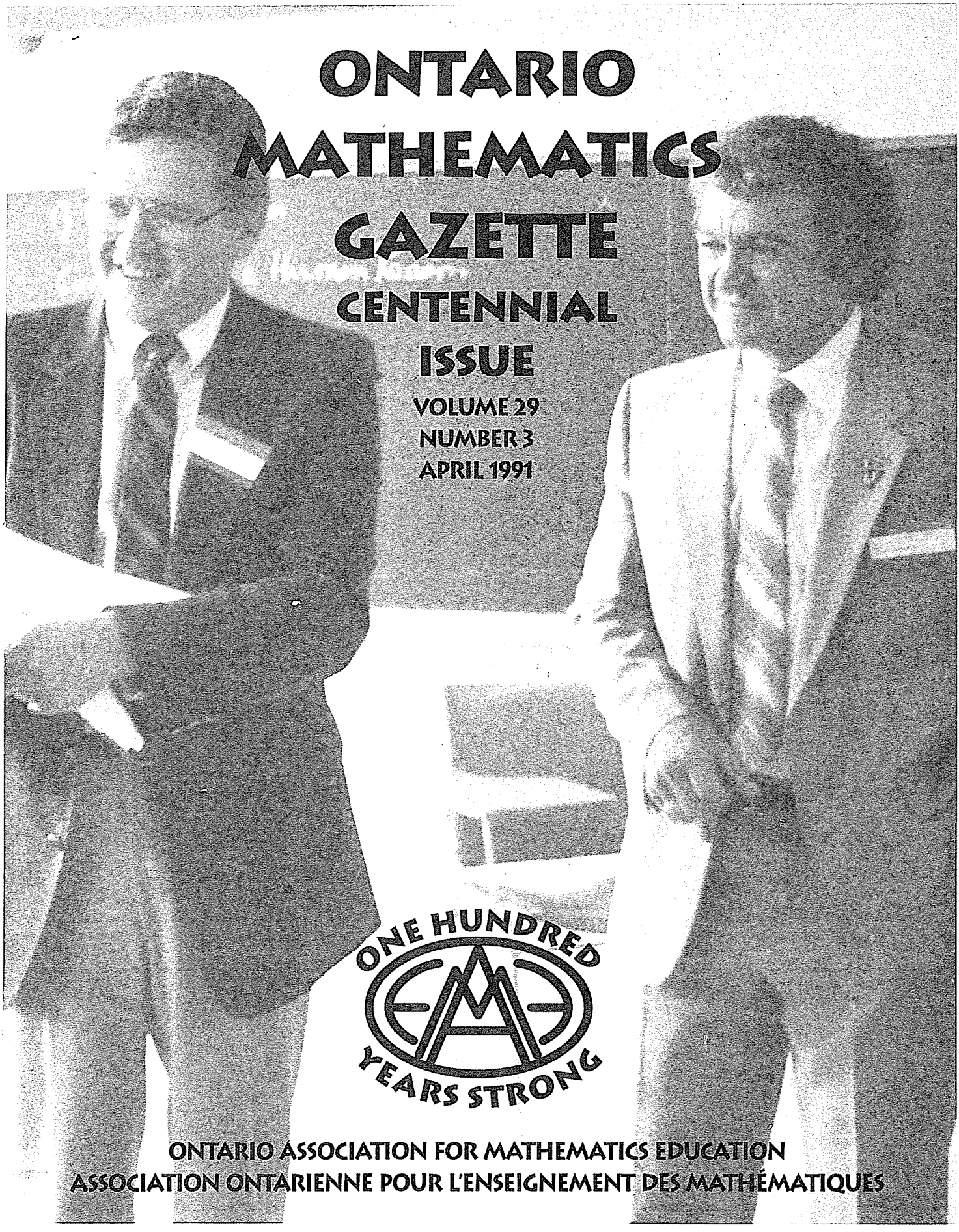


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CENTENNIAL ISSUE

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ONE HUNDRED YEARS STRONG

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

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AVIS AUX AUTEURS

Les articles qui sont soumis pour publicatoion doivent etre dactylographiés ou une photocopie de l'originale, écrit à double interligne sur papier 8.5" x 11" avec une marge de 1.5" et écrit seulement sur une coté de la feuille. Les diagrammes et les figures doivent etre prets pour imprimer. TROIS copies doivent etre remises à l'editeur et l'auteur devrait garder une copie en cas de perte. L'auteur devrait aussi inclure son adresse au complet et son affiliation en éducation sur une page SÉPARÉE du manuscrit. Les articles sont révisés par un comité qui ne une phote portrait noire et blanche, 5" sur 7" en grandeur, convenable à la publication. Les photographies de l'équipement devraient etre au moins 5" sur 7" en grandeur et de couleur noire et blanche.

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DEADLINES

FOR SUBMISSION OF INFORMATION TO BE INCLUDED IN O.M.G. ARE AS FOLLOW:

- June 15 for the September issue
- October 15 for the October issue
- January 15 for the April issue

FOREWORD

JACK LESAGE

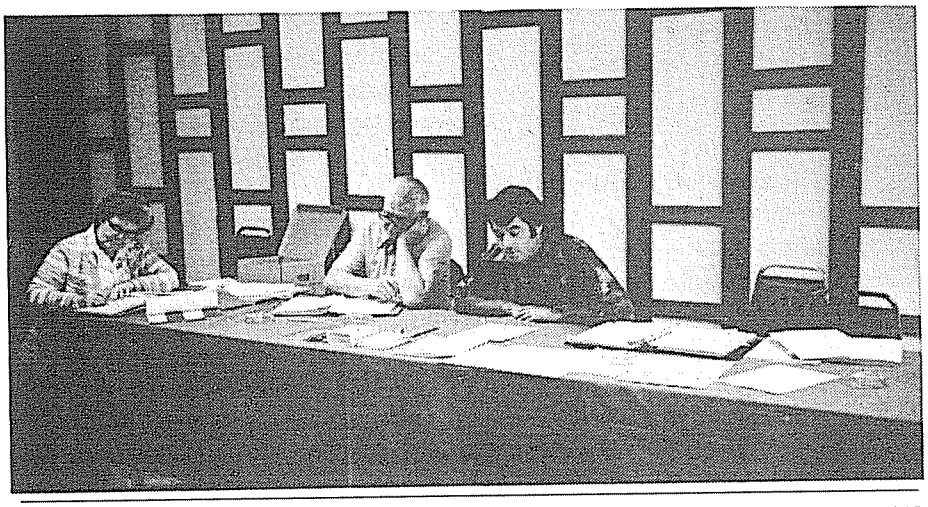
First, a disclaimer. When Joan Routledge and I first discussed this we decided that this would not be a history in the usual sense but a series of personal looks at the times.

As I look over this edition I realize that I concentrated on the 40's, 50's, 60's and 70's. (The greats of the earlier times are not around to share their thoughts with us.) To the new greats of the present: please start writing your thoughts now so that, when we contact you for the 125th anniversary edition, you will be ready! It is interesting to note that Dave Davidson, Tom Griffiths and Bob Robinson are retiring from Council this year with a combined record of over fifty-five years of service.

I would like to dedicate this issue to Ernie Totton and Frank Asbury who put the first history together and to Mona and Morley MacGregor who wrote the second and third histories.

There are so many of the important Mathematics Educators who were not featured here.

- Ralph Stanton, Ken Fryer (and later, Ron Dunkley) who, along with John Coleman, revolutionized the modern-day relationships between the universities and the secondary schools.
- Frank Kinlin who was all things to all people and who made it possible for the reforms of the 60's and 70's to take place.
- Professor Norman Miller and Professor Eric Magee who attended the conferences for so many years.
- George Scroggie who was the Department of Education's "Mr. Mathematics" at a very critical and productive time in our curriculum history.
- Warwick Sawyer whose thesis was that, in order to improve the teaching of mathematics, we had to start with the elementary school children and wait until they became teachers. We did and its working.
- Don Fox, Peter Ullrich and Fred Maskell from Ottawa who we all miss very much.
- Doug Henderson who did so much for Mathematics Education in the North and who always gives thoughtful presentations when asked to speak.



FROM THE GALLERY: MONA MACGREGOR, MORLEY MACGREGOR, DAVID MCPHAIL

- Hugh Allen who always has a unique presentation whenever he speaks at conferences.
- Dorothy Bevan who helped maintain the bridge between the female private schools and the rest of us.

I know that I'm in trouble since there are so many more people who should be mentioned!

Now, a sincere "thanks" to many people. To Joan who gave me advice; to Lorna Morrow, Tom Griffiths, Peter Weygang, and Elaine Harvey who found so many interesting tidbits; to Paul Sherk for generously sharing his photographs with us (and for his continued interest in the Association); to Ron Lancaster and Amy Parker who helped in so many ways; to Eric Wood for his technical advice; and to Michael Tabor who put it all together.

Then, of course, we have Jack Weiner who approached this project like he does everything else — with more talent and enthusiasm than one person should be allowed to have!

Finally, a big "thank you" to Mary, who gave me understanding and advice when I needed it.



FROM THE GALLERY: NEIL WILLIAMSON, BOB ROBINSON, JOHN HOPKINS, DOM DEFILICE, BOB KOVATCH, SHIRLEY MACINTYRE, BONNIE ALEXANDER, LORNA MORROW AND FRIENDS

PRESIDENT'S MESSAGE

MICKEY SANDBLOM

Being President of the Ontario Association for Mathematics Education as we arrive at the end of the first century of meetings and deliberations is a true pleasure for me. It is also an honour to be able to make a small contribution to this Gazette through which we are encapsuling the history of these 100 years.

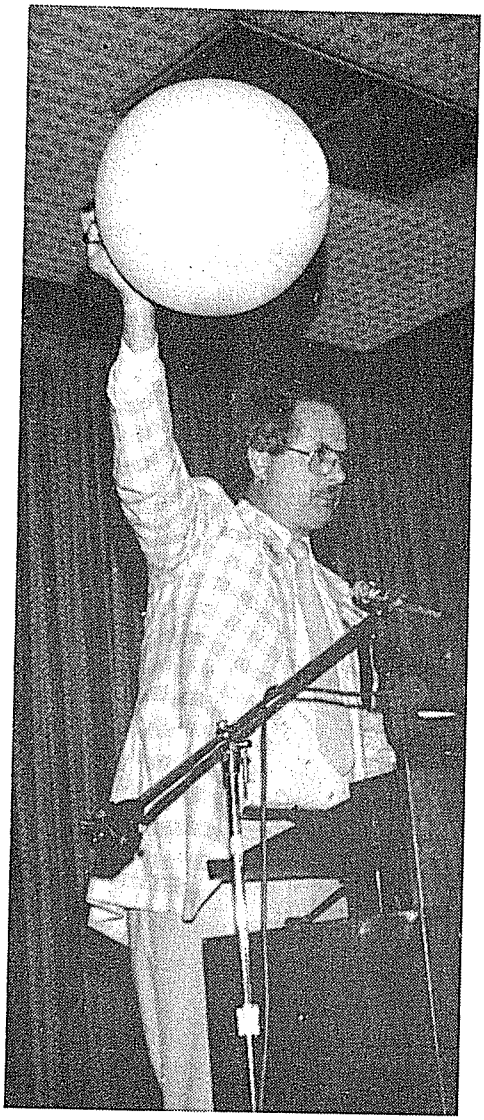
Plans for this event began several years ago and in that interval a good deal of discussion has taken place about the format to be followed in both collecting and presenting the information for this project. The leader behind these efforts has been Jack LeSage, with an able assist from Joan Routledge. Both of them deserve praise and thanks for their work in the preparation of this historical Gazette. Their efforts have not only involved decisions regarding the ways in which to organize the data when it was gathered, but also finding sources of information in both written and personal form. In addition, in their own rights, they are also worth of high mention for their personal contributions as giants in the history of mathematics growth and organization in this province.

Joan and Jack's efforts have involved many other members of OAME who have taken the time to search for documents from the past to provide insight into the growth of our organization as it exists today. Others took time to gather information and send it to our editors about various activities and organizations such as chapters within our organization. To each and everyone of you who contributed, please accept my thanks and congratulations on behalf of myself and OAME.

The giants of the past have led us through our first 100 years. As we head into our second century of mathematics organization in this province, OAME has taken steps to be prepared to carry on this leadership role. Our constitution and bylaws have recently been reviewed and revised. Plans have been put into action to provide the organization with a firmer financial base from which to work toward greater input at all levels of government, industry and business. Internally, all council members took part in a seminar to look at directions for math education in the 90's and on into the 21st century. These people are now prepared to go to groups throughout the province to share this experience with others.

However, most important of all has been the initiative taken by members throughout the province to create a network of support of these organizations and to develop through them an interactive two way communication system to provide input to the central organization and disseminate information back to the membership. With the commitment of the provincial organization to provide maximum support to each chapter, we can go on into the next century of our existence strong and united.

The past is depicted in the pages of this publication. The future is in our hands. Let us go forth and make those have worked before us truly proud of our efforts.



FROM THE GALLERY: MICKEY SANDBLOM

FROM THE ARCHIVES

JOHN C. EGSGARD

PUBLICATIONS COMMITTEE

... With the completion of the terms of the previous editors, Bill Eames and John Griffith for the *Gazette* and Brock Rachar for the Abacus, new editors were obtained. Arnold Harris was appointed as editor of the *Gazette* and Andy Czempinski for the Abacus ...

... SOME OF THE MAJOR ACTIONS TAKEN...

- Submitted a brief to the Minister of Education on the Qualifications and Preparation of Teachers of Mathematics K-8.
- Conducted a leadership conference for elementary teachers of mathematics.
- Established a Senior Cyclic Curriculum Committee.
- Nominated Dr. Magee of the University of Western Ontario as a life member of OEA.

SIX CHAPTERS OF OAME

- Southwestern Ontario Association for Mathematics Education (SWOAME)
- Grand Valley Mathematics Association (GVMA)
- Northern Ontario Mathematics Association (NOMA)
- Stormont Dundas Glengarry Prescott Russell
- Carleton Ottawa Mathematics Association

REPORT OF THE PRESIDENT, VOLUME 14, NUMBER 1, SEPTEMBER 1975

LETTER TO THE EDITOR





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January 1991

On behalf of the Ministry of Education and the Government of Ontario, I extend to you my sincere best wishes on this the 100th anniversary of subject associations for mathematics education in the province of Ontario.

Through the past hundred years the mathematics education associations of Ontario have had a rich and commendable record of service to the educators and students within the province. The original mathematics association OATMP (Ontario Association of Teachers of Mathematics and Physics), the OATM (Ontario Association of Teachers of Mathematics) and the present OAME (Ontario Association for Mathematics Education) have made a significant contribution to mathematics education.

As you celebrate this important event in your history, please be assured that your past contributions have been appreciated and our educational partnership with your association will continue into the future. My best wishes to all members past, present, and future as you enter your centennial year and a new decade of education in Ontario.

Yours sincerely,

Marion Boyd
Minister

A SHORT AND PERSONAL VIEW OF OUR ROOTS

JACK LESAGE

As I look back over the history of the associations and think of my own mathematics education history, I realize that the person who influenced me the most was Frank Kinlin. So I respectfully dedicate my article to him.

This will be a series of significant dates, interesting quotes and some connecting comments. Please do not confuse this with a scholarly history! I am grateful for two sources upon which I have drawn heavily:

- *Historical Highlights of The Ontario Association of Teachers of Mathematics and Physics, 1891-1960* by Ernie Totton and Frank Asbury, Copp Clark
- *Highlights, Ontario Association for Mathematics Education / Association Ontarienne pour L'Enseignement des Mathématiques, 1973-1989* by Morley and Mona MacGregor

PRE-HISTORY

In 1860 the Ontario Teachers Association, later to become the Ontario Educational Association (OEA) was formed. It eventually became the umbrella for the various specialized Sections:

- Subject oriented — Mathematics and Physics
- Child oriented — Elementary School Teachers
- Administration oriented — School Inspectors, School Trustees, etc.

It wasn't until 1918 that the first Teachers' Federation was formed (OSSTF), so this association was the voice of Education in Ontario. It would appear that the meetings were held in August since at that time there was no March Break (nor its predecessor, Easter Holidays). It is interesting to note that the Easter Week Holiday was negotiated by the OEA so that teachers could come to Toronto for a Teachers' Convention.

The first reference found concerning mathematics was a talk in 1873 by Thomas Kirkland, Science Master at the Normal School (Teachers' College), who spoke on "Euclid as a Textbook". He was concerned that it had been abandoned in continental Europe and the USA but not in Great Britain and Canada. (He favored keeping it)

In 1879, Dr. McLellan (President of the OEA) said:

> *"I think, then, that notwithstanding the dogmatic utterances of certain Metaphysicians who were almost totally ignorant of Mathematics, and the careless admissions of a few Mathematical Metaphysicians who sacrificed the certainty and stability of Mathematics for the aberrations of Psychology, enough has been adduced to establish the proposition that Mathematics are entitled to a high position as an Instrument of Education."*

The next day there was a talk on "The Higher Education of Women". (For an interesting footnote to this see Jean Leppard's article on her introduction to "Higher Education" in 1928.) A Professor Young gave a talk on the development of the brain and concluded that:

- "kindergarten was the best approach for 5 to 7-year olds, and
- "the processes of arithmetic were the important matter, and that children should not be tormented by being required to give the reasons for every step."

In 1880 David Boyle (Headmaster of Aurora Public School) spoke on "The Natural Sciences in the Public Schools". He said:

> *"Children are rushing away to the cities, frightened from their schools by impractical and uninteresting instruction by teachers who regard it a sacred duty to tell just how many* x*'s it takes to make a* y*; how fast one train, so many feet long, is going in one direction when it passes another train, twice or half the same length, going the opposite way, or the same way, at such-and-such a rate; or when the hands of an 8-day clock ... will next be together, or at right angles, or in some other position .... At the same time the pupil doesn't need to know the difference between a cat and a cat-fish, or a sunflower and an ear of corn, provided always (that) he can solve some crooked combination of figures by the unitary or any other method."*

THE EARLY YEARS: THE FIRST 50 YEARS

On 1891-01-18-10:00 the preliminary meeting of those interested in the formation of a Mathematical Association for the Province was held in the library of the Normal School. (Using the formula on page 24 of the Volume 29, Number 1 issue of the *Ontario Mathematics Gazette*, I calculate that to be a Sunday.)

Professors Louden, Baker and McKay, and Messrs. Kirkland, MacMurchy, McGowan, Riddell, Grant, Dickson and Manley were present. They obviously decided to form an association that would encompass Physics — which, of course, is Applied Mathematics! — and the first meeting of the Mathematical and Physical Association of Ontario was held on 1892-04-21. The charter President was A. MacMurchy. There were 37 charter members and the dues were $0.50.

Dr. J.A. McClellan — author of *The Elements of Algebra*, Canada Publishing, 1886 — spoke on "Mathematics as an Education" and University of Toronto Professor Alfred Baker's talk was "The Introduction of Astronomy into our High Schools". (He was the author of: *Elementary Plane Geometry, Inductive and Deductive, Introductory and Practical*, $0.50; *Geometry for Schools, Theoretical*, $0.75; and *Analytical Geometry, for Beginners*, $1; all by W.J. Gage in the early 1900's.)

In 1895, Professor A.T. DeLury (President) of the University of Toronto suggested:

> *"A Committee of the Association might report each year on all, or the more important, textbooks appearing during the year, (so that) teachers would have knowledge as to the character and importance of the recent books on their subjects."*

He also suggested that *teachers in any district might organize themselves to prosecute some special studies, ... , by coming together when possible or convenient, work* on some original investigations. So we see that, already, the concept of chapters was in its rudimentary stages. A.H. McDougall of Ottawa Collegiate stated that there had been a decline of interest in Mathematics and Arithmetic, blaming it on the: increase in the number of female teachers, lowered Arithmetic requirements for the first-class teaching certificate, the "Yankee idea" of solving difficulties by leaving them out.

"Our Public School Arithmetic has left out everything in the shape of complicated fractional expressions ... a growing tendency ... in the High School to shirk algebraic problems that involve complicated expressions. Our pupils have not had the old-time training that made such work easy. Recurring decimals have disappeared from Public School work ... The High School arithmetic has a well graded set of examples on annuities ... but here again the Yankee idea has prevailed and henceforth we are to have arithmetic omitting annuities."

He suggested a new outline for Geometry for Forms II, III and IV (now Grades 10,11 and 12) that would supply a connecting link between the elementary geometry and the conic sections and modern geometry as taught in universities. I think we are seeing the first suggestion for Analytic Geometry in the High Schools. (Mr. McDougall was the author of *Advanced Geometry for High Schools, Synthetic and Analytical;* and *The Ontario High School Geometry, Theoretical, $0.50;* by Copp Clark in the early 1900's.)

In 1896 W.H. Ballard of Hamilton was elected President. He was the first President from outside Toronto.

In 1901 C.L. Crassweller of Essex spoke on "Mathematical Studies and Intellectual Growth" and discussed the role of Greek and Egyptian mathematicians and the influence of Near Eastern philosophy and culture upon the study of mathematics. There was a move to have Canada adopt the Metric System and this gave rise to the following:

"In the opinion of this Association the time has not yet arrived for the introduction into Canada alone of the Metric System, but that it is in sympathy with all efforts to make the pupils of our schools thoroughly acquainted with the System with a view to it successful introduction as soon as an agreement can be arrived at among the English-speaking nations..."

Well, we are still waiting for that agreement!

From 1900 to 1904 the whole issue of the place of geometry in the high schools was thoroughly discussed. This resulted in the following resolution (in 1904). The Association:

"heartily approves of the work in Geometry outlined for the Lower School (Grades 9,10) in the draft prepared by the Education Department for consideration; that this Section (of the OEA) is of the opinion that in the Middle (Grades 11, 12 Advanced) and Upper Schools (OAC) some work in Geometry more practical and harmonious than Euclid, with the applied mathematics taught in these forms, is desirable, if ... it can be done without sacrificing the rigor of Euclid's demonstrations."

The proposed new courses were:

- Practical Geometry in Grades 9,10
- Formal Deductive Geometry in Grades 10, 11 and 12
- Pure Geometry (Supplementary) for OAC
- Elementary Analytic Geometry for OAC.

This is of double interest. It is the first definite move away from Synthetic Geometry and it indicates cooperation between the Department of Education and the Association.

In 1907 Wilson Taylor spoke on the "Poetry of Mathematics". By then it was a day and a half conference and at 15 o'clock of the second day the Section met jointly with the Natural Science Section to hear Ernest Rutherford (Nobel Chemistry prize, 1908) speak on the "Transformation of Matter". Three of the remaining five talks were on the 1906 Provincial examinations:

- Junior Leaving Arithmetic,
- Senior Leaving Examination Papers, and
- The Problems Paper.

In 1908 a balance of $69.99 was reported by Secretary-Treasurer Thomas Kennedy. One wonders if he was related to the T.L Kennedy who was Provincial Treasurer. The following resolution appears:

"That the Honour standing for candidates for Matriculation, whether for scholarship or not, be based upon the three papers on Algebra, Geometry and Trigonometry, and that the Problems paper be regarded merely in determining the rank for scholarship standing."

In 1917 Mr. E.J. Whethy of Carleton Place talked about using calculating devices in Grades 9 and 10. Mr. E.T. White of the London Normal School talked about the deficiencies of Normal School Students. He lamented their weakness in mental arithmetic, and in problem solving.

In 1922 University of Toronto's Dr. Sam Beatty's talk was "The Balance between the Real and the Mechanical in Mathematics". I had the thrill of learning Calculus from Dr. Beatty in 1950 and still recall his diagrams of motorcycle policemen hiding behind billboards as he explained the mysteries of a limit to us! When he retired, some of his admirers initiated the Samuel Beatty Fund which, among other projects, helped underwrite the cost of the *Gazette* from 1963 to 1974.

In 1925 we see a resolution that:

"...having had several years' experience of the new regulations re teaching of Algebra and Geometry, they have found the results unsatisfactory and suggest that ... (we) have Algebra in the first year, both subjects in the second (third and fourth), one subject to be stressed each year and one subject written off at the end of the third year as now."

Editor: This is very similar to the method in use when I was in High School. The 'subject written off' refers to the Junior Matriculation examinations that were written in the various subjects in Grades 11 or 12.

This resolution was repeated in 1926.

In 1926 it was resolved by Messrs. Keith and Butcher that:

"...the Mathematical and Physical Section ... is agreed that the proposal to transfer the Pass Work of the first year of the Universities to the Collegiate Institutes (Editor: a high school that had a significant number of teachers who had Specialist qualifications) *and High Schools should be carried out, and if any school is equipped for teaching the Honour Work of the first year, its pupils should be given credit for such work. The Section also suggests greater coordination between the Universities and the Department ..."*

In 1927 there were 56 members and the bank balance was $36.51

1931 R.N. McKenzie (President) spoke on the "desirability of having an introductory course in Calculus ... in the curriculum." (In 1932 Sam Beatty and James Jenkins published in the OEA Reporter a proposed Calculus course, considered by many to be too theoretical, which was later published as a text. It is interesting to note that the text was a collaboration between a University professor and a high school teacher. In 1933 a motion in favor of "An introduction to the Calculus" was defeated.)

In 1935 Professor John Long of OCE spoke on "Objective or New Type Tests in Mathematics". Membership was 161 and the balance was $311.94. The Depression seems to have helped the Association!

In 1936 "The Report of the Committee on the (High School) Mathematics Curriculum" was presented by Mr. W.A. Jackson, who suggested the introduction of Trigonometry in Grade 12 and a full year Analytic Geometry course in the fifth year. Eugene Durrant was elected President. Eugene is still keen of mind and it's always a pleasure to talk to him.

In 1938 we have the first record of a luncheon. It was at Central Y and the speaker was N.C. Urquhart, President of the Toronto Stock Exchange.



FROM THE GALLERY: TOM MOUSSEAUU, JACK LESAGE, BRUCE JAY, MORLEY MACGREGOR — LEADERSHIP CONFERENCE, NIAGARA FALLS, 1974

THE LATER YEARS: THE NEXT 50 YEARS

In 1943, Lieutenant Israel Halperin spoke on "Mathematics Used in Artillery".

In 1944 we see a panel discussion on "Mathematics for Girls in Secondary Schools" given by Miss Hilda Rice, Miss E.M. Scully, Mrs. M.A. Barton, Mrs. M. Gray, Miss D. Williams, and Miss A. DeGuerre. There is also the first reference to films.

In 1945 John Knowles of Aurora was president. He was the grandfather of Bob McRoberts who is a mathematics teacher at his former school — Dr. G.W. Williams.

In 1946 Hilda Rice became the first woman to be elected President. (In her later years she married Austin Hiltz, an acquaintance of Jean Leppard — our second woman president.) Hilda Rice suggested that Graded Tests for Grade 9 be made available.

The Association, through Eugene Durrant, Mr. A.L. Milloy, and Wally Morrison, developed a "Brief to the Royal Commission on Education" that recommended:

- "...a Unified Course in Mathematics through the elementary and secondary schools ...
- "...that equipment and accommodation be increased in order that Mathematics might be taught as a Science ...
- "that provision be made for in-service ..."

A.L. Milloy was co-author of *Modern Physics for Secondary Schools* and *Physics — A Senior Course* by Copp Clark. Wally Morrison was co-author of *Mathematics in Practice* by MacMillan and was later Secretary-Treasurer of the Ontario Mathematics Commission (OMC).

That year Bob Rourke spoke on "The Significance of the Canadian Mathematical Congress (formed in 1945) for Secondary School Mathematics". He suggested cooperation among provinces, between teachers and business people and between Canada and the USA. Bob was co-author with Professor Norman Miller of Queen's University of *An Advanced Course in Algebra and Plane Trigonometry* and *Statics* by MacMillan.

In 1949 Professor P.A. Petrie (OCE) talked on "Simplified Equipment for Demonstrating Experiments in Statics in the Mathematics Classroom". (The fifth year Trigonometry course was now Trigonometry and Statics.) Professor Petrie (with V.E. Baker, John Levitt, Bruce MacLean and sometimes W. Darbyshire) was co-author of the Copp Clark series of texts that dominated the Grade 9 to 13 market (with the exception of the Grade 13 Analytic Geometry course). You will see later why this changed. Membership was 244, Balance $110.29.

In 1950 Bob Rourke convinced the Association to affiliate with NCTM. There was a talk on "Field Work in Math" and an informal dinner for the first time (at 18 o'clock).

In 1951 there was a name change to "Ontario Association of Teachers of Mathematics and Physics (OATMP)"

In 1953 we have the first issue of a Newsletter that I could find. Don Mumford was the Editor. My last copy of the Newsletter is 1960 but I assume that it continued until the start of the *Gazette* in 1962-02.



FROM THE GALLERY: DON AND CAROL ATTRIDGE

In 1958 we have the first record of "regional meetings": *Mathematics Seminars for Teachers of Metro Toronto* (four that first year) organized by John Del Grande, Ernie Totton et al. There was also a meeting at Belleville. Professor A.W. Tucker of Princeton (an expatriate Canadian) spoke on "Why Sets?". He compared the introduction of Set Theory to the introduction of Analytic Geometry in the 17th Century. Membership stood at 278 (including me!), while the bank balance was $511.

1959 saw the rebirth of the OMC, formerly a committee of Ontario Association for Curriculum Development (under the leadership of Howard Mulligan), now co-sponsored by OTF and the Department of Education. Among the people present were John Coleman, John Del Grande, Fr. Don Faught, Larry Griffiths, Howard Mulligan, Don Mumford, and Norm Sharp.

In 1960 Ern Totton (with the help of Frank Asbury) put together the first history: *Historical Highlights of the Ontario Association of Teachers of Mathematics and Physics*. I have made liberal and grateful use of it for these notes. The OMC sponsored the writing of an experimental Grade 9 text using the "New Math". The authors were John Coleman, John Del Grande, Howard Mulligan and Ern Totton. Grades 10, 11 and 12 followed later and included other authors — including John Egsgard, Bill Forsythe, Larry Griffiths, and Bill Zimmerman. It is interesting that, about this time, OATMP Council began spending more of its meeting time on organizational details for the larger annual conferences.

In 1961, under the presidency of Norm Sharp and the chairmanship of John Egsgard, we hosted the first NCTM Summer Meeting outside the USA.

In 1965 we had another name change to: "Ontario Association of Teachers of Mathematics (OATM)", a change that had the blessing of the Science Section of the OEA. This year saw the Report of the Committee on the Mathematics of the Four-Year Programme by Bill Anglin, Wilf Baxter et al. The report was co-sponsored by the OMC and the Ontario Curriculum Institute (the predecessor of OISE) This led people such as Dave Campbell from Althouse College to produce experimental materials that, in turn, inspired the creation of a large number of excellent texts for the Four-Year Programme. The annual conference had three seminars for Elementary School teachers. It obviously worked because Joan Routledge attended and she was to have a considerable effect on our future. Jim MacLean was now a councillor and I think that he was the first elementary school person in this position.

In 1966, under the leadership of President Jean Leppard and Chairman Garth Kaye, the annual conference moved to a hotel — The Inn on the Park. In retrospect this was a very significant move for the annual conferences and also meant that we were moving away from downtown Toronto where most other Sections of the OEA met. The 1966-09 issue of the *Gazette* was a Special Elementary School edition.

In 1967 the Canadian Association of Mathematics Teachers was formed with John Egsgard as its president.

In 1968 Jim MacLean was the first president to be elected from the elementary panel.

In 1969, Doug Crawford (McArthur) who was President of OMC approached OATM with the news that financial problems might cause them to disband. President Dave Alexander expressed the concern that, because of the larger annual conferences in the previous ten years, less OATM council meeting time had been spent on educational issues (in contrast to the modus operandi of OMC). There followed small-group discussions on "What Mathematics for Which Children?". It is interesting to note that the '91-01-12 Council meeting featured a presentation by Mary Lou Kestell, Alex Norrie, Bob Robinson, and others on future trends in Mathematics Education.

In 1970 Don Fox and his confreres convinced us to move the annual conference out of Toronto to Ottawa. This was another very important step in the development of annual conferences. Members: 504. Balance: $2393.53.

The courtship began as it was moved by Art Dayman and Jack LeSage that "a committee be formed to investigate the possibility of amalgamation of OMC and OATM with an eye to disbanding both organizations and creating a new Ontario organization for mathematics education." The OATM committee was Joan Routledge, Art Dayman, Ron Scoins, L. Chouinard, Jack LeSage and Dave Alexander. OMC people involved were Geoff Steel, Ross Leigh, Andy Vertesi, Norm Sharp, Eldon Pipher, Jim Tennant, Ken Fryer and Eugene Durrant. The first meeting of the "Nameless Society" (later GVMA) was held. While it, at first, chose not to be affiliated with OAME it exerted, and



FROM THE GALLERY: KEN FRYER

continues to exert a great influence on Mathematics Education.

In 1971 the OATM became concerned about the "we-they" attitudes that seemed to permeate the Mathematics Education community in Ontario. So, at the Niagara Falls Conference, Bruce Jay, Mike McKenna and Jack LeSage hosted an informal meeting of people from university mathematics departments and faculties, colleges and faculties of education, secondary school teachers, elementary school teachers, mathematics coordinators and the Department of Education. The first Leadership Seminar was held. It was organized by John Girhiny of the University of Guelph and co-sponsored by OMC and OATM. It was "a program to assist teachers in the elementary classrooms of Ontario to improve mathematics education". President Don Fox and L.M. Skube of the Art Section led a revolt concerned with the cost of services available from the OEA. (The OEA disbanded in the mid-70's.)

In 1972 the annual conference was held at the University of Waterloo in May — instead of March Break — and "Waterloo in '72" did to the annual conferences what Calgary did to Grey Cup in 1948!

In 1973 OAME was born to the proud parents OATM and OMC at North Bay. Assisting at the birth were Don Attridge (the last OATM President), Andy Vertesi (the last OMC President) and Dave Alexander (the first OAME President). A crest was designed by R. Patterson. Morley (and Mona!) MacGregor was (were) appointed as Secretary-Treasurer.

The charter chapters were NOMA, COMA, Prescott, Russell, Stormont, Dundas and Glengarry and Renfrew County. There were many gains and one of them was that OAME turned over responsibility for the annual conference to a local committee and so had more time for other issues as is evidenced by the new types of committees, representation on Ministry committees, position papers, etc. But there were some losses. One of them was the loss of constituent representation that OMC had. The *Gazette* was almost a casualty but John Coleman offered to underwrite any funding shortfall for the year and so it continued publication.

In 1974 Morley MacGregor and Bruce Jay resurrected the Leadership Seminars under the sponsorship of OAME.

In 1976 the new name, OAME-AOEM was adopted.

In 1981 George Cumyn designed a new crest.

In 1982 the NCTM Annual Meeting was held for the first time outside USA. George Knill was President. Dave Alexander, John Egsgard et al were responsible for it.

In 1989 Don and Carol! Attridge succeeded Morley and Mona MacGregor as the new Secretary Treasurer.

In 1990 an NCTM Regional meeting was held in Hamilton under President Mary Lou Kestell. It was organized by George Knill, Bob Robinson, Ralph Connelly, Alex Norrie, et al.

In 1991, the Centennial conference — organized by Jeff Martin — was held in Etobicoke under President Mickey Sandblom. It brought back many happy memories to me to see so many of the former Presidents there.

FROM THE ARCHIVES

A MEMORIAL TRIBUTE: FATHER DONALD T. FAUGHT

Mathematics in Ontario has undergone a great change in the last fifteen years. The initiating of this change was due to a rather small group of people. One of these people was the late Father Donald T. Faught of the University of Windsor, who was the first President of the Ontario Mathematics Commission.

Father Faught, was one of a rare-breed — a University Professor who had taught in high school, as he did for fourteen years at St. Michael's College in Toronto from 1940 to 1954. His high school background played an important role in his work with teacher groups, as he taught courses in the "New Math", led them in the marking of the old grade thirteen examinations that he set, or acted as Honourary President of the Ontario Association of Teachers of Mathematics. ...

In the classroom, Father Faught was a teacher who determined that everyone should understand the Mathematics that he was teaching. Through his dynamism and ability to explain the most abstruse topic, they usually did.

To honour his memory, the OAME has established the Father Faught Memorial Award, to be given annually to the Ontario School that obtains the highest standing on the Junior Mathematics Contest of the University of Waterloo.

VOLUME 14, NUMBER 1, SEPTEMBER 1975

SOME PERSONAL IMPRESSIONS OF THE MATHEMATICS AND PHYSICS SECTION OF THE ONTARIO EDUCATION ASSOCIATION

J. EUGENE DURRANT

My awareness of the Mathematics and Physics section of the OEA began in 1927. If my memory is correct we ten or so members of the mathematics specialists group at the College of Education at University of Toronto first heard the Mathematics and Physics section indicated as of interest to us by J.T. Crawford, Professor of methods and mathematics. This gentlemen was very much a professor: scholarly, dignified, well-organized and most skillful in presenting a topic, as well as how to teach it. His personality was most reflected in the two textbooks of which he was the author: *High School Algebra* and *Algebra, a Senior Course*. (The latter was used in Grade 13.) His calling our attention to the Mathematics and Physics section carried weight with us.

Those were the days of individual effort. Teachers who attended the OEA at Easter time did so at their own urging and at their own expense. Not many of us bothered with hotels in those days — -there was no money available for that sort of thing. Just a very few teachers attended with the assistance of the Board which the teacher served. For example, a teacher from Thunder Bay might receive help because the expense for travelling from there was considerable. For myself, it was easy to attend the OEA from Oshawa Collegiate where I taught my first two years, then from Guelph Collegiate where I was Head of the Mathematics Department.

"Small scale" was a fair description of how things were done in those days compared to the present times. The Mathematics and Physics section met at the University College building at the far southwest corner in a physics lab with tiered seating (so that it was easy to hear the speaker and see the writing on the blackboard). The attendance was relatively small — between 80 and 100 members would be there at most meetings — and the whole atmosphere was one of quiet, friendly association.

A FEW OF THE OUTSTANDING PERSONALITIES IN THE 20'S AND 30'S

- W.J. Lougheed succeeded J.T. Crawford at the College of Education. This man took a personal interest in everything and knew everyone, and so he was a perennial chairman of the nominating committee.
- Charles W. Robb was a very charismatic individual who later became the first principal of Lawrence Park Collegiate, a high school inspector, and then the first superintendent of secondary schools in the City of Toronto.
- Dr. Samuel Beatty was Head of the Mathematics Department and later Chancellor at the University of Toronto.
- Dean Matheson of Queen's University was Head of Mathematics and then, in the 30's, Dean of the Arts College.
- Dr. Harold R. Kingston held the same position at Western and later became Dean of the Arts and Science faculty there.
- Jim Jenkins was rather a flamboyant character while W.A. Jackson was a quieter one.
- John McKellar was a highly respected teacher, and later principal, of Lawrence Park.

As would be expected, most of the topics dealt with mathematics in the classroom: how you would teach certain topics and, sometimes, what should be taught. I remember giving one paper on applications of mathematics that could be demonstrated in the classroom.

One special visitor from the USA gave a report of a thesis that one of his students had prepared for a postgraduate degree entitled "Learning Number Facts". The surprising summary of this thesis was that, in learning number facts, there are 6183 things that a student could do wrong compared with the few that are right. The conclusion that this postgraduate student came to was that it was unreasonable to expect the student to learn the number facts. The professor did not take time to point out, what most teachers saw immediately: that you do not learn that way. You learn what is right and that automatically excludes all the things that are wrong! (It was an interesting sidelight on research in American education.)

THE WINDS OF CHANGE

In the 30's the winds of change began to blow and the programs shifted more to what to teach as well as how to teach. About the year 1932 the Mathematics and Physics section made a special arrangement with Dr. Samuel Beatty, Head of Math at University of Toronto and James Jenkins, Head of Math at Jarvis Collegiate to write a course in Calculus that would be published, chapter by chapter, in the Journal — the official publication of the OEA. This effort stirred considerable interest among the teachers but, the presentation being rather theoretical, the reaction from teachers was not as positive as had been expected.

In 1935, the publication of *A Modern Geometry for High Schools* (for Grades 11 and 12) by Professor W.J. Lougheed and John Workman of UTS created much interest. In that year, by invitation of the Mathematics and Physics section, I spoke on the question "Would a Full Year of Analytic Geometry be a Suitable Course for Grade 13?" I suggested that emphasis on directed distance, control of a moving point (which later became sets of points), and other methods might bring more understanding and meaning to the subject.

The year 1936 was a special year for me personally because at Easter I presided as president of the Mathematics and Physics section and in June of that year *A New Geometry, Analytic, Synthetic* by Durrant and Kingston was published. This text was for the existing Grade 13 course but it incorporated new methods in the presentation of topics. Also about that time the Department of Education set up a committee chaired by Charles W. Robb to make recommendations for improved mathematics courses in Grade 13.

GENERAL MATHEMATICS

The second wind of change was blowing towards General Mathematics. *(Editor: Note that this is not the present General Level course.)* High school inspector R.W. Anglin addressed the section on the topic of general mathematics whereby algebra, arithmetic and geometry would be integrated where topics made this feasible. He claimed that this was both practical and necessary. As a direct result of this, a committee set to work, and in 1938 *General Math Book 1* (for Grade 9) by Jackson, Dean and Crawford was published. In 1939, *General Math Book 2* by Lougheed & Workman was published.

However, we all found that it was easier to talk about integrating mathematics than to do it in the classroom. Some topics had a natural content which made integration relatively useful, but some topics made integration more of an effort than a good result. However, the idea was good and work was continued on that basis.

THREE NEW COURSES

While the foregoing was proceeding, the committee, headed by Charles W. Robb, had been working and making recommendations so that in September 1940, three courses in mathematics were introduced.

- The first course was an advanced course in Algebra for which the text was written by Professor Norman Miller of Queen's and Robert E.K. Rourke, assistant head master of Pickering College. This I believe competed with the Crawford text. (Six years later the Petrie, Baker, Levitt, McLean text book was coming into use.)
- The second course was Trigonometry and Statics. The text was also written by Miller and Rourke. I believe it was later replaced in many schools by the Petrie group's text.
- The third course was Analytic Geometry. It was a full-year course in the subject because it was felt that the best basis for understanding calculus at university was for the student to have an understanding and a feel for analytic geometry. The textbook, *A New Analytic Geometry* by Durrant & Kingston became a widely used book in Ontario classrooms.

In the 40's I was invited to be an inspector with the Ontario Department of Education which necessitated a division in my time at the OEA between the Mathematics and Physics section and the Supervisory group.

In 1946 Professor W.J. Lougheed retired and Mr. P.A. Petrie of UTS. replaced him. His group of authors gradually took over the text book field for Senior Algebra, Trigonometry and Statics and later in courses for grades 9 to 12. However, for one reason or another, *A New Analytic Geometry* by Durrant & Kingston and its three new editions retained most of the Grade 13 market in Ontario for a period of thirty years. A French edition was used in the Province of Quebec for thirty-five years as well as in a few special schools in the USA.

THE ONTARIO MATH COMMISSION

The Ontario Math Commission from 1959 to 1972 did much useful work. After being in administrative positions in "The Department" and then for the Etobicoke Board until retirement, I was happy to be secretary for the Commission from 1969 to 1972.

OAME AND OEA

The OAME was formed in the latter year and functions in a manner which matches the changed times and circumstances in the educational scene. I felt very honoured on being recommended by OAME to be a life member of the OEA and was happy to receive this membership a few years before the OEA gave way to new organizations in the Province of Ontario.

Editor: This was transcribed from an audio tape sent by Eugene who, in his position of Executive Secretary of the Ontario Mathematics Commission OMC, assisted at the birth of OAME. He continues to be an inspiration to us as we marvel at the keen mind, sense of humour and dapper appearance that are still his trademark.

FROM THE ARCHIVES

OAME MEMBERSHIP ANNOUNCEMENT: TO ALL PERSONS CONCERNED WITH MATHEMATICS EDUCATION

A new membership taken out now is effective until August 31, 1976 for a $10 membership fee you receive:

3 ISSUES OF THE ONTARIO MATHEMATICS GAZETTE

- Items for the classroom
- Articles from local and international contributors
- Review of new books and products
- Announcements of interest to folks involved in Mathematics Education

4 ISSUES OF THE NEWSLETTER ABACUS

- Classroom teaching ideas for next day's lessons
- Articles of interest to mathematics teachers
- Indications of current trends such as metrication

You are eligible to attend regional and annual conferences

VOLUME 14, NUMBER 1, SEPTEMBER 1975

COMPARING SECONDARY SCHOOL CURRICULA

GORD NICHOLLS

EUROPE & USA: THE NINETEENTH CENTURY

- On the Continent, especially in Germany (in the Gymnasia — schools for the university-bound student) and France (in the Lycées — ditto) there was a trend towards Analytic Geometry and Introductory Calculus.
- In the UK the programme was heavily directed towards Euclid and Algebra.
- The USA seemed to follow the UK model.

ONTARIO: THE NINETEENTH CENTURY

1816 (Very Few Schools)

- Form III (age 11 to 13): Commence Algebra
- Form IV (age 12 to 14): Continue Algebra, Commence Euclid
- Form V: Algebra, Euclid, Trigonometry (heights, distances, surveying, navigation, astronomy)

1854 (More Schools but Most Were Private)

- Form I: Arithmetic, Introductory Algebra
- Form II: Practical Arithmetic, Algebra (up to simple equations)
- Form III: Commercial Arithmetic, Algebra (up to quadratic equations), Euclid (Books I, II)
- Form IV: Algebra, Euclid (Books III to VI)
- Form V: Plane Trigonometry (surveying, etc.), Review

1871 (An Act to Create Collegiate Institutes)

- Form I: Arithmetic (proportions, interest), Mensuration, Algebra, Euclid (Book I)
- Form II: Arithmetic (discounts, stocks), Mensuration, Algebra, Euclid (Books II, III).
- Form III: Arithmetic, Algebra, Euclid (Books IV, V), Trigonometry, Astronomy

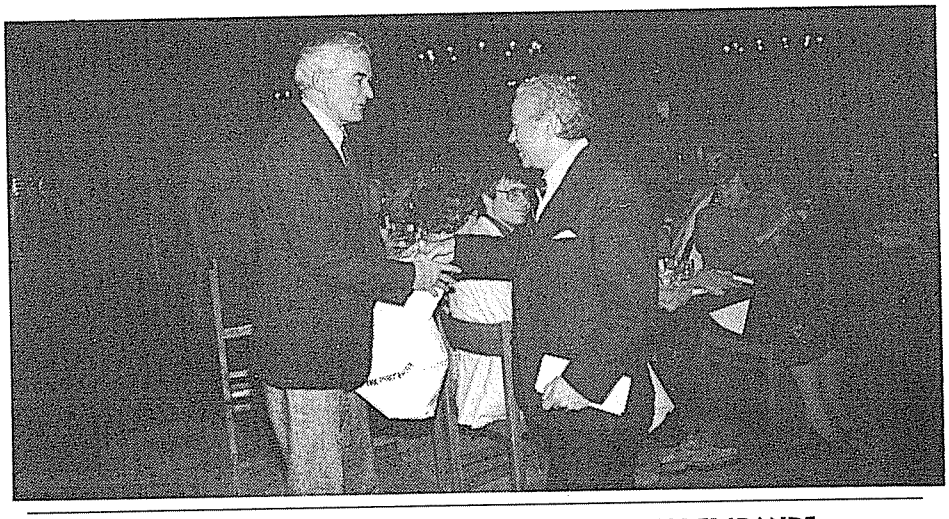
1878 (Inspector McLellan's Programme)

- Lower School (Forms I, II): Arithmetic, Mensuration, Algebra (to quadratic equations), Euclid (Books I, II, III)
- Middle and Upper School (Forms III, IV, V): Arithmetic (loans, mortgages), Algebra (combinatorics, binomial theorem, number properties, sequences), Euclid (Books I to VI), Analytic Geometry, Trigonometry. There was to be a stress on intuition.

This programme was found to be too challenging for the teachers and so, in 1885, the Analytic Geometry was removed and the Programme returned to the 1874 Programme.



FROM THE GALLERY: A "MAKE AND TAKE" WORKSHOP



FROM THE GALLERY: JOHN COLEMAN AND JOHN DELGRANDE

EUROPE AND THE USA: 1900 TO 1960

- 1892: Felix Klein gave his famous lectures on "Elementary Mathematics From an Advanced Standpoint" to Gymnasium teachers at Gottingen in 1908. He appealed for the use of intuition and an emphasis on Analytic Geometry and Transformations. *(Editor: See the Ontario 1878 curriculum.)*
- 1900/1920: Alfred North Whitehead in England made a strong case for teaching the "great ideas" of mathematics. The programmes in France and Germany had Euclid plus heavy components of Analytic Geometry (and one presumes, of Algebra) and some Calculus.

In 1957 — Sputnik went up and, in the USA at least, Mathematics became a matter of national prestige (survival?).

ONTARIO: 1900 TO 1960

- 1904: The Analytic Geometry of the straight line and of the circle was re-introduced to Upper School (Form V).
- 1937 (Grades 9, 10): A common programme for all levels of student (called General Mathematics). It included: Arithmetic, Mensuration, Algebra, Euclid (Books I, II)
- 1937 (Grades 11, 12): Algebra, Euclid (Books III, IV, V)
- 1937 (Grade 13): Algebra, Analytic Geometry, Trigonometry and Statics

This programme stayed in place until the early 1960's.

Editor: While this is a look at secondary school curricula, it is interesting to note that a new curriculum for elementary schools was introduced in 1937. If you ever get the chance, read the preamble. It stands the test of time as a philosophy of education.

FROM THE ARCHIVES

B-PROBLEMS

Draw the figures, describe the method of construction and give proofs.

1. On a straight line of given length make a parallelogram equal in area to a given triangle and having an angle equal to a given angle.

DEPARTMENT OF EDUCATION, ONTARIO ANNUAL EXAMINATIONS, 1929 MIDDLE SCHOOL GEOMETRY



FROM THE GALLERY: BOB TUCK, JIM FENCOTT, BOB KOVATCH

EUROPE AND THE USA: THE SIXTIES

- 1959: At the conference in Royaumont, France many of the best mathematics minds — and the bodies that contained them! — in the West discussed the future. This is where Dieudonne's "Euclid must go." was delivered! (Dieudonne was a member of Bourbaki — see John Coleman's article.)
- 1961: The Athens Conference was a follow-up to the Royamount Conference.

Many new programmes were created. Different courses of action were taken in the various countries. But, in many cases, the programme was overloaded when new topics were added to the old. (This was especially true in the UK, Germany and the Nordic countries.) The term "New Math" was coined. By the late sixties Morris Kline was writing and speaking about the "New Math disaster" in the USA. He felt that there was too much theory and not enough attention to applications, especially in Science. (He was the main speaker at an OATMP annual meeting in the mid-sixties.)

FROM THE ARCHIVES

EDITORIAL

RALPH STANTON

... But it is time that the government received more information. It is time that this political SHORTFALL ceased.

In conclusion, one bright note. One university in the province seems to be receiving adequate operating grants. According to the Financial Post of October 12, student population at York was 500 students. The operating grant at York was 1.3 million, an average of 2600 dollars per student. At Queen's University, for example, student population was 3792. The operating grant at Queen's was 3.45 million, an average of 910 dollars per student. The other universities were in the same range as Queen's ...

VOLUME 3, NUMBER 1, FEBRUARY 1964

ONTARIO: THE SIXTIES AND SEVENTIES

- 1959 The Ontario Mathematics Commission was founded. Many changes followed.

Early Sixties

Mathematics was to be offered in three branches (Arts and Science; Science, Technology and Trades; Business and Commerce) and at two levels — Four-Year (General) and Five Year (Advanced) in each of these branches. It was also to be offered in the Two-Year programme and in the Occupational programme (Grades 9, 10).

- Grades 9, 10 (all branches): Arithmetic, Euclid (I), Algebra (the usual and sets, relations, number properties)
- Grades 11, 12: Euclid (III, IV), Algebra (the usual and functions), Trigonometry (including some former Grade 13 material), Analytic Geometry (straight line — formerly Grade 13)
- Grade 13: Math A (logic, functions, conics, trigonometry, transformations, calculus), Math B (sets, combinatorics, probability, binomial theorem, vectors, vector equations, linear systems, transformations, complex numbers, polar coordinates, groups)

Late Sixties

This was the second round of revision and was intended to consolidate the previous changes. The Credit System was on the horizon.

- Grades 9, 10: Mainly the same but group theory and number structure was added to Grade 10. (This was a major failure.)
- Grades 11, 12: Mainly the same but an attempt was made to add Synthetic Transformations to Grade 11. (This was a failure.)
- Grade 13: The material from Math A and Math B was re-packaged into three courses (Algebra, Calculus, Functions and Relations)

Editor: Among other things, this made time-tabling easier. This change was not initiated by the Department of Education but was made in response to demands from the teachers.

The guidelines were very flexible and allowed for a lot of teacher experimentation. During this period, criticism of the curriculum started to appear. The developing Faculty of Mathematics at the University of Waterloo became a focal point for the concerned teachers.

*Editor: It is interesting to note that, while the secondary school curriculum seemed to focus on content, the new trends in the Kindergarten to 6 curriculum were on content (more geometry, statistics) **and** on process. We see P1J1 Mathematics, Living and Learning, Nuffield approach, The Formative Years, etc..*

Mid Seventies

The new Grades 9 to 12 curriculum was introduced under the leadership of George Scroggie of the Ministry. This revision was important for many reasons, not the least of which was that it released the energy and opinions of practising teachers. They were incensed at many of the proposals and demanded change. I remember leading a delegation to Queen's Park that represented the entire Metro Toronto and York regions. We met with George and an Assistant Deputy Minister *(Editor: probably Frank Kinlin)* to state our misgivings. The actual changes were minor but it was a coming of age for Mathematics teachers in the Province as we cast off the paternal influence of the Ministry.

Editor: Another interesting aspect of the Intermediate curriculum revision is that the Ministry commissioned Dr. Patrick Babin of the U of O, who in turn seconded Paul Pogue to produce "Recommendations for Intermediate Division Mathematics in Ontario" 1976. It still makes good reading.

EUROPE AND THE USA: THE EIGHTIES

- There was disenchantment and the new buzz words were "Back to the Basics" and "Be Accountable". This has caused some major changes.
- One of the most obvious in North America is the massive effort by the NCTM to produce the "Standards" document. The best part about this *(Editor: excellent)* work is that we see for the first time the Americans implementing what we did 30 years ago. (Our younger mathematics teachers should know this!)
- The European situation will be very much affected by the massive political changes that are taking place. In a few years we will possibly see a Renaissance of ideas in Europe, especially Germany and Eastern Europe.

FROM THE ARCHIVES

EDITORIAL

... It is both a pleasure and a privilege to introduce an issue of the *Gazette* devoted entirely to Mathematics in the new Colleges of Applied Arts and Technology. This new system of Colleges is only in its second year of operation, yet already it shows tremendous vitality in attempting to meet the needs of the great number of high school graduates who require further education in our complex society ...

VOLUME 7, NUMBER 1, DECEMBER 1986

ONTARIO: THE EIGHTIES

- The 1985 revision was very democratic. Dave Alexander had a three-year mandate to issue white papers and collect reaction. Although many people did not think that they were listened to as much as they would have liked and the opinion-poll-mentality did take over it was, I think, a process that worked remarkably well. Those who are now dissatisfied should ask themselves, "Did I do my homework on the White Papers?". In Waterloo County we did a huge amount of work in 1983-84 and sent in well-researched documents to the committee. Many of our suggestions were accepted and many were not. The important point is that we had the opportunity

Editor: I can personally verify this. I sent in many suggestions. Thankfully! Most of them were not accepted but I know that they were considered. On another issue it is interesting to note that, by 1980, and more explicitly in 1985, we finally see, in the Grades 7 to OAC curriculum, an emphasis on the process components that were introduced in the Kindergarten to 6 curriculum in the early '70's!

- One major criticism that has been advanced is the overloading of topics in Grades 11 to OAC and the lack of time to achieve appropriate levels of problem solving. Recall that the Coleman Report on the Mathematical Sciences in Canada (1981) identified the lack of problem solving skills as a major defect in our teaching of mathematics.
- I think that the present Advanced Level programme has a lot of merit, especially the Grade 12 and OAC:

  We are leaders in North America;

  We are no longer 40 years behind Europe;

  The challenge for the 1990's is to consolidate what we have and raise the level of problem solving.

Editor: This comparison is based on a very interesting summary that Gord Nicholls of Preston HS sent to me. The summary was, in turn, the basis for a week of lectures that Gord gave when he was teaching in the Type B programme at FEUT in '73/74. The content is his, the wording is mine.



FROM THE GALLERY: RON DUNKLEY, NEIL WILLIAMSON, FRANK EBOS, AND FRIENDS

SOME THOUGHTS ON THE PAST

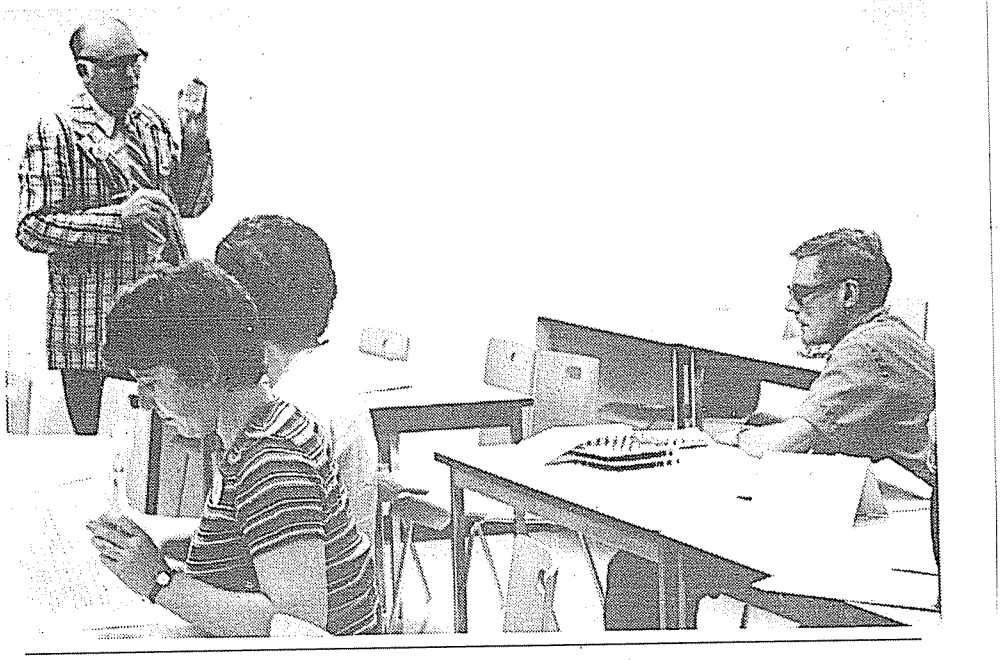
NORM SHARP

I began my Ontario teaching career in September 1937. Those of you who were around at that time may remember that school openings were delayed a few weeks because of the polio epidemic. Others may have different reference points. This was before: the pill and the population explosion, TV, penicillin, polio shots, antibiotics, open-heart surgery *(Editor: thanks for that!)* hair transplants, frozen foods, nylon, Xerox, Kinsey, radar, fluorescent lights, credit cards, ballpoint pens, vitamins, disposable diapers, Jeeps, face lifts, instant coffee, decaffeinated anything, FM, tape recorders, electric typewriters, word processors, electronic music and disco dancing.

In those days our courses were based on texts written by such mathematics educators as Lougheed and Workman, Levitt, Jackson, etc. Good reference texts that were on every teacher's desk were Advanced Geometry for High Schools, McDougall and Higher Algebra, Hall and Knight. The geometry course contained such famous theorems as: Ceva, Menelaus, Nine Point Circle, Simpson's Line, Ptolemy's Theorem along with the topics Medial Section, Harmonic Ranges and Pencils, the Complete Quadrilateral, Poles and Polars. Many of the problems in the texts would be stoppers on present-day Mathematics contests.

Editor: Don't forget that this comment comes from a valuable member of the Canadian Mathematics Competitions problems committee.

My earliest recollection of a mathematics meeting in Toronto was in (about) 1938. Gene Durrant was the speaker. He outlined a new course in Geometry. It was completely analytic (straight line and conic sections). Previously the Geometry course had three divisions; synthetic two-dimensional, synthetic three-dimensional, analytic (straight line). The teacher could choose one of the first two and the Provincial exam had three parts of which the student selected two. The text for the new geometry course was written by Durrant and Kingston and later by Durrant, Sharp and Kerr.



FROM THE GALLERY: NORM SHARP

Another text for this course was by Jenkins. Texts were much smaller than those used today.

For a number of years courses and concepts remained constant. Then some new ideas came across the border from the United States. This was the 'new math' and many educators took courses in the US to familiarize themselves with this turn of events. Beberman, University of Chicago, was a much sought after speaker at conferences. Emphasis was placed on names more than ideas and, to many of us, it appeared that we would lose much of the work that we were teaching. Did it matter if we confused number with numeral? Was it so important that the basic arithmetic be all proved from a few axioms. Ideas that we used naturally such as commutative, associative, distributive and identities were now to be given central billing.

Saner heads prevailed. In the late 50's there was the Lakefield conference to which well known mathematics educators from across the province were invited for a week's discussion. The result was the formation of the Ontario Mathematics Commission. Summer workshops were established with new texts being written for testing and evaluating. The Commission did its work, sifting through all the ideas being forced upon school systems in Great Britain, United States, France, Germany and different parts of Canada. The members selected the best of the new to meld with the best of the old and prepared the courses that were to remain in use for a long time and that influenced today's courses.

The improvements in the elementary schools were in content and approaches. Many workshops were given in which teachers were exposed to the advantages of using concrete materials and of teaching more geometry. It was still difficult for many teachers in the elementary schools to convince themselves that there was anything other than add, subtract, multiply and divide in mathematics. I think that we convinced them that a day per week on geometry would encourage many of those having difficulty with arithmetic facts that there was still a lot of fun in the subject. I can say from my experience that I learned much more about three-dimensional geometry than I had ever experienced before.

Probably the most dramatic changes in the mathematics curricula in the past 20 years have been the change to metric along with the introduction of the use of calculators and computers. Imagine inserting data into either machines when the data comes from measurement using the Imperial system. I remember being in England several years ago and being amazed at the facility of their cash registers in pounds, shillings and pence. Yes, they can make a machine to do the converting but when the converting is different in linear measure than it is in capacity measure, from what it is in mass,

you realize the way our calculations have been streamlined.

The opposition to the metric system has mainly disappeared but there is still some opposition to calculators. It has taken a few years to realize the full potential of these small electronic units. The proper use of calculators has taken the emphasis from computation and placed it in other areas. Now, much of the emphasis can be placed on problem solving and students who can not memorize their tables as well as others can devote their time and efforts to the applications of mathematics. More emphasis is placed on approximations, validity of answers and finding new ways to solve problems. It is most fascinating to see the ways the minds of students operate and where the use of calculators enters the problem solving process. I taught a course in the Mathematics of Finance at Humber College last year and found the calculator essential if we wanted to use different rates of interest and frequency of compounding. Students from Grade 6 onward should start their mathematics class with a calculator on the desk.

Editor: Now that we have convinced elementary school teachers that students should use a four-function calculator, how will we convince secondary school teachers that students should use graphing calculators and algebra calculators!

For a while teachers became concerned about the computer nuts. In their own way these nuts were discovering for themselves more ideas than we could possibly give them in class. Both the computer and calculator make the students organize their thinking, and discovery takes on a new meaning.

The use of calculators has increased the need for a good background in decimal notation and decreased the use of fractions. When I say this I keep reminding myself of the tendency, in all curriculum change, for the pendulum to swing too far. One of the most difficult topics to teach to the elementary student is the algorithm for the addition of fractions. However this skill is still important when we wish to simplify algebraic formulae or to change the form of a trigonometric expression. The need for the ability to use the rational expression is still with us and one who can is ahead of one who can't.

As one settles into the comforts of a senior citizen the mind is not as active and the memory wanes *(Editor: I am on a committee with Norm and either he is lying or he is the exception to the rule!)* so here are some people that I haven't mentioned:

- Edith Biggs and Geoffrey Mathews from England who exerted a great, and good influence on us.
- Andy Elliott, Ruth Winters and Janet Black, who along with me learned so much on our visit to England (sponsored by OMC and the Ontario Curriculum Institute).
- Wynne Bates, Jack McKnight, John Del Grande and Joe Perrell, who along with myself formed the group which became the Ontario Mathematics Coordinators Association.
- Peter Hilton who brought sanity to the many new approaches to mathematics in the 60's.

Editor: Norm continues to have a beneficial effect on Mathematics Education. I have the privilege of working with him and marvel at his pedagogical insight and his mathematical ability — he still has fun doing mathematics. Did you know that he and Betty Hallamore put together one of the first "semi-transparent mirrors" that eventually evolved into the Mira? Did you know that Norm was on the executive of the Metro Toronto Hockey Association when Abbie Hoffman played minor hockey incognito.

FROM THE ARCHIVES

A SECOND-CLASS CERTIFICATE AND INTERMEDIATE EXAMINATION

AUTHOR NOT INDICATED

In Babylonia a capithe of meal was sold for 4 sigli. A siglus was worth 7 ½ obols, the capithe held 3 qts. Find the price of meal per bushel, taking the obol at 3 ½ ¢.

J.W. CONNOR, HIGH SCHOOL, BERLIN

ONTARIO PUBLIC SCHOOL ARITHMETIC

AUTHOR NOT INDICATED

Why do we begin at the units' place in the addition and subtraction of numbers? Is it necessary to begin at the units' place in multiplication? Why?

Editor: This is an interesting problem.

If for an ocean voyage the cost of a steerage ticket is ⅖ that of a second-class ticket, and the cost of a second-class ticket is ⅔ that of the first-class, find the amount saved by travelling steerage instead of second-class on a boat for which a first-class ticket will cost $135.

ROBERT SIMPSON CO., 1910, 10¢

PUBLIC SCHOOL ARITHMETIC

AUTHOR NOT INDICATED

A man distributed 535 ½ lb. of flour among a number of poor persons, giving 14 ⅞ lb. to each. How many received relief? Had there been 2 persons fewer, how much more would each assisted person have received?

From a heap of shot weighing 7 ⅜ lb., 3465 shot are taken, and the heap is then found to weigh 4 ¾ lb. Find the weight of a single shot and the number originally in the heap.

On the reopening of school after the mid-summer holidays John bought a Third Reader for 36¢, an arithmetic for 25¢, a grammar for 25¢, a geography for 68¢, a slate for 15¢, a copy book for 13¢ and a bottle of ink, a pen, and a penholder for 8¢. How much did the whole cost?

CANADA PUBLISHING, 1887, 25¢

A HIGH SCHOOL ENTRANCE EXAMINATION

AUTHOR NOT INDICATED

A cannon ball travels at the rate of 1,500 feet in a second and a half; how far will it have gone in $^{11}/_{15}$ of a minute?

DECEMBER, 1874

ONTARIO HIGH SCHOOL ALGEBRA

J.T. CRAWFORD

The long process for cube root is eliminated, as cube root is not now required in arithmetic....

Prove algebraically that if two rectangles have equal areas and equal perimeters, they are equal in all respects.

Take any two proper fractions whose sum is unity. Add unity to the difference between their squares. Show that the result is always twice the greater fraction.

A rancher sold 50 head of horses, part at $125 a head and the balance at $150 a head. After spending $50 he was able to make the first payment of ⅓ of the purchase price of 1200 acres of land at $18 per acre. How many horses did he sell at $125 a head?

MACMILLAN, 1916

AN ARITHMETIC FOR HIGH SCHOOLS

A.T. DELURY

Preface ... I have thought that if less time were given to the solving of strange and artificial problems and more on the theory of the subject and to the careful working out of normal problems, the subject would have a higher value educationally and practically.

A teacher's salary of $800 is paid in four quarterly payments at the end of each quarter. Find what sum paid at the beginning of the year is equivalent of these payments, reckoning compound interest at 1½ per cent., a quarter.

By means of a drawing shew that a cube may be divided into three pyramids with square bases and equal in all respects.

Editor: This, of course, leads to the formula for the volume of a pyramid.

CANADA PUBLISHING, 1904

HAMBLIN SMITH'S ARITHMETIC

THOMAS KIRKLAND, WILLIAM SCOTT

On p. 33/40 we have a fascinating account of "Methods of Verifying the Operations and some Practical Methods of Shortening Labor in the Fundamental Rules".

W.J. GAGE, 1887, 60¢

ONTARIO HIGH SCHOOL ARITHMETIC

BALLARD, THOMPSON, CRAWFORD

At 10.24 a.m. a steamer in longitude 25°16' W. sends a wireless message to another steamer. It is received at 10.19 a.m., true time in each case. What is the longitude of the second steamer?

A regiment lost 20% of its men in a battle; 10% of the remainder deserted, there then remained 360 men. How many men were there originally in the regiment?

Editor: An interesting problem considering the date that it was probably written.

A farmer tested the skim milk from his separator and found it to contain.13% of butter fat. The separator was adjusted and a second test showed .05% of butter fat. If the separator had been out of adjustment for 30 days what was the loss on a herd of 20 cows each averaging 25 lb. of milk per day, butter fat being valued at 28¢ per lb? Assume that the weight of the skim milk is 90% of the whole milk.

Editor: If these problems seem difficult remember that, even when I was in Grade 8, you had to write Entrance Examinations to make it to Grade 9. Even if you passed (I was worried that I would fail the Art exam!) you still had to decide whether or not to go to High School.

HUNTER-ROSE, 1918, 40¢

A FIRST-CLASS CERTIFICATE AND UNIVERSITY HONORS EXAMINATION

JAMES BRUCE, ESQ.

The ratio of two sides of a triangle is 5:6, and the segments of the base made by a perpendicular falling from the vertical angle on the base are 10 and 14. Find the sides of the triangle.

WATERDOWN HIGH SCHOOL



HIGH SCHOOL ARITHMETIC

AUTHOR NOT INDICATED

Preface ... Chapter IV closes the subject of pure calculation ... The curious and those who care to spend time on a subject of no practical and of but little speculative importance may consult the Arithmetics of ...

Two men, A and B, hired a span of horses and a carriage for $7 to go from *M* to *R*, a distance of 42 miles. At *N*, 12 miles from *M*, they took in C, agreeing to carry him to *R* and back to *N* for his proportionate share of the expenses. At *P*, 24 miles from *M*, they took in D, agreeing to take him to *R* and back to *P* for his proportionate share of the expenses. What should each person pay? (Give briefly the arguments for and those against each of the two commonly presented solutions of this problem.)

Editor: Now we know why Stephen Leacock wrote his essay on algebra!

GLASHAN, ROSE PUBLISHING, 1890

EXAMINATION PAPERS IN ARITHMETIC

J.A. MCLELLAN, THOMAS KIRKLAND

Preface ... To be successful at these examinations, students must be trained to a complete independence of the mechanical rules and routine of the ordinary textbooks. This independence, with the self-reliance resulting from it, is to be secured, not by solving questions set under given rules and formulas, but by constant practice in properly prepared set of problems, in which neither rule nor answer is at hand to furnish clews and crutches to the halt and the blind ... In maintaining the superiority of the "Unitary Method," it is not intended to assert that rules should be entirely ignored. On the contrary, rules have their proper place; but the pupil should be the master of the rule, not the rule the master of the pupil. To secure intellectual training, independent methods must be followed; but for the sake of practical facility in reaching results, rules may be framed as logical inferences from independent investigation.

Editor: I wish that I had said that!

ADAM MILLER & CO., 1877

THE FOUNDING OF OAME

MORLEY AND MONA MACGREGOR

On May 13, 1973 at 9:30 a.m. at Weaver Auditorium, North Bay, the Ontario Association for Mathematics Education was formed.

Many months of preparation had gone into preparing a constitution that — in the years to come — would fulfil and expand the ideas that had been the backbone of the Ontario Mathematics Commission and the Ontario Association of Teachers of Mathematics. Both parent organizations had agreed that one organization was the best solution to promote good mathematics education in Ontario. The first president was David Alexander and he was ably assisted by Past Presidents of OATM and OMC, D. Attridge and A. Vertesi.

Morley and I will touch on several highlights of this organization in its first 16 years of existence. These highlights illustrate how this organization functions to assist teachers and students in the province of Ontario.

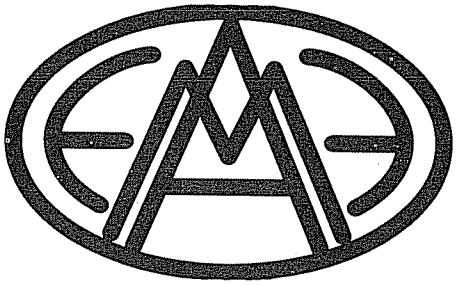
REVISED NAME OF THE ASSOCIATION

At the Annual Conference at Brock University (1976) the French Translation of our official name and logo were approved.

- Ontario Association for Mathematics Education / Association Ontarienne pour L'Enseignement des Mathématiques
- "OAME / AOEM"

LOGO

R. Patterson of Sarnia designed the first logo which was accepted at the first executive meeting held at Bonnie and David Alexander's home. In 1981 we chose the design of G. Cumyn of Ottawa as the new logo.



THE SCOPE OF OAME MEMBERSHIPS

It was of interest to us and also to many of OAME's/AOEM's members how widespread our membership actually is both within and outside the province of Ontario. We are going to list a few examples. One must remember this is an ever-changing list and one location may receive several memberships.

PROVINCES OF CANADA

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland
- North West Territories
- Nova Scotia
- Prince Edward Island
- Quebec
- Saskatchewan

AMERICAN STATES

- California
- Illinois
- Michigan
- New Jersey
- New York
- Texas

OTHER COUNTRIES

- Australia
- Bahamas
- Barbados
- England
- Jamaica
- Mexico
- Singapore
- South Africa
- South Korea
- Turkey
- West Germany

COMMITTEES INVOLVED WITH THE MINISTRY OF EDUCATION

Since the time OAME was organized we have seen a steady growth of the involvement of OAME / AOEM and the Ontario Ministry of Education. The first brief presented to the Ministry of Education was on, The Qualifications and Preparation of K-9 Teachers of Mathematics. It was prepared by L. Ridge, J. LeSage and P. Broughton and sent to the Ministry in June 1974. However, no direct action followed on this brief.

SENIOR CYCLICAL REVIEW COMMITTEE AND INTERFACE COMMITTEE

OAME set up the Senior Cyclical Review Committee in 1974. The original members were R. Leigh, T. Griffiths, R. Scoins, W. Higginson, D. Attridge and N. Viire. In 1977 a report was sent to the Ministry of Education. This report was before its time and some of its ideas are only now being acted upon. In the meantime the Senior Cyclical Review became the Interface Committee of OAME. Its membership had changed to F. Maskell, P. Pogue, R. Acheson, F. Ebos, T. Griffiths, E. Silcox, A. Norrie, G. Peters and D. Roberts. This committee was disbanded and the work of the Interface Committee was taken up by the COMA Chapter. They became involved with a Ministry of Education project and did an outstanding report for the Ministry. The report was submitted in the summer of 1983.

THE SENIOR GUIDELINES COMMITTEE

This committee was revised in 1982. The active members were D. Davidson, T. Griffiths, P.Pogue, J. Shifrin and N. Wilson. This committee took an active part in the Senior Divisions revisions, by recommending and reacting to the draft guidelines as they became available.

OAME/AOEM-TV ONTARIO

OAME was approached by the then Ontario Educational Communications' Authority to form an advisory committee to assist in the development of TV programs in Mathematics. This request was accepted and a committee consisting of Sharon McPhail, Paul Lessard, Paul Pogue and President Neil Williamson was formed. After a needs assessment survey sent to all OAME members it was decided that Intermediate Geometry would be developed Three OAME/AOEM members, George Knii,,



FROM THE GALLERY: MORLEY MACGREGOR, SHIRLEY MCINTYRE, AND ALEX NORRIE AT THE NCTM ANNUAL MEETING, 1982

Peter Ullrich and Neil Williamson worked with TVO as mathematics writers during the project. In 1983 the series "Landscape of Geometry" became available. This is an excellent series and one program "It's Rude to Point" won an International Award.

Intermediate Curriculum Guidelines: 1980 and 1985

T. Griffiths and J. LeSage were asked to represent OAME / AOEM on these Ministry Committees. They conveyed to the Ministry many of the concerns of OAME councillors and their fellow teachers.

OAIP

The Ministry asked OAME / AOEM to provide representation on this committee. Three of the members to represent OAME were S. McPhail, P. Ullrich and R. Connelly. OAME / AOEM continues to have representation (that is well received by the Ministry) on various OAIP committees.

Bill 82

In November 1983 a committee chaired by E. Harvey and composed of members B. Laframboise, D. Handley, I. Brown, L. Marshall and C. Poce completed a brief on Bill 82 to be sent to the Ministry.

Many OAME / AOEM councillors worked on the various committees associated with the Ministry. Some of those who served in later years were E. Carli, D. Henderson, M.L. Jefferies, G. McNabb, R. Morrow, M. Sandblom, J. Shifrin, S. Stuart — to mention but a few.

OAME/AOME's Association with National Council of Teachers of Mathematics

By constitution OAME / AOEM is an affiliate of NCTM. But our relationship with NCTM runs much deeper. When the organization was less than five months old it assisted at a Name-of-Site Meeting of NCTM at the Royal York Hotel in Toronto. In 1975 OAME contributed $1000 to the NCTM building fund. J. Routledge was the Canadian representative to NCTM 1975-1978 followed by R. Robinson. J. Egsgard, our second president, was president of NCTM. R. Robinson has been an NCTM Director.

OAME / AOEM succeeded in convincing NCTM to hold its Annual Meeting in 1982, for the first time outside of the United States, in Toronto. This had been brought about by a strong selling campaign of OAME Council. A tribute should be given here to D. Alexander who was chairman of local arrangements for this annual meeting and to his wife, Bonnie, who chaired committees for spouses and social events.

OAME / AOEM members have been active in the National Council of Supervisors of Mathematics, a division of NCTM.

The excellent reports on NCTM activities given by R. Robinson will long, long be remembered by OAME / AOEM council members. A regional meeting of NCTM was held in Hamilton May 9-12, 1990. The general Co-Chairmen of this conference were G. Knill and R. Robinson. The program Co-Chairman were A. Norrie and R. Connelly.

Ontario Mathematics Coordinators Association

The OMCA has been a vital part of Mathematics Education in Ontario. In the late 1980's OAME / AOEM and OMCA began having an observer at each other's meetings.



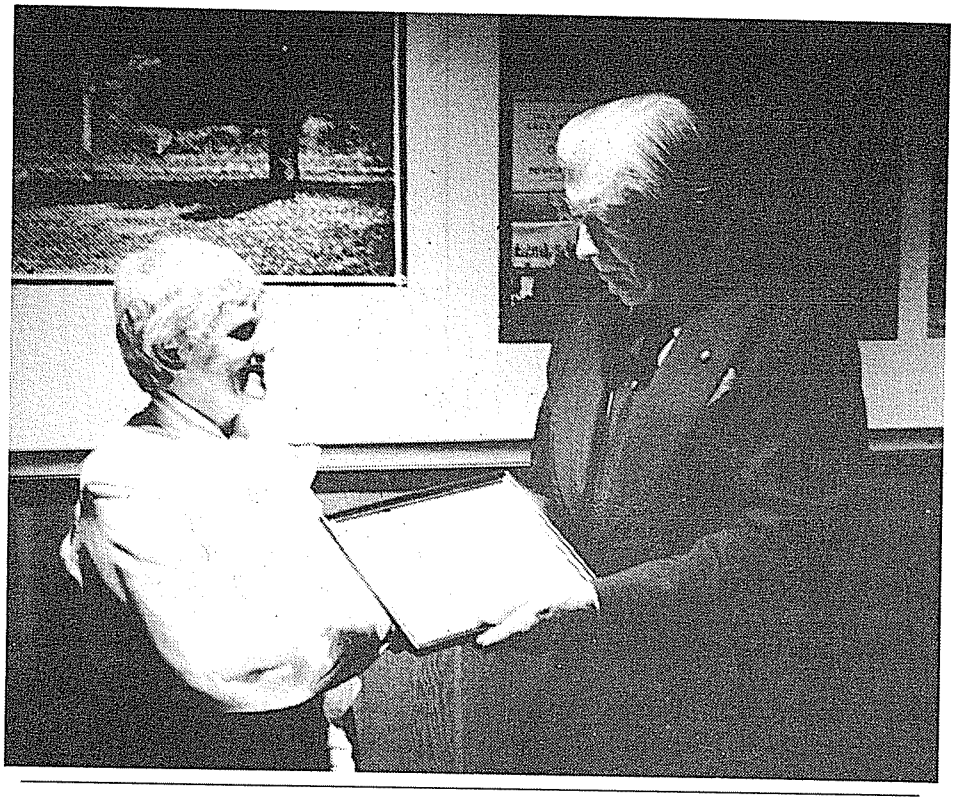
FROM THE GALLERY: DAVE ALEXANDER

AWARDS PRESENTED BY OAME

Father Faught Award

This award was given in memory of Father Faught. He was a highschool mathematics teacher, a university mathematics professor, the first president of OMC, an honourary president of OATM, and the manager of a Major Junior A Hockey team — St. Michael's Majors! It was originally presented to the Ontario school that received the highest mark in the Junior Mathematics Contest. Today it is given on the basis of the Fermat Contest. The award is a plaque for the school and $50 cash prize to purchase books for the Mathematics department.

Year	Father Faught Award Winner
1976	Scarlett Heights School, Etobicoke
1977	Thornhill Secondary School, Thornhill
1978	Glebe Collegiate, Ottawa
1979	Toronto French School, Toronto
1980	University of Toronto Schools, Toronto
1981	Loyalist Collegiate, Kingston
1982	Etobicoke Collegiate, Etobicoke Woburn Collegiate, Scarborough
1983	Woburn Collegiate, Scarborough
1984	University of Toronto Schools, Toronto
1985	Woburn Collegiate, Scarborough
1986	Toronto French School, Toronto
1987	Woburn Collegiate, Scarborough
1988	Woburn Collegiate, Scarborough
1989	Dr. J.C. MacKenzie High School, Deep River



FROM THE GALLERY: JOAN ROUTLEDGE

McCartney Scholarship

This scholarship was presented by SRA in recognition of the late John McCartney's contribution to education.

OAME / AOEM was assisted by the Science Research Associates in this scholarship. It was a $400 scholarship given to an Ontario student who had successfully completed three Grade XIII Mathematics courses and intended to study mathematics at University. We administered the scholarship and we selected two educators to judge the applications.

Year	McCartney Scholarship Winner
1979	Puiwing Wong, Don Mills
1980	Lai Lane Luey, Willowdale
1981	Gregory Plaxton, London
1982	John Omielan, Ingersoll
1983	Neale Ginsburg, Kingston
1984	Alex Pak, Scarborough
1985	Eric Veech, Sarnia
1986	Guiseppe Russo, Sudbury
1987	Rocky Lee, Scarborough
1988	Patrick Surrey, London
1989	Philip Jong, North York

Life Membership

Life membership was closely allied to OEA affiliation. When OAME was formed we accepted all the Life Members of OEA who belonged to the Mathematics section of O.E.A. These were F.C. Asbury, L.S. Beattie, E. Durrant, J. Egsgard, J.T. Jenkins, G.W. Keith, W.J. Lougheed, W.B. MacLean, J.I. McKnight, N. Miller and P.A. Petrie. In the first years of OAME., OEA asked us to present names for consideration for Life Membership in OEA. The following received Life Memberships: R. Leigh, J. LeSage, M. MacGregor, E. Magee and J. Routledge. These are recognized as Life Members of OAME / AOEM. Since 1986 OAME/AOEM as an Association has awarded its own Life Memberships. They have been awarded to D. Alexander, D. Attridge, L. Auckland, D. Dottori, A. Norrie, N. Sharp and R. Smith.

Canadian and International Olympiads

OAME / AOEM now contributes annually a sum of money to the Canadian Olympiad to assist in the training of Ontario students who wish to compete at the International level. OAME / AOEM also purchased blazer badges for the Canadian International Teams.

Problem Solving Award

The Association formed a Problem Solving Committee in 1982. The most active person in this committee was C. Carlow. The Association is indebted to C. Carlow for a sum of money which the Association matched to give an award. This award was to be given to Elementary Teachers who developed "neat" and effective ways and means of improving the teaching of problem solving in their classrooms. To date three awards have been given and one teacher received honourable mention.

Poster Contest

This contest has always been under the direction of T. Griffiths. The purpose is to encourage Mathematics students across Ontario to research mathematical problems. Prizes were given by OAME / AOEM for posters illustrating unsolved problems in Mathematics. Prizes were awarded in 1988, 1989 and 1990.

Certificates for Excellence in Math

Since 1986, OAME / AOEM has been providing these certificates to elementary and secondary school principals for distribution to students who display excellence in mathematics.

I Love Math Buttons

This was the dream child of the Membership/ Publicity Committee and M. Sandblom made it very successful. I Love Math Buttons promote the appreciation of mathematics among students and teachers.

Award for Outstanding Service to Mathematics Education in Ontario: The Mona MacGregor Award

This award was established in 1989 and the first recipient was Mona MacGregor.

The Morley MacGregor Memorial Award

This annual award, to commence in 1991, is administered by OAME / AOEM but the setting of criteria, naming of the award winner etc. are to be the responsibility of WOMA.

The award pays the registration and banquet fee for a "Junior to 8 teacher in Lambton County".

LEADERSHIP SEMINAR

The OMC for 2 years had conducted an Elementary Leadership Seminar for teachers of Grades K-6. This was under the direction of J. Girhiny. The OATM had given a grant of money to help pay for the seminar.

The 1973 seminar was cancelled by OAME. In 1974 Morley and I were asked, along with B. Jay (formerly of Stamford Collegiate, Niagara Falls), to arrange for the Third Leadership Seminar. We were to look after the administration of the seminar and Bruce the program. The 1974 and 1975 Seminars were held at the Park Motor Hotel, Niagara Falls. The 1976-1979 Seminars were held at the Ascot Inn, Rexdale. Beginning in 1980 they have been held at the Ramada Airport Inn. The program coordinators since 1978 have been the past presidents of OAME / AOEM. As we view it, the whole problem of the leadership seminar, is to obtain the correct balance on the program of offering classroom mathematics and leadership skills. The numbers of participants has varied from year to year. On the average, attendance has been about 70. We have enlarged the scope of the Leadership seminar encouraging secondary mathematics teachers to attend. We believe these seminars are one of the highlights of OAME / AOEM.

CHAPTERS OF OAME

Our first president was very adamant that OAME would only succeed if Chapters were developed. The idea of Chapters was not new to members of OATM. At the meeting in North Bay the following four were accepted as Charter Chapters of OAME.

- Northern Ontario Mathematics Association
- Ottawa Carleton Association
- Prescott, Russell, Stormont, Dundas & Glengarry Association
- Renfrew County Association

During the executive and council meetings of the first year, guidelines were set up for creation of more Chapters. From the very beginning the organization encouraged mathematics teachers in various areas of the province to form chapters and gave them financial assistance in form of a set-up grant and a refund of part of the membership fee.

Chapters with two exceptions, have been the hosts of our Annual Conference. One exception was the Sarnia Conference, 1981, which was organized by the MacGregors and the McPhails and greatly assisted by our friends. The 1986 Annual was organized by B. Rachar and T. Griffiths and their friends and held at UWO. In some cases the Chapters were formed as a result of the area teachers organizing the annual conference. Many areas of Ontario do not have chapter organizations and yet mathematics thrives in these areas. Perhaps it would thrive better with an area Chapter.

TRAVELLING LIBRARY

Few of our present members will know what this is. The Ontario Mathematics Commission had sponsored a library of mathematics books and materials for any teacher on request. There were both an elementary and a secondary package. Most of the material was out of date and OAME donated the Secondary Library to Althouse College, London and the Elementary Library to North Bay Mathematics Resource Centre.

ELECTIONS

Our constitution called for voting by ballot at Annual Meetings. At the very first Annual Meeting a motion was put forth for proxy voting. Council rejected the idea. Then began a long struggle for voting by mail. The constitution was amended in 1981 at the Sarnia Annual Meeting to declare the method of voting to be voting by mail.

EUREKA (CRUX MATHEMATICORUM)

No highlight would be complete without mention of this publication which one of our members, Fred Maskell of COMA Chapter, toiled long and hard to edit, publish and distribute worldwide.

It was started in 1975 as a COMA project by L. Sauvé and F. Maskell of Algonquin College. It was read world-wide and had an impressive list of readers and contributors.

GVMA PUBLICATIONS

The Grand Valley Mathematics Association which works very closely with Waterloo University has published and continues to publish a number of extremely valuable publications. These have always been available to all OAME/AOEM members at a nominal cost.

CONTINUOUS SERVICE

One interesting note we found was that R. Robinson attended the first council meeting of OAME and has served continuously till the end of our term of 1989.

Editor: Bob, Tom Griffiths and Dave Davidson "retired" on '91-05. They had a total of 55 years of service!

CONSTITUTION BYLAWS/GUIDELINES

In the winter of 1983 I undertook to rewrite the Constitution Bylaws and Guidelines so that they more truly reflected how the Association handled its problems than did the motions that had been passed at various council meetings.

For the next 3 years at each executive meeting the members attempted to edit the material. At the end of that time Mona retyped it and handed it on so that the future executives could build on it. I on 1988, D. Davidson and W. Sebben were asked to prepare a final draft of the constitution to be presented at the 1990 Annual Meeting.

PUBLISHERS & SUPPLIERS

Morley and I feel no highlight would be complete without a tribute being paid to all publishers and suppliers of Mathematics Books and materials. They have unselfishly supported, OAME / AOEM at Annual Conferences, Leadership Seminars and Mini-Conferences.

PROVINCIAL AND LOCAL ASSISTANCE

I would like to say thanks to the personnel of the Ministry of Education, Mathematics Coordinators and the Boards of Education, their Directors, Supervisors, Consultants and Staff who have assisted OAME / AOEM not only at Annual Conferences and mini- conferences but also in the general operation of the OAME / AOEM. Their assistance has been both of a professional and a financial nature.

IN MEMORIAM



FROM THE GALLERY: JIM FENCOTT



FROM THE GALLERY: FRED MASKELL, ED BARBEAU, AND FRIENDS

Morley and I would like to pay special tribute to the following members, now deceased.

We also sincerely remember all other members of OAME/AOEM who are now deceased, with whom we worked.

- R. Acheson
- F. Asbury
- C. Cardenas
- J. Fencott
- D. Fox
- K. Fryer
- C. Gravelle
- R. Hood
- B. Jay
- E. Magee
- F. Maskell
- N. Miller
- P. Ullrich

ANNUAL CONFERENCES

Toronto	1892 / 1965	
Don Mills	1966 / 1968	
Etobicoke	1969	
Ottawa	1970	
Niagara Falls	1971	
Waterloo	1972	
North Bay	1973	
Kingston	1974	
London	1975	
St. Catharines	1976	
Ottawa	1977	
Hamilton	1978	
Peterborough	1979	
North York	1980	
Sarnia	1981	
Toronto	1982	NCTM Annual
Waterloo	1983	
Kingston	1984	
Sudbury	1985	
London	1986	
Scarborough	1987	
Niagara	1988	
Ottawa	1989	
Hamilton	1990	NCTM Regional
Etobicoke	1991	



FROM THE GALLERY: ED ANDERSON, RON SCOINS, KEN FRYER, DOROTHY DUNKLEY, RON DUNKLEY, AND FRIENDS — WATERLOO, 1972

CONCLUSION

It has been a pleasant task for Morley and I to put these Highlights on paper. We trust you will bear with us for any errors. Perhaps you would have chosen a different format. We know we will have missed items you would have included. We included some names and if your name was not included it is not that your contribution was any more or less than someone whose name was mentioned. The benefits of the work done by the council and executive is work that will eventually affect the students of mathematics. We see great benefit of OAME / AOEM coming from the association of six executive members meeting seven times a year and thirty-four councillors meeting three times a year. Each one cannot help taking back to his/her students some gem of knowledge the next Monday morning.

We close these Highlights with two simple sentences.

"Morley and I thank every member of the Association for their tremendous support and for sixteen years of very happy fellowship."

"We wish OAME / AOEM every success in reaching higher and higher heights as the years go by".

Editor: When we were planning this issue, we knew that it would not be complete without something from "M & M". When we talked to them about it at the Hamilton NCTM they asked us to use their "Highlights" produced in 1990 as a basis for an article written on their behalf. Since we have reduced the number of pages, we have introduced some discontinuities and we apologize to Mona for this. In case someone from another planet reads this, they may not be aware of the impact that Morley and Mona have had on the Mathematics Education community in Ontario. One can get a sense of it here and elsewhere in this history. Mona: We know that you miss Morley, and so do we. We hope that you will continue your association with us .

HOW THE NEW MATHEMATICS CAME TO ONTARIO: PREJUDICES AND UNRESEARCHED REMINISCENCES

A.J. COLEMAN

One day in the Fall of 1958, Dan DeLury — the new Head of Mathematics at the University of Toronto — said to me "Coleman, the Department has been asked to nominate a member for some committee which the Ontario Teacher's Federation (OTF) wants to create to look at the teaching of mathematics in the schools. Would you like to go? I know that it will be a nuisance. You cannot hope to get teachers to change so probably, nothing will come of it. You will likely be involved in only one meeting."

If a young staff member knows on which side his bread is buttered, when the boss suggests something he replies immediately, "Of course, I would be pleased and honoured to represent the Department!"

So it was that a few days later I found myself in a small room, in a house owned by the OTF on Pr. Arthur just north of Bloor St. near St. George St., packed together with several high school mathematics teachers named by the Federation and a bunch of representatives from Ontario universities.

Unhappily, there was no one from the University of Waterloo, because the OTF was unaware of its existence! Perhaps it was for this reason that the Head of Mathematics at Waterloo challenged the New Mathematics.

The meeting was chaired by Don Faught, the Head of Mathematics at Assumption University- now, the University of Windsor — who had previously taught at St. Michael's College High School. Don Faught and Howard Mulligan, both now deceased, are the principal heroes of my story. Fr. Faught was a member of the Basilian Order. As the reader is doubtless aware, to survive successfully in a religious order one needs to be a master of diplomacy and psychology.

Fr. Faught said, "We have all day so we do not need to feel in a rush. Let us spend the morning answering the question: Is there any change I would like to see in the current high school mathematics programme?" One supervisor for mathematics felt that everything was absolutely perfect and that it would be foolish to contemplate any change. Everyone else had their pet proposal which would, in their view, revolutionize for the good the current terrible programme!

At the end of the morning the motion "Change is necessary and desirable" was passed with only one objector. The afternoon was devoted to inventing a strategy for implementing this motion. The OTF quickly created a Mathematics Commission which organized a meeting at Lakefield School near Peterborough, at which a new curriculum was adumbrated.

Editor: The reader should not take umbrage at the correct use of this word!

Fr. Faught insisted on stepping down and I was elected chairperson of the Mathematics Commission of the OTF. Within a year this was reorganized as the Ontario Mathematics Commission sponsored by the OTF, the universities of Ontario, the Provincial Department of Education and the Mathematics and Physics Section of the O.E.A.

To test the new ideas it was necessary to produce text-book material. In the school year 1959-60 some very ad-hoc materials were tried out in a few places and on the basis of these experiments a provisional text for grade nine was written by John DelGrande of St. Andrew's College, Howard Mulligan of Bathurst Heights C.I. & V.S., Ernie Totton *(Editor: Ernie later wrote the first history of our Association.)* and myself during four months in the spring and summer of 1960. By this time I had become the Head of Mathematics at Queen's.

The resulting text was called *Mathematics 9*. It was illustrated by my older brother who was a draughtsman, sold for $2, had a soft green cover and was produced in 3000 copies. These were used in 40 classrooms each of which was visited twice by the two provincial mathematics inspectors. They were convinced that the new approach was a definite improvement over what had been going on before.

WHAT HAD BEEN GOING ON BEFORE?

For decades prior to 1960, Copp Clark Publishing Company had a monopoly in mathematics text-books. This had occurred in a perfectly honest, understandable way. In the "good old days" — 1910 say — there was no money to be made from mathematics text-books so that part of the prescribed duty of the professor of mathematics education at OCE was to write a book. Naturally this became the one and only text he used with his students so the texts written by the OCE professors were authorized by the Department of Education for universal use in the schools. By 1960 the economic advantage of publishing text-books had improved but the OCE professors still enjoyed a monopoly. The mathematical content of the programme had remained essentially unchanged for about fifty years. The one exception to this of which I am aware was that Solid Geometry was, unfortunately, dropped form the syllabus around 1930 just before I entered High School.

On the other hand, during the 1950's in Europe and the USA there had developed a strong movement to de-emphasize rote learning of mathematic facts and to attempt to teach understanding of the structure of mathematics. There was a major attack on Euclid. When I was in Grade Ten, for example, the programme consisted of the memorization of about sixty theorems of Euclid. This had been going on since Newton, except that he probably had to memorize two hundred! (Certainly it is clear from the Principia that he had a phenomenal grasp of Euclidean geometry.) Prospective mathematicians like myself loved geometry and it was an excellent training. But for the majority of students it was dull and meaningless.

Professor Jean Dieudonnée, one of the founders of Bourbaki (the name under which a group of very able young French mathematicians wrote an ambitious treatise in a dry and axiomatic style covering the "whole of mathematics" — declaimed "Euclid must go!") This unleashed the production in Europe of a flood of absurd school texts mimicking Bourbaki's dry exact style of writing for mathematicians. In the USA there came another flood of books based on the premise that if the word "set" occurred three times or more on every page,

true understanding of the beauty and infinite worth of mathematics would be inevitably enhanced!

Of course, Canadians were not to be swept off their feet by such nonsense. The Department of Education insisted that any experimental text for Grade 9 must cover the approved curriculum. It bowed to the winds of change to the extent of adding a sentence to the official syllabus which gave permission to teachers to use the words "set", "commutative", "associative" and "distributive"! The rest is history.

Soon publishers circled like vultures around the authors of *Mathematics 9*. We settled on W.J. Gage because, at that time it was the only Canadian-owned publisher which approached us. For several years, universities offered short courses in the evenings or summers to help older teachers adjust. Fr. Faught reported that as he emerged from one such session he overheard an old man say "Thank heavens, I am over the edge".

Compared with many other jurisdictions the change in Ontario was sensible and relatively painless. In large measure this was due to Howard Mulligan. Howard was, I feel sure, one of the most effective and best loved mathematics teachers in the Province. He was a member of the Executive of the Ontario Secondary School Teachers' Federation and, about 1957, had the idea that the Federation should be concerned about something other than salary. Possibly, even, the relevance of the curriculum for the students he was teaching! It was his initiative which led to the meeting on Prince Arthur to which Dan DeLury sent me. In addition, the two provincial inspectors, *(Editor: Alf. Bishop and Frank Kinlin)* having seen in 40 classrooms that in the hands of able and enthusiastic teachers, the difference between the old and the new approach was the difference between night and day, fought resolutely against the upper bureaucrats in the Department of Education who were frightened by the mere idea of change. At one point Mr. Kinlin told them that if they did not approve the change he would resign.

Was the change good? To this question there is no objectively valid answer but I certainly think it was. The role of mathematics in our society has become much more important and visible since I was young. It is therefore essential that average citizens understand mathematics. It is not enough that they can add, subtract and multiply. I admit that the old method was better at achieving this latter goal.

This year, teaching Freshman Calculus, I note that many students are at a disadvantage because they make frequent errors in manipulating polynomials and rational functions. They have little insight in recognizing structure. To gain this latter facility I know of no better method than proving trigonometrical identities. If you get a chance to pick up Hobson's Plane Trigonometry, seize it. Make your students prove 150 trigonometric identities. Once they get into it they will love it and emerge with the ability to perceive mathematical structure.

For successful teaching there are no panaceas. Everything useful that can be said is in A.N. Whitehead's, "The Aims of Education and other Essays". Read this every second year! Encourage your ablest students to become independent, to read on their own and to enter a mathematical career. As long as Canada attempts to be a technologically advanced country there will be need for more and more mathematics.

If you have a copy of the 1960 Edition of *Mathematics 9* put it in your safety deposit box. It will soon be a priceless cultural artifact!

Editor: I had the privilege of having John as a teacher at University of Toronto. he is a scholar, a teacher and a gentleman just like his predecessor Sam Beatty who also profoundly affected Mathematics Education. His altruism (he set up a fund to aid Mathematics Education from his share of the royalties from the Gage texts that he co-authored) is an inspiration to us all. Personally and through the Gage series of texts he co-authored, he has touched and influenced many of us.

FROM THE ARCHIVES

PRESIDENT'S REMARKS

GEORGE KNILL

CURRENT EDUCATIONAL ISSUES AND DIRECTIONS

- How will computers enhance mathematics education?
- Are there appropriate mathematics programs for the learning disabled and the gifted?
- Do the senior guidelines meet the needs of the students?
- How can education promote mathematics to the general public?
- OAME must investigate means in which it can continually become a more proactive voice in Ontario education.
- For this year your council has formulated the following as its goals:

1. To determine and establish OAME positions on current issues such as ... Computers in Mathematics

VOLUME 21, NUMBER 1, SEPTEMBER 1982

FROM THE ARCHIVES

COMPUTING MACHINES AND THE BRAIN

HANS HEINING

... It is certain that thinking machines can be built — and have been built — which approximate certain particular functions of a brain. It may in fact be faultless. However to build machines which simulate the brain in all its modes with all its versatility and adaptability seems impossible ...

VOLUME 9, NUMBER 3, MARCH 1971

HERSTORY: THE WOMEN AND MATHEMATICS COMMITTEE OF OAME

ELAINE HARVEY

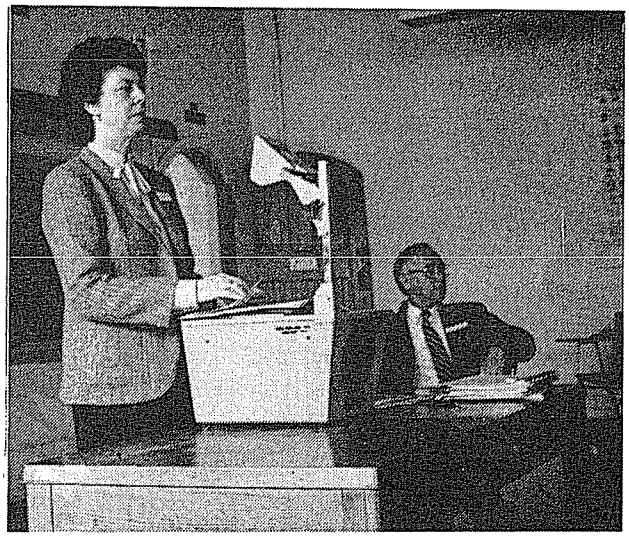
"Moved that OAME establish a standing committee, the focus of which will be in the area of math anxiety and issues involving women and mathematics, the name and goals of the committee to be decided by the committee."

With this motion which I proposed at the OAME / AOEM Council meeting of October 15, 1983, the Women and Mathematics Committee was created.

An informal brainstorming session on women and mathematics was held at the 1984 annual OAME / AOEM conference held in Kingston. The level of interest in this session and the ideas brought forth provided a sound foundation for the work of the Committee when it was finally established at the June 1984 Council meeting. Lorna Wiggan and Irving Pupko were named as co-chairs and Elaine Harvey as executive liaison.

Since its inception, the Committee has worked in conjunction with the planners of the annual conferences to obtain speakers on topics related to women and mathematics. There was a two-fold purpose to this goal: to increase the number of women speakers at conferences because traditionally the podia were dominated by men; and to heighten the awareness of issues regarding women and mathematics. Because such topics had seldom been presented in past conferences, an identifiable Women and Mathematics Strand of presentations was offered at the 1985, 1986, 1987 and 1988 conferences. At the Ottawa conference in 1989, the Committee discontinued the systematic planning of a strand in which a women and mathematics workshop was offered in every time slot. Instead the Committee began offering a scheduled breakfast.

May 13, 1989, marked the first annual conference breakfast meeting arranged by the Women and Mathematics Committee. The speaker, Heather-Jane Robertson, author of The Idea Book, published by the Canadian Teachers Federation, spoke on the topic, "Promoting Gender Sensitivity in the Classroom." Well over a hundred people attended. The second annual breakfast was held on May 11, 1990, at the NCTM / OAME / AOEM Conference in Hamilton. Sylvia Gold, faculty member for the Canadian Centre for Management Development and former chairperson of the Canadian Advisory Council on the Status of Women, spoke on the timely topic, "From Alchemy to Chaos". The Committee was fortunate in obtaining outside financial support for the breakfast.



FROM THE GALLERY: ELAINE HARVEY AND DAVE ALEXANDER

Ever conscious of inequities, the Committee requested in 1986 that the planners of the Leadership Seminar obtain some men speakers at the elementary level and women at the secondary level and that equity issues be addressed. At the October 1987 Council Meeting the Committee raised the concern that no women had been appointed to any of the Committees announced during that particular business meeting and determined to send a letter to that effect to the executive. In October, 1988, the Committee noted that Council had no representation at that time from private schools or community colleges.

In 1986-87, the Committee also began to seek out competent women who would be willing to accept nominations as councillors and executive members since only a quarter of the councillors at that time were women. It has also assisted interested women in building their profiles in preparation for their future contribution to the organization.

Recently the Committee has identified as a goal the establishment of a speakers' list for distribution to local chapters. Olive Fullerton is coordinating the compilation of a list of women who can address issues related to women and mathematics, and women who can provide appropriate leadership in mathematics.

In 1987 Lorna Wiggan became the Committee's representative on CEMSAT, the Coalition for Equity in Mathematics, Science and Technology. This organization held a very successful conference at Glendon College in May 1989.

On October 15, 1988, the Committee, concerned that its membership was small and that its members could not participate in the other standing committees because they met in the same time slot, began holding breakfast meetings prior to the Council meetings. Attendance at these meetings has been excellent. Now all councillors and executive members are invited and receive agendas in advance. Between 25% and 40% of the councillors attend these early morning meetings, and this does not preclude their participation in another committee.

An attempt has been made to see that at least one article for each issue of the *Ontario Mathematics Gazette* deals with a topic related to the interests of the Committee. During the editorship of the late Clifford Gravelle, a Women and Mathematics Department was established first appearing with the December 1986 edition and continuing for the following two editions. It was a completely separate entity from the Committee and was not meant to reflect in any way the goals of the Committee or receive its endorsement. Elaine Harvey was editor of that department.

With Clifford's untimely death in December of 1987 the Women and Mathematics Department along with other departments established by Clifford ceased to exist. However, an editorial and two articles which had

been submitted for the Women and Mathematics Department appeared instead in the March 1988 edition.

Since that time and at the invitation of the editor, at least six members of the Women and Mathematics Committee have joined the editorial board of the *Gazette*.

In the seven years that the Women and Mathematics Committee has been in existence the number of women participants in Council meetings has increased form 28% to 40%. There has been a similar increase in women speakers at both the annual conference and the Leadership Seminar. In 1990, the keynote speaker at the Leadership Seminar was a women — the outstanding University of Toronto physicist, Dr. Ursula Franklin.

GOALS AND OBJECTIVES OF THE WOMEN AND MATHEMATICS COMMITTEE

The goal of the Women and Mathematics Committee is to encourage greater participation of girls and women in mathematics.

Year	Chair	Executive Liaison
▶ 1984-1985	Lorna Wiggan/ Irving Pupko	Elaine Harvey
▶ 1985-1986	Jerri Lunney	Elaine Harvey
▶ 1986-1987	Elaine Harvey	Mary Lou Kestell
▶ 1987-1988	Elaine Harvey	Ralph Connelly
▶ 1988-1989	Lorna Wiggan	Jay Symington
▶ 1989-1990	Lorna Wiggan	Mary Lou Kestell
▶ 1990-1991	Lorna Wiggan/ Olive Fullerton	Mickey Sandblom

Editor: Elaine, in her own quiet way, has had a significant influence on Mathematics Education in this province as well as being an important member of the Women and Mathematics Committee since its inception. It's always nice to meet her and discuss old— and new — times.

FROM THE ARCHIVES

RECOMMENDATIONS TO THE MINISTRY

MORLEY AND MONA MACGREGOR

... This report has been prepared for the Ministry of Education by the Ontario Association for Mathematics Education for consideration during their review of the Senior Division Mathematics Curriculum ...

... The OAME considers the present senior division guidelines to be basically sound curriculum statements. We also believe that the present format should be maintained in future revisions ...

... We offer the following recommendations in order to improve the senior division curriculum and facilitate its eventual implementation ...

... It is recommended that the Ministry contact the Ontario Association for Mathematics Education to assist with the implementation of revisions within the Senior Division ....

1. It is recommended that the core topics and skills for a particular course be clearly identified so that greater understanding and mastery can be achieved. This recommendation does not conflict with the spiral approach in the present curriculum but allows for the establishment of priorities within that approach.
2. It is recommended in principle that externally prepared provincial common examinations be available for students proceeding to post secondary educational institutions. Consideration should be given to the establishment of examining boards involving participation by universities, colleges, professional organizations, the Ministry of Education, the Ministry of Colleges and Universities and local school boards.

These examinations would complement the evaluation within the school and aid in establishing provincial standards.

3. It is recommended that the Ministry consider the establishment of a mathematics course for those students who plan to study Social Sciences after secondary school. This course shall be composed of topics selected from the present guidelines.

The focus of this course would be applications of mathematics within the social sciences.

4. It is recommended that the Ministry provided detailed support documents for the following:
   (a) "A Mathematics Style Guide" outlining current notations, correct use of symbols, and concise, logical proofs.
   (b) "Problem Solving" requiring the use of many concepts to stress mathematical interrelationships.
   (c) "The History of Mathematics" relating both the history and people of mathematics to specific topics.
   (d) "Mathematics and the Social Sciences".
   (e) "A Mathematics Bibliography".
5. It is recommended that the Ministry identify the prerequisite skills required for each Senior Division Mathematics course.

The identification of the required knowledge and skills will enable the student to make more rational course selections. This will also enable teachers to identify topics which need review and consolidation within a course of study.

6. It is recommended that the Ministry authorize the provision of opportunities for high ability students to realize and exercise their full potential in mathematics.

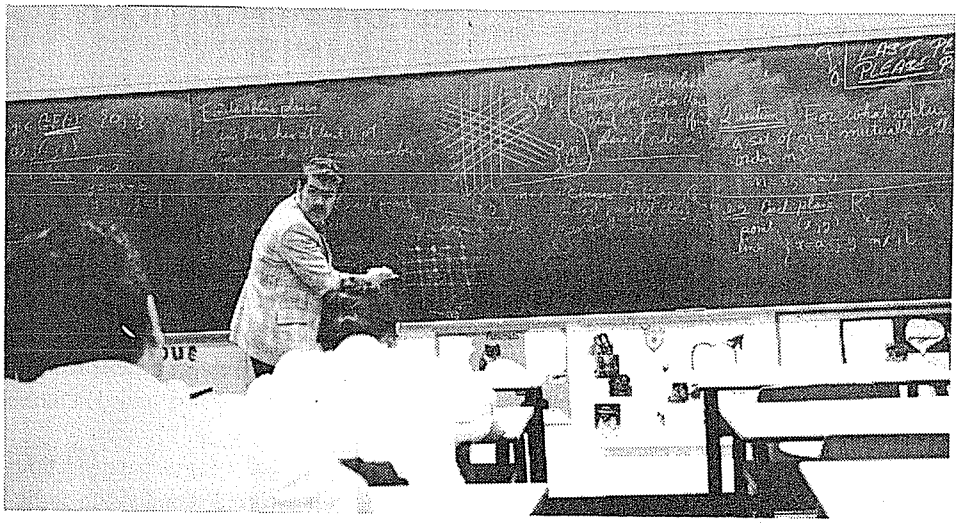
This involves the encouragement of special courses for special individuals, and the encouragement of school boards to provide classes for fewer than 15 students, when appropriate.

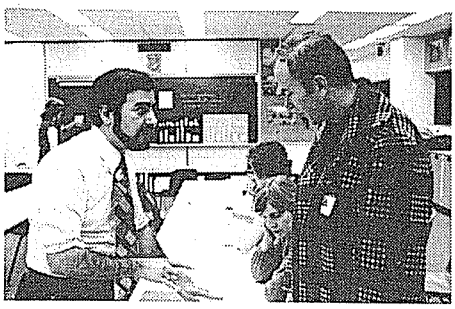
7. It is recommended that the Ministry contact the Ontario Association for Mathematics Education to assist with the implementation of revisions within the Senior Division.

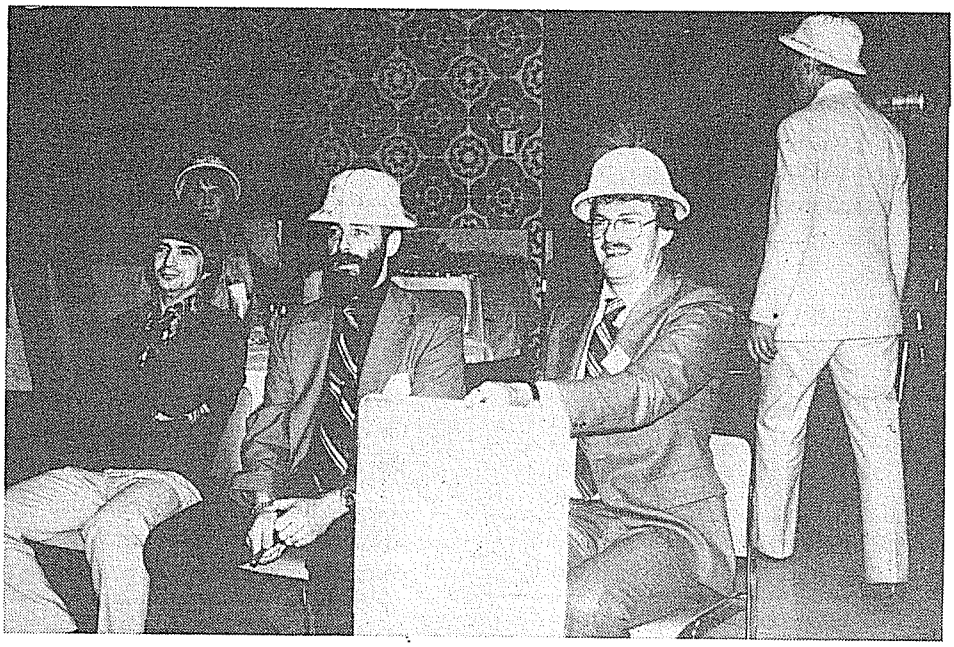
VOLUME 15, NUMBER 3, MARCH 1977

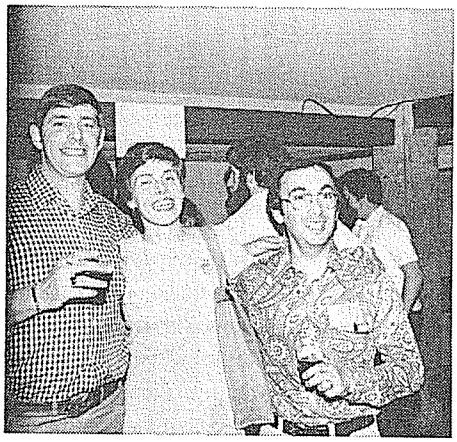
FROM THE GALLERY OF THE OAME

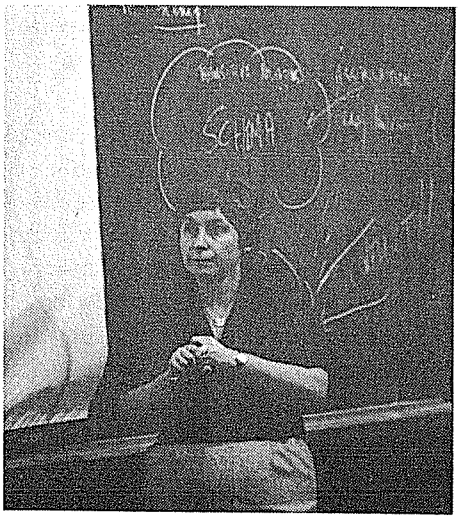


























with mathematics teachers to discuss topics of interest. As an outcome of the Coleman evening it was decided to invite teachers to a small gathering to discuss topics of mutual interest. John Coleman was to head up the group and I was to act as Secretary. We organized a meeting for Forest Hill Collegiate expecting at most 40 teachers to attend. Notices were sent out to Toronto schools and to our surprise more than 150 teachers attended. Out of these meetings came the leaders of the New Math movement in Ontario.

Lorna: Just how did the new math get started in Ontario?

John: In the scrabble that followed the launching of the Russian Sputnik there was great interest in the suitability of the mathematics being taught in schools. Begle from Stanford was leading a group to develop the SMSG program and Vaughan and Beberman were developing a new program at the University of Illinois. Prior to this time Howard Mulligan had been working on new approaches to the teaching of mathematics with the support of OTF and I was trying the new math in a grade 12 class. John Coleman, Howard Mulligan and Father Faught encouraged the OTF to underwrite the cost of holding a meeting of leading educators to set directions in mathematics for Ontario. The first meeting was held at Lakefield Preparatory School and was attended by university professors, high school teachers and one representative of the public school teachers. The outcome was the birth of the Ontario Mathematics Commission. John Coleman was president and I was vice-president. We decided to write text materials for high schools incorporating many of the new ideas of the time. John Coleman, Howard Mulligan, Ernie Totten and I undertook to write the grade 9 materials and the grade 10 was to be investigated by John Egsgard. Those were very busy years as we were being asked to speak across the province to teacher groups almost every week.

Lorna: I've used many of the materials you developed. What were some of the first ideas you pursued?

John: We investigated the geoboard and its applications to mathematics. We soon found that by looking at slides, flips and turns of figures we could mathematize many of the activities on geoboards. It was during this development that Norm Sharp mentioned, one day, that the use of coloured plastic mirrors helped children with reflections or flips. We adapted the idea to geoboards and the related geopapers. This work preceded the development of the Mira by George Scroggie and Norm Gillespie. We were to applaud and support the work of these two men in bringing the Mira to market. Our work in geometry led to the writing of my book on Geoboards and Motion Geometry for Elementary Teachers, published by Scott Foresman and Company, in Chicago.

Lorna: As I recall you were involved with setting the Ontario Mathematics Achievement Test at OISE. Wasn't there an interesting outcome from this?

John: Yes, even though the correlation between this test and success in mathematics courses was high, the Ministry could not persuade the universities to take it over. But there was one notable outcome from our meetings. Ken Fryer was a member of the OMAT group. We met once a month. On one of the meeting days Ken and I were having a little refreshment before lunch (mine was rum and coke) and Ken was bemoaning the fact that the Waterloo mathematics students would never become teachers because industry employed them during their work terms and would lure them into those firms upon graduation. Ken asked, "Why can't you hire these students during their work terms?" I took the question back to North York and with little effort convinced senior administration that here was our chance to influence the training of mathematics teachers. Ken was invited to North York to make a presentation. He brought with him Art Beaument, Steve Robinson and a vice-president of the university. They came with the idea of convincing North York to accept one student to pilot the program. Ken didn't know that we had already decided to take 5 students.

Lorna: After all these years in education have you any secrets to share? What makes a good teacher?

John: Let me begin by giving you an example of a poor teacher. During my first year of teaching, the math head scoffed at me for buying a book on mathematical recreations called "Mathematics: Its Magic and Mastery", by Aaron Bakst. He said it was a waste of money. I found that incredible and said, "But books are the tools of my trade!" I have always felt that the best teachers are those who are also learners. I have tried throughout my career to be open to new ideas and techniques. I read current math journals and attend conferences as a way of maintaining professional contacts and keeping up to date with current philosophy and practices. For example, I've attended ICME (International Conference on Mathematics Education) 2 , 3, 4, 5, and 6, an international conference held every four years.

Lorna: In recognition of your accomplishments you have received some notable awards during your career. One of the most prestigious is the NCSM Glenn Gilbert Award for making a significant contribution to mathematics education. You received the first one given, in 1982, and are still the only Canadian so honoured. Are there any other awards you would care to mention?

John: I have received two awards worthy of mention. In 1965 the Professional Engineers of Ontario gave me an award in recognition of contribution made to engineers by a secondary school teacher. Then I received the Descartes Medal from the University of Waterloo.

Lorna: I was going to close this interview by asking how long you intended to continue being actively involved in mathematics education, but I think the question is unnecessary. Hopefully, Dr. John Del Grande, Phd., scholar extraordinaire, will continue to be around for a long time.

Editor: Lorna Morrow worked with John in North York and co-authored a number of text books with him. She is an active member of NCSM. In NCTM she is a member of the Arithmetic Teacher editorial panel. She is a past president of OAME and continues to act as a councillor. Lorna has just completed co-authoring a series of texts K-8 for D. C. Heath in Boston. John is one of the giants of Mathematics Education. He has profoundly affected the development of the mathematics curriculum in Canada and the USA. For a retiree, he is busy indeed, working at OISE, writing texts, active in NCTM, and more.)

A HISTORY OF THE ONTARIO MATHEMATICS COORDINATORS ASSOCIATION

JOHN DEL GRANDE & PAUL ZOLIS

The roots of the Ontario Mathematics Coordinators Association (OMCA) were planted about 40 years ago when Mathematics was being scrutinized by educators and politicians. In October 1957 the Russians startled the world by launching the first satellite, Sputnik, beating the USA by several months in achieving this scientific breakthrough. The politicians and the public believed that mathematics and science education had to be improved to overcome the Russian lead. Leadership in the proposed changes was given by the University of Illinois, the School Mathematics Study Group and the College Entrance Examination Board. In Ontario, the OTF and the Ministry of Education funded a large group of teachers to study the implications of the proposed changes for the Ontario curriculum.

In the period of dynamic change, experimental courses and course materials for grades 7 to 13 were developed for Ontario schools. Many of the teachers involved in the writing went on to become coordinators of mathematics and curriculum leaders in some of the larger school boards. The first coordinators were Wyn Bates (Toronto), John Del Grande (North York), Joe Perrell (Hamilton), Norm Sharp (Etobicoke), and Jack McKnight (Scarborough). These coordinators met informally at first to talk-shop over lunch. After a few lunches, it became apparent that full day meetings would be very useful. The meetings were informal and were called whenever one of the members suggested that a meeting was warranted. John Del Grande acted as secretary (pro tem) for about 6 years. Any person with a K-13 responsibility for mathematics was invited to join the group.

As the group became larger it was formally named the Ontario Mathematics Coordinators Association (OMCA). A constitution was written and the group expanded to include consultants from many smaller boards. The members of OMCA meet regularly to discuss current trends, the direction that mathematics education should take, and to exchange ideas and materials to achieve specified goals. Each year the OMCA holds a two day retreat, organizes a special seminar to which an outside speaker is usually invited, and sponsors a Basic Level Conference for teachers.

Presently there are 40 members in OMCA. Included are representatives from the Ministry of Education and others with special assignments in mathematics.

Many of the coordinators/consultants are also members of OAME / AOEM,NCSM (National Council of Supervisors of Mathematics) and other mathematical organizations. Alex Norrie, Coordinator of Mathematics for the Peel Board of Education, is also a director of NCSM and was program chair for the Hamilton Conference for the Joint NCTM/OAME / AOEM Conference in May 1990. John Del Grande, former Coordinator of Mathematics for the North York Board of Education is still an active member of OMCA and was the first winner of the prestigious Gilbert Medal from NCSM.

Bob Robinson, a former consultant with the Hamilton Board of Education and presently with the Ministry Education, has also been active with NCTM/OAME / AOEM for over a decade. Bob was also Chairman of the Program for the NCTM Utah Conference, and is always active in organizing many of the OAME / AOEM conferences.

Brendan Kelly, former Coordinator from the Halton Board of Education, and presently an instructor at FEUT, (Faculty of Education, University of Toronto) has been very active with NCTM and OAME / AOEM and is presently on the computer committee for NCTM.

Many of our other members have been actively involved with OAME and NCTM, and have made numerous presentations and contacts with mathematics educators across North America and other countries.

OMCA is certainly a very active organization in the teaching and learning of mathematics, and is presently publishing (with OAME / AOEM) the "Ontario Mathematics Standards" for Mathematics Education from JK to OAC. This document will be distributed to all mathematics educators in Ontario. The 1990/91 President is Ron Sauer of Waterloo County.

AIMS OF THE OMCA

- To promote quality mathematics education in the province of Ontario.
- To encourage and stimulate professional growth and development on the part of its members and the members of the mathematics community in the province of Ontario.
- To encourage communication with regard to all aspects of mathematics education amongst its members.

MEMBERSHIP IN OMCA

- Membership shall be open to all individuals, on the basis of one representative per board who: are working in an educational jurisdiction in the province of Ontario, and have system responsibility for the curriculum review, development and/or implementation of mathematics program within a School Board (as defined by the Education Act, 1974).
- With approval of the membership, the executive steering committee may second additional members for special purposes on an annual basis.
- The current President of the OAME / AOEM and representative(s) from the Ministry of Education shall be invited to be members each year.

FROM THE ARCHIVES

ONTARIO ASSOCIATION OF TEACHERS OF MATHEMATICS AND PHYSICS / ONTARIO EDUCATION ASSOCIATION

WILFRED CUNNINGTON

The Easter Convention will again be held in the Ontario College of Education buildings at the corner of Bloor Street and Spadina Avenue. Lectures will be in room 374; book displays and seminars will be in nearby rooms.

VOLUME 1, NUMBER 1, FEBRUARY 1962

A HISTORY OF THE GRAND VALLEY MATHEMATICS ASSOCIATION

RON SCOINS

Three ingredients came together in the early 1970's that led to the establishment of one of the most vital and influential chapters of OAME. The need for a forum to address curriculum and pedagogical issues, a group of dedicated and willing mathematics educators along with the leadership and generosity of the Faculty of Mathematics at University of Waterloo combined to spawn the Grand Valley Mathematics Association.

The NASSMT (Nameless Association of Secondary School Mathematics Teachers) started meeting as an unstructured body of mathematics teachers in 1970. Meetings were held at the University of Waterloo to discuss issues impacting the mathematics classroom. A popular beverage of the time, "The Tea — known by its good taste alone", inspired the name. This was to be a Mathematics Association to become known by its good works and thus otherwise would remain nameless.

A significant step in the passage from a loose organization to a formal association was a meeting held on March 4, 1971, at which 150 teachers met in groups to discuss the Ministry of Education's proposal for Grade 13 mathematics. It became clear that in order to become a positive influence in mathematics education, a new mathematics association should be formed.

On January 4, 1972 representatives from counties surrounding the University of Waterloo decided to form the Grand Valley Mathematics Association. The GVMA was founded on the principle of improving the mathematics programs of the schools in this geographical area, and of providing a forum for the exchange of teaching ideas and professional growth. From the outset, the GVMA was to be an association of classroom teachers for classroom teachers. It has remained true to this ideal throughout its existence. From its inception to the present, every president or chair has been a classroom teacher.

By the Fall of 1972 a two-day seminar program had been established, semi-annual general meetings were occurring and four writing projects had been established. It is of interest to note that by the Spring of 1973, the following publications had been produced: a Geometry Handbook, a Grade Nine Preparedness Test, a Mathematics Contest for Grades 7 and 8 and a grade 13 sample examination package.

The contest for grades 7 and 8 had an enrolment of 756 Wentworth County students in its first year.

Editor: In fact, this contest was, in its first few years, the brainchild and product of Jim Mattice, and his mathematics Department at Parkside High School in Dundas.

It was subsequently named the Gauss Mathematics Contest and is now part of the Canadian Mathematics Competition. In 1990, 75,000 students from across Canada participated.

Over the next two years the GVMA gained support for its activities from a steadily growing membership. It remained as an independent association running seminars, general meetings and fostering writing teams that produced support materials for mathematics teachers.

In 1973, the Ontario Association for Mathematics Education was formed with a new organizational structure that included chapters to better serve all regions of the province. The GVMA was not consulted nor included in the planning of this new organization. Under the founding by-laws of OAME, chapters were defined in a top-down model and as such the GVMA Council decided that it would have been unfair to its members to become a chapter at that time. The executive of OAME was disappointed by this decision. The president of OAME initiated discussions with GVMA, and as a result of negotiated changes in the by-laws, the membership of GVMA voted in favour of becoming a chapter. The application for chapter status was accepted at the annual meeting in May, 1974.

The GVMA has continued to hold to the same principles as when it was founded. It has shown leadership in addressing the issues of mathematics education through seminars and conferences. The bibliography of publications for classroom support brings great satisfaction to the writers in knowing that students have been the beneficiaries. The success of this organization is a tribute to the many teachers who so willingly have given of their time and talents for the cause of excellence in mathematics education.

One of the great satisfactions of my professional career is to have had the opportunity to help nurture and guide this association throughout its existence.

THE KENNETH D. FRYER AWARD

In memory of the late Dr. K.D. Fryer, OAME / AOEM in conjunction with the GVMA established the Kenneth D. Fryer Award for Excellence, to be presented annually to a Mathematics Department demonstrating excellence in Mathematics Education as well as contributing to the overall development of students beyond classroom activities.

SCHOOLS HAVING RECEIVED THIS AWARD

▶ 1985	O'Neill Collegiate and Vocational Institute, Oshawa (Durham) LaSalle Secondary School, Sudbury
▶ 1986	Overlea Secondary School / Marc Garneau Collegiate Institute (East York)
▶ 1987	Merivale High School, Nepean (Carleton)
▶ 1988	Lorne Park Secondary School, Mississauga (Peel)
▶ 1989	Northern Collegiate Institute and Vocation School, Sarnia (Lambton)
▶ 1990	Albert Campbell C.I. (Scarborough)

MAGIC PENCILS

JEAN LEPPARD

September, 1928. My trunk was packed! I had been vaccinated for smallpox! At age sixteen I, who had never been more than twenty-five miles away from the red brick farmhouse where I was born, was setting out for Toronto to register at Victoria College and to enrol in the Mathematics and Physics course. The money in my purse — four hundred dollars — would cover all expenses of my first year. To date I had spent ten years in school — first at the "little red schoolhouse" in DeCewsville where all grades were gathered into one classroom, and then at Cayuga High School.

VICTORIA COLLEGE

After registering I went for an interview with the Dean of Women, who literally begged me to stay clear of the honours course in Mathematics and Physics and advised me to talk to one of the professors before making up my mind. I left her office with three thoughts: I was going to study mathematics and physics; I was going to work hard; and I was not going to fail!

The course was certainly demanding. I can recall having two three-hour laboratory sessions every week and lectures from professors Beatty, Pounder, DeLury (A.T.), Robinson (D.A.F.), Sheppard, Satterly and Kenrick. In later years professors Chapelon, Mackenzie, Webber, Synge, McLennan, Burton, Gilchrist, McTaggart, Chant, Young, Barnes, Ireton, Ainslie and Allin are some I remember.

There were lighter moments too: the Reception tendered by Professor and Mrs. McLennan in the library of the Physics Building; the monthly meetings of the M & P Society in Room 43 and social evenings in the homes of Dr. Burton or Dr. Chant.

In my first year one of my assigned lab exercises was the making of a thermometer. I was desperately failing to produce a presentable bulb at the end of the tube when a passing third year student noticed my plight and offered assistance. In no time he had blown a beautiful bulb I continued with the project and he kept coming back to check progress. He became my friend, my tutor and eventually, my husband. A turning point! A new direction!

RECRUITED

In the Spring of 1932 Professor Lougheed of the Ontario College of Education addressed the final meeting of the M & P Society with the aim of recruiting student teachers of mathematics. I liked his enthusiasm and decided to become a disciple. In September, 1932, I enroled in the College and in the Spring of 1933 I became a member of the Ontario Association of Teachers of Mathematics and Physics. It is good to know that, after a succession of name changes over the intervening years, this organization — now the Ontario Association for Mathematics Education — is, on the eve of its hundredth anniversary, still vigorous and productive.

PRACTICE TEACHING

My first practice teaching was done at Bloor Street Collegiate Institute under the eye of Major Lamb, a friendly man and obviously a great favourite with his students. (Wilbur Howard was one of them: he later gained fame as a Moderator of the United Church of Canada.). Major Lamb said, "If you don't enjoy teaching, don't teach!" I certainly enjoyed teaching for him.

For practice teaching in physics I was placed with Dr. Charles G. Fraser, Jr., at Harbord Street Collegiate Institute. Dr. Fraser had earned a reputation of being impossible to please and when he asked me to prepare two lessons on Centre of Gravity for a Grade 13 class I decided to put forth every effort to impress him favourably.

I returned to my old haunts in the University of Toronto. Physics Building, seeking advice from Dr. Satterly. He was most helpful: he had Percy, his famous lab assistant, assemble some demonstration items which I might borrow. Among these was what Dr. Satterly called "a disobedient egg". One prepared it by making a tiny hole at each end of a hen's egg, blowing out the contents, inserting some lead shot in the small end and securing it in place with melted wax. With suitable restoration of the damaged shell the egg would look natural but would stand only on the small end. I used this prop in my first lesson and Dr. Fraser was fascinated. One of his students was given the job of creating a duplicate. At the time, Dr. Fraser was writing a book eventually to be published under the title "Half Hours with the Great Scientists". I showed interest and later he sent me an autographed copy which I used as a reference for years.

Times were rough in the Spring of 1933. There were 743 student teachers at the Ontario College of Education and to say that they were well qualified would be an understatement indeed. In the science section there were lawyers, dentists, doctors, Ph.D.'s of all kinds, engineers and business men looking for a job, any job. Of the 743 I believe only 57 had positions by September.

A JOB

I applied for a position in Fergus. On the day of my interview it rained heavily and, like the other candidates, I had to walk about town in the rain to keep appointments with the Principal and the 13 members of the School Board. I had little hope of being chosen: first, I was a woman; and second, I knew that many of the applicants had qualifications superior to mine. Some time after I was established in Fergus I asked my Principal what had tilted the scales in my favour. He told me that after 200 interviews he still could not pick a teacher: there were just too many good ones. At this point his ever-helpful wife had said, "Surely there was one who was different ... ", "Well," he had replied, "there was a young girl who didn't complain about the rain." His wife had said, "Take her." So the farmer's daughter who didn't know enough to come in out of the rain got the job. What a turning point in my life! What a twist!

So, I was lucky. I had a job at Fergus High School. For $1700 a year I agreed to teach mathematics to Grades 9, 11 and 12 and also algebra, geometry, trigonometry and physics to Grade 13, as well as Senior Girls' Physical Training. If any student should aspire to a scholarship in mathematics I was to be the coach for the Problems examination.

A year later my colleagues and I were asked to accept a ten percent salary cut which lasted until 1939. But, if salaries were low, so were expenses. For example, my room and board cost me $9 a week, $7 if I was away for the weekend.

I loved Fergus. The pupils were away above average and so I was always under-estimating them. One year I submitted to the Department a trigonometry mark of 25 as my estimate of a certain student. On the morning of the exami-

nation she came down with chicken-pox and couldn't write the paper. However the Departmental marks, when they came in, showed her with a pass in that subject. The rationale was that her class had, on average, made 26 more marks per paper than I had allowed them in my estimates, so, with 25 + 26 = 51 marks she had her pass. What I had was a firm reprimand from the Department for not being a realist.

In the Spring of 1940 my fiance was on a training course at the University of Toronto preparatory to induction in the R.C.N.'s Special Branch (hush-hush work later revealed to involve radar service with the Royal Navy). Unexpectedly I was also confronted with an opportunity to serve when Professor Burton recommended me for a staff job with the British Scientific Mission in Washington under Professor Lindemann ("the Prof"). Since our departures were imminent we decided to get married without delay. There was no chance that I might continue teaching; married women were not eligible for classroom work. So my husband departed overseas but my plans changed when it became clear that our first child was on the way. There ensued a decade and a half during which I had little or no contact with the classroom.

VAUGHAN ROAD COLLEGIATE INSTITUTE

In the Spring of 1956 our dinner was interrupted one evening by a phone call from Mr. George Evans, Principal of Vaughan Road Collegiate Institute. One of the mathematics teachers had suffered a massive stroke and each of the five substitutes he had called in to help had resigned after a few days. Would I come? I had been away from the classroom for 16 years, it seemed that there was a student discipline problem, and the classes in question were either Grade 9 or 10 whereas I much preferred Upper School Work. Thinking to stall things completely I said that I wouldn't consider coming for less than $500 a month nor without a guarantee that the students would co-operate and settle in to learn. I walked away from the telephone telling my family, "Don't worry — they'll never pay me $500 a month!" Five minutes later Mr. Evans was back on the line saying he was ready to meet my terms and would like me to begin work the next Monday. I don't know what he said to those classes before I met them, but they did behave. I had come to Vaughan with the idea of staying till Easter. It turned out that I stayed 17 years — and enjoyed them.

George Tuck

George Tuck was head of mathematics at Vaughan. He was a seasoned pro and his department was second to none in the province. I longed to teach grade 13 but as a newcomer among such a talented group of teachers I had to keep quiet. Imagine my delight when in June 1956 he told me that, starting in September, I could have two Upper School classes — Algebra and Trigonometry. Later, when sets were being introduced in the lower grades, I attended a meeting of the NCTM in Chicago and brought back a few work-books on sets. He accepted them and filed them in our mathematics library under L with the title "Leppard's Folly". I respected George Tuck and learned a lot from him.

I encountered many bright young minds at Vaughan. The one that achieved the most brilliant success in the world of science was Leslie Saunders whose work at Princeton had brought him world-wide recognition. He died of Hodgkin's Disease at age 29, shortly after his returning to take up a professorship at the University of Toronto. What a privilege to have been a factor in the early training of such people! And it was fun — teaching them was a breeze!

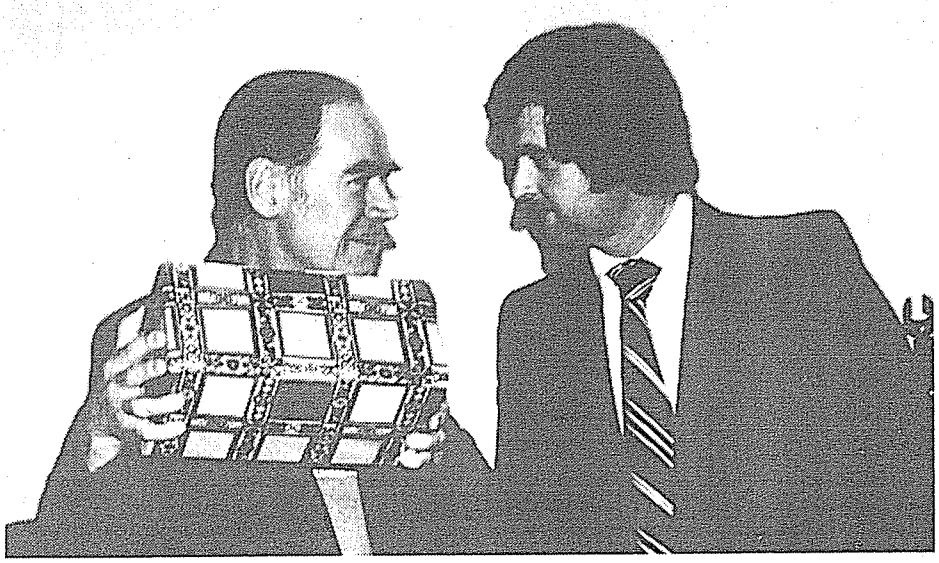
The Number Crunching Game — with Spice

In those pre-computer days we had to look for useful short-cuts in practical calculations done the hard way. I suggested, for example, that it would be nice to memorize the logarithm for pi to five places. Now it was easy to call up the first three places (0.497) because 49 is the square of lucky 7. How to remember the 15 which followed? Someone said, "That's the age of Fred's girl friend". So log pi became 0.497 "plus" the age of Fred's girl. Everyone in my classes had log pi on the tip of his tongue and Fred's girl (whom he eventually married) was dubbed "0.49715". This and many other dodges we worked out added spice to the number-crunching game.

The Departmental Examinations were always approached with a certain apprehension by the students, and I always did my best to ease the tension. Eventually I tried sorcery. That year I had a particularly good Upper School class; good, that is, with the exception of poor struggling Louie. I bought five dozen lead-pencils at a variety store and had them sharpened by the proprietor. Next day I brought them to school in a brown paper bag and as my students were gathering for the Algebra paper I stopped each one, took a pencil from the bag, rubbed it between my hands, kissed it and said, "This is a magic pencil; I have put a spell on it. Just take it into the room with you. It will guide you." Then I solemnly passed the pencil to the student as one hands over the baton in a relay race. After the examination I met Louie coming down the hall: he was clutching the pencil in both hands. With a shaking voice he said, "My God, Mrs. Leppard, it is magic." Louis made 53, far more than I expected of him. The rest of the class did extremely well, as I knew they would.

Next year the students lodged early enquiries as to whether I was intending to provide magic pencils for the Departmentals. Horror of horrors, they really trusted my magic! One student bought a 14k gold clip and carried the pencil in his breast pocket for years. Next Spring there was no refusing: I repeated the ritual and again it worked! Fortunately the Departmental were abolished the following year and I was off the hook. I am still wondering whether I really am a witch!

Editor: Jean significantly affected the professional lives of both of us and we admire her and thank her for this. (She spotted Joan Routledge at the 1965 Conference and personally welcomed her to the group—and we know the impact Joan has had on the scene.) Her upbeat view of the world shines through these pages.



FROM THE GALLERY: DUFF BUTTERILL, BRUCE TOPPING — OTTAWA, 1970

A HISTORY OF THE CARLETON-OTTAWA MATHEMATICS ASSOCIATION

DUFF BUTTERILL

During the 1960's, in the relatively compact geographical area of the Ottawa-Carleton region, the teachers of mathematics were the employees of numerous boards of education — The Ottawa Public, The Carleton Public, and several separate school boards. There were also two universities with active mathematics departments and Algonquin College. The Eastern Ontario regional office of the Ministry of Education was located in Ottawa. There was a clear need for an organization which would bring together representatives of the mathematics teachers from each of these administrative entities. The Carleton-Ottawa Mathematics Association (COMA) was founded on Tuesday, June 5th, 1973, at 3:30 PM in the Ministry of Education Offices on Woodward Avenue.

From among the Founding Council, an executive was chosen, a constitution was developed, and a program begun. An early decision by the executive was that every meeting (whether executive, council or general) should begin with some mathematical item.

Joe Ryan as chairman and Fred Maskell as secretary shepherded COMA through its incubation and the Association grew. By April, 1974, membership convenor, Bruce Topping, could report 68 active members. For the next several years, liaison with the parent body, OAME proceeded. Members joining OAME / AOEM are considered to be members of COMA and a portion of their membership fees is rebated. to COMA.

MEMBERS OF THE FOUNDING COUNCIL, 1973

- Mr. J. Ryan, Carleton R.C.S.S. Board
- Mr. P. Brady, Ottawa R.C.S.S. Board
- Miss B. Wright, Ottawa Board
- Dr. F. Morrison, Ottawa Board
- Mr. B. Topping, Carleton Board
- Miss J. Starrs, Ottawa Board
- Mr. W. McLeod, Ottawa Board
- Dr. R. Semple, Carleton University
- Mr. M. Carmelon, Carleton Board
- Dr. V. Dlab, Carleton University
- Dr. M. Closs, University of Ottawa
- Miss R. Seguin, Teachers' College
- Mr. I. Pressman, Carleton University
- Mr. L. Sauvé, Algonquin College
- Mr. D. Fox, Ministry of Education
- Mr. D. Butterill, Ottawa Board

MEMBERS OF THE FIRST EXECUTIVE, 1973

- Mr. J. Ryan, Chairman
- Mr. F. Maskell, Secretary
- Dr. M. Closs
- Mr. J. Quesnel
- Mr. E. Sparling
- Mr. B. Topping

The next several years found increasing co-operation between COMA and the local universities. Numerous seminars and meetings were hosted by the post-secondary institutions. By 1978-79 COMA could boast of 120 members.

In May, 1970, the OAME asked for Ottawa to be the location of its province-wide conference *(Editor: This was the first annual conference outside Toronto and COMA played the host with flying colours.)* For all his work among mathematics teachers, the Conference was dedicated to Don Fox. Bruce Topping and Duff Butterill were co-chairs. Dozens of other Ottawa teachers participated.

In March, 1975, the first edition of a mathematical magazine EUREKA was published. The name was subsequently changed to CRUX MATHEMATICORUM. This magazine gradually took a life of its own, separate from COMA, and became known, quite literally, world wide. The editor for 11 years, until 1986, was Leo Sauve of Algonquin College; the managing editor, Fred Maskell literally dedicated his life to the magazine until his death in January, 1985.

OAME / AOEM again had its province-wide conference in 1989 here in Ottawa. The chairman and workers experienced a great deal of satisfaction for a "job well done!"

FROM THE ARCHIVES

If a triangle is subdivided into any number of smaller triangles with the sole restriction that no side of a subdivision may contain a vertex (except at its end points), then the number of such triangular subdivisions must be odd.

Duff: I wonder if Mac Camelon remembers the neat proof he gave for this problem?

ITEM FROM A COMA EXECUTIVE MEETING, APRIL 1974



FROM THE GALLERY: SHARON MCPHAIL AND BOB ROBINSON

SWOAME HISTORY

THE EDITOR

SWOAME, designed to serve all of Southwestern Ontario, was formed in 1974 very soon after the founding convention of OAME. The charter president was Dave Skoyles and he was followed by Arn Harris and later by Gary Peters.

In 1977 a constitution was formally adopted and the chapter continued tis sponsorship of regional conferences. The Chapter Council, which represented the 25 educational jurisdictions in the region spent a significant amount of its time on educational issues. For example, they spent at least two meetings discussing the Pogue Report (Recommendations for Intermediate Division Mathematics in Ontario, University of Ottawa, 1976). This included a meeting with Paul Pogue and the writing of a brief to OAME and the Ministry.

By 1980 the Chapter was essentially defunct and so the Sarnia Meeting was organized by Morley MacGregor and Sharon and Dave McPhail.

In 1987 Todd and his colleagues resurrected SWOAME to serve Essex and Kent Counties. It is once again thriving and hosts semi-annual meetings (a dinner meeting in May and a Friday-Saturday meeting in November.)

Editor: This was written based upon notes that Todd Romiens gathered for me. I apologize for any omissions caused by a lack of intimate knowledge of the Chapter.

NOMA, THE EARLY YEARS

DOUG HENDERSON

After a May, 1969 conference of mathematics teachers, organized and publicized by the OTF Toronto office but held at Laurentian University, attracted only a dozen delegates; Doug Henderson and John Milliken agreed that such a meeting could only be successful if it were sponsored and promoted by Northerners themselves.

To overcome the problem of communicating with teachers spread over an area of hundreds of thousands of square miles (it was 1970 and the metric system was used only in the science lab!), they took advantage of John's position as Ministry of Education Programme Consultant for Sudbury, Sault Ste. Marie, Wawa and points in between and Doug's role as Master Teacher of Mathematics in the Sudbury area. Enlisting the help of Art Dayman (Ministry Programme Consultant) they spread the word from North Bay to Timmins, Kirkland Lake and further along Highway 11.

An organizational meeting in May 1970, attended by 100 teachers representing all levels of education from kindergarten to university was followed by the first official NOMA meeting at Laurentian University in October 1970. Two hundred and twenty-five enthusiastic teachers from as far away as Wawa, Hearst and Iroquois Falls were present. The concept of an organization for mathematics teachers in Ontario with chapters throughout the province was born that day and NOMA, especially through Art Dayman, had a strong influence on the present constitution of OAME.

As it does now, NOMA dealt with contemporary issues in mathematics education. Some topics, such as the metric system and teaching efficient use of the slide rule seem rather archaic now. Programmes in the early 1970's featured debates which would still be apropos today. Among the resolutions were: "The semester system is an abomination," "The calculator is the most promising invention for the improvement of mathematics education since the chalk-board," "Mathematics education in Ontario is better now than it has ever been." There is no record of the outcome of these debates; it is certain that they continue in some form in staff-rooms across the province even today.

One of NOMA's strengths as an organization has been its ability to attract participation from elementary as well as secondary panel teachers. Much of the credit goes to speakers like Joan Routledge, Bob Tuck, Don Fraser, Norm Sharp and Frank Ebos who graciously agreed to take part in NOMA meetings. At Laurentian University in 1973, W.W. Sawyer gave a demonstration lesson to a class of grade five pupils, showing how he would introduce concepts in algebra to young children.

Beginning without any formal support from a parent organization, NOMA managed to remain financially solvent by charging $2.00 for membership and $3.00 as a conference fee. Buffet lunches cost $2.75 and a double room at the Pinewood Inn in North Bay was $14.18, all with taxes and tip included!

Like the rest of the province, Northern Ontario has always had an abundance of able and dedicated teachers, eager to assist their students' growth by improving their own knowledge of mathematics and mathematics learning through organizations like NOMA. Teachers and students today owe an immense debt of gratitude to people such as John Milliken, Art Dayman and Doug Henderson who began NOMA and assisted it through its early years; to Bob Tuck, Andy Czempinski, Robin Hill, Jeanette Bedard, Peter Weygang, Jim Hill and John Savage who served as executive members and organizers in the early years and to the many teachers who give the organization life by their participation and enthusiasm.

A HISTORY OF THE PINE RIDGE MATHEMATICS ASSOCIATION

RON ENNIS

This story started in Oshawa sometime during the years 1974-1976 when Bill Jeffers held office as the Mathematics Consultant for the Durham Board. During his visits to schools and discussion with teachers throughout the Board, Bill sensed a need to improve the interaction between elementary and secondary teachers of mathematics. During this time several meetings were held where elementary and secondary teachers discussed problems related to curriculum, teaching methods and manipulative materials. The groundwork had been laid for the establishment of an OAME chapter in the Durham area.

In 1977, a request was made to host the OAME / AOEM Conference in 1979. Armed with the support of several dedicated colleagues, Bill agreed on our behalf to host the 1979 conference.

Since provincial conferences are usually hosted by a local chapter, it was now incumbent on the organizers to establish a chapter. The decision was made to include institutions in the Junior Mathematics Contest, Zone 68 Region: Trent University, Durham College and schools in Simcoe County, Victoria County, Northumberland, Newcastle and the Durham Board were included. In the school year 1977-78, the PRMA (named after the pine-covered ridge of hills which runs through these areas) was born. Bill was installed as the first president and went on to organize a very successful conference at Trent University in May 1979. Conference delegates were treated to top-notch meals, entertainment, accommodation and speakers. The conference focus was on elementary mathematics and many elementary teachers were attracted by some special incentives. The conference was planned for 450 but 700 attended. Needless to say the conference produced a profit for OAME / AOEM and the PRMA, which used the proceeds to provide scholarships for elementary teachers taking upgrading courses in Mathematics (M. Ricciuto, S. Allan, C. Hunt, J. Lubitz, G. Gadanidis, S. Bernard and others).



FROM THE GALLERY: NEIL WILLIAMSON, DAVID MCPHAIL, AND FRIENDS AT THE OAME ANNUAL CONFERENCE — PETERBOROUGH, 1970

The PRMA has come into its own since that time and is instrumental in organizing several activities for teachers and students each year. The Spring Mini-Conference was established in the early eighties and attracts 100 to 150 elementary and secondary teachers to a dinner and two presentations in April of each year. The PRMA also assists in the arrangements for the Durham Board-Wide PA day held in November.

In 1984 a Mathematics Awards Ceremony was instituted and is held every year in June. At this function, students who have been successful in the elementary and secondary mathematics contests are honoured by the Durham Board. PRMA members assist with the organization of this function each year.

Even though in recent years our geographical region has shrunk, our membership has expanded, and the current executive is looking at ways to improve this next year. Another conference perhaps?

FROM THE ARCHIVES

AN ORGANIZATION FOR MATHEMATICS

A REPORT FROM THE OATM-OMC COORDINATING COMMITTEE

The cause of mathematics education in Ontario has been served in various ways past and present by a number of groups and organizations.

In its long history to date the Ontario Association of Teachers of Mathematics (OATM) has provided a two-fold service for teachers. It has been a meeting-ground for its members for professional updating, for stimulation, refreshment and information through provincial and regional conferences. And in its affiliation with the Ontario Education Association it has given mathematics teachers some participation in the wider Ontario educational scene. It has been in a position, through its representation on the OEA senate, to influence recommendations to the Minister in the interest of mathematics education.

OATM leadership over the years has grappled with two problems: (1) the building of a larger base of support and involvement through increasing membership (2) development of service to the support from the elementary school teacher with special interest in mathematics. In the 1960's progress was made in both of these areas, but much more is desired.

Now, without detailing its history, let us try to summarize the role of the Ontario Mathematics Commission (OMC). In the late 1950's, great concern was felt for the school mathematics curriculum in Ontario. This concern found expression among mathematics teachers at a conference at Lakefield, Ontario, and the resulting organization (OMC) was supported by the Ontario Teachers Federation and the Ontario Department (now Ministry) of Education. This support was both financial and in the form of personnel appointed to the Commission. The Commission was composed of approximately fifty persons appointed from the complete spectrum of mathematics education in Ontario — elementary, secondary, private schools, college, university, teacher, OATM, and Department of Education. In my opinion, this wide representative nature of OMC was its greatest strength. The Commission plunged into its task of reviewing, designing, testing, writing, proposing changes in mathematics curriculum.

VOLUME 11, NUMBER 3, MARCH 1973

A HISTORY OF THE ONTARIO MATHEMATICS GAZETTE

BOB SMITH

FOREWORD

To write a history (a systematic, continuous record of events) of the *Ontario Mathematics Gazette* and its predecessors, requires deeper insight, and a better sense of the times than I have before me. Thus, the following pages will briefly outline the views of the editors as the Journal changed through the years. The real record of *Ontario Mathematics Gazette* is in the many articles printed and the few bits reprinted here can only wet the appetite.

1892-1962

Although there was not a particular Journal known as *Ontario Mathematics Gazette*, a section of (OEA) met to share their thoughts concerning mathematics and some of their meetings were reported in the OEA "Journal" and later in the OATMP newsletter. The name (OATMP) was formally adopted in 1951. Prior to this, the group was known as the Mathematical and Physical Association of Ontario. Papers on mathematics and minutes of their meetings are available in the OEA centennial publication In The Cause of Education.

1962-1973

The first issue of *Ontario Mathematics Gazette* was published in 1962 under the joint sponsorship of the OATMP, a section of the OEA, and the OMC, with Editor Ralph Stanton of the University of Waterloo. During this period, it was also supported at various times by the Samuel Beatty Fund, and the mathematics departments of various universities. Printing and distribution were organized from the OAE and the OMC offices in Toronto. For one critical year, when it appeared that there were insufficient funds, Professor John Coleman of Queen's University agreed to personally underwrite the shortfall. Luckily there was no shortfall.

1973-1990

The *Ontario Mathematics Gazette* has been the official publication of the OAME since its beginning in 1973.

The mathematics community has maintained a strong voice of concern in education over the last 100 years. What have been these concerns?

From its very beginning, The Association was concerned with ways in which it might extend its influence. In 1895, President A.T. DeLury suggested:

> *"...a Committee of the Association might report on all, or the more important textbooks appearing during the year"* and that *"the teachers in any district might organize themselves to prosecute some special studies ... (which) the Association could bring together and (then) make accessible the results of the research."*

With the first publication of *Ontario Mathematics Gazette* in 1962, it was decided to continue the communication function of the newsletter formerly published by OATMP. *(Editor: The first reference to the OATMP Newsletter we can find is in 1953.)* It was hoped there would be continuing liaison between secondary school teachers and university professors. In subsequent publications of the Gazette, liaison with teachers of mathematics both in the elementary schools and the community colleges was included. To accomplish this, special elementary school editions of *Ontario Mathematics Gazette* were printed in 1966 and 1967. In 1973, a newsletter called ABACUS was instituted. In 1986, the ABACUS became an insert in the *Ontario Mathematics Gazette*.

Until this year the *Ontario Mathematics Gazette* had been available to non-members on a subscription basis. From 1986 on, it was available only to members. Editors over the years have been looking for articles on new teaching techniques, innovative pedagogical material and have accepted mathematical expositions as well as material on the historical and psychological aspects of mathematics. Recently, more effort has been made to have *Ontario Mathematics Gazette* act as a forum for discussion as well as publishing "teaching tips" and "research clips" to help teachers in the classrooms.

From the beginning, editors have taken pen in hand to voice their concerns. Each has been challenged to comment on the issues of the day. Most often this had to do with a curriculum issue.

EDITORS' REMARKS OVER THE YEARS

1904

> *"resolves that the mathematics and physics section of OEA heartily approves of the work on geometry outlined for the lower school in the draft prepared by the Education Department."*

1964

R.G. Stanton pointed out where he thought the Math curriculum process could be improved:

- *Approving of textbooks: At the present time, there is a distressing "sameness" about school textbooks ... Let the Curriculum Branch give up "approval" ... Let us have an independent board.*
- *Curriculum Committees like Canadian cabinets seem to "represent" varied interests. Surely the best qualified people to discuss content should be adequately represented on such committees.*

Editor: In 1964, the Gazette won the prestigious Greer award from the OEA.

1976

A. Harris reviewed the Canadian Chambers of Commerce *Report on Basic Education Skills*. He then went on to comment:

> *"Since 1946, a percentage of the 15-19 year age group in the schools has risen dramatically (35% to 80% in Ontario). Society has decreed that elimination is no longer a satisfactory solution to the problem of non-performing students ... The Ontario Education Curriculum Development report on Canadian education states that we neglect our underprivileged, handicapped and native people. Are these not basics we should be looking at?"*

1981

R. Smith commented on the document *Math-1980 Curriculum Guidelines for the Intermediate Division* and made the following suggestions:

- *It is to be hoped that at some future date the Ministry's proposed document* The Intermediate Years *will be completed. It should provide a reasoned, logical framework as well as practical help at the various grade levels for the sample objectives.*
- *To help in implementation, begin a cyclical review so that implementation is monitored.*
- *Grade 7 and 8 teachers are generalists. Either we need more specialist teachers in the intermediate division or we need more in-service courses to help the generalists.*

1983

S. Pravica wrote an open letter to the Minister of Education voicing his concerns, regarding *The Intermediate/Senior Mathematics Curriculum Committee*. D. Alexander, the Chairman for the Committee, replied in the next issue. It was a useful exchange of views. The Ontario results for the Second International Mathematics Study were published the same year and the editor asked, "Do the proposed new Senior Guidelines seem to be addressing themselves to the learning shortcomings identified in this study?"

The format has changed from time to time. *Ontario Mathematics Gazette* began as a 6" x 9" booklet of 46 pages with a soft cover title page. The text was typed by secretaries of the editor. Expenses were absorbed but additional funds were sought through voluntary contributions of one dollar. In 1970, a 7" x 10" format was adopted and a colourful cover added. By 1975, printing was moved to Pole Printing in Forest, where it is still done. Since 1988, galley proofs are being returned to the authors for proofreading, French articles are included, a split page text has been adopted, and typesetting using WORDPERFECT 5.1 with laser printing has become standard. *Ontario Mathematics Gazette* is presently 44 pages and the ABACUS insert is 16 pages. It is printed three times a year and is sent to all OAME / AOEM members.

This centennial issue of the *Gazette* was set in Lithos and Times, composed in PageMaker, and output from LaserMaster high resolution laser printers by MARK III Text Management, a Division of School Services of Canada.

GAZETTE EDITORS OVER THE YEARS

Year	Editor	Guest Editors
1962-1965	R. Stanton	
1965-1968	J. Hogarth	D. Clarke
1968-1973	D. Crawford	T. Davidson
1973-1975	W. Eames	J. Griffith
1975-1978	A. Harris	
1978-1981	R. Smith	S. Pravica R. Connelly
1981-1983	H. Heinig	
1983-1986	R. Connelly	S. Pravica
1986	C. Gravelle	
1987	R. Connelly	
1988-1990	R. Smith	E. Wood B. Onslow
1990	B. Onslow	E. Wood

ABACUS EDITORS

- B. Rochar
- T. Brown
- A. Czempinski
- G. Jones
- B. Laframboise
- P. Lessard
- S. McIntyre
- S. McPhail
- L. Morrow
- R. Ripley
- S. Robinson
- G. Vervoort
- L. Wiggan
- C. Zellar
- C. Garnham
- A.M. Garnham

Your editors continually try to improve the journal to meet the needs of its readers as well as the needs of OAME /AOEM. Surveys invariably receive a very limited response. However, the few who do respond make excellent suggestions and appear to enjoy the articles that are offered. In April, 1990, your present editors sent the latest editions of *Ontario Mathematics Gazette* to several well-known mathematics educators. The covering letter outlined *Ontario Mathematics Gazette* circumstances and requested a critique. Before me are letters from D. Robitaille, T. Romberg, H. Tunis and J. Kilpatrick. Allow me to quote from one of the above: "I found it an interesting and high quality Journal, one of which any mathematics organization might be justifiably proud. I like the mix of articles ... the layout is clean and attractive ... I read the issue with interest and plan to use at least one of the articles in a course I am teaching this summer. The quality of the articles I read is every bit as high as that of M.T. and A.T. *(Editor: Mathematics Teacher and Arithmetic Teacher)* ... Best wishes to you in your largely unsung but very important work."

Any journal is only as good as the articles submitted by authors. Their topics are varied, well presented and represent classroom experiences, results of studies, as well as ideas on curriculum. Readers have enjoyed book reviews, solving math problems and their favourite authors. May the work of *Ontario Mathematics Gazette* continue into the next century.

(Editor: Bob has been Editor of the Gazette for two terms and has written numerous articles during the tenure of other editors.)

FROM THE ARCHIVES

... "WHERE ARE WE GOING? WHY ARE WE GOING THERE? AND HAVE WE GOT TO THE RIGHT PLACE EVEN IF WE GET THERE ... ?"

G.G. STEEL

TITLE OF AN ARTICLE FROM VOLUME 5, NUMBER 2, MARCH 1967

THE OATMP AND THE OAME: SOMETHING LOST?

DAVID ALEXANDER

The 100th anniversary of mathematics associations in Ontario is a time to reflect upon the changes that have occurred in those organizations over the years and how these changes have effected their influence on curriculum change.

My first experience with what was then the Ontario Association of Teachers of Mathematics and Physics was the annual meeting of 1959. I believe the total attendance was less than 100, but included were many of the department heads across the province, department chairs from three or four of the half dozen Ontario Universities of the day, Professor Petrie of the Ontario College of Education (the only secondary school teacher education institution), and the two Department of Education inspectors of mathematics. This combination of small numbers and attendance of persons from a variety of institutions resulted in discussions of provincial curriculum policy that do not occur in our much larger meetings of today.

The teachers who belonged to the organization were a very homogeneous group. Most were graduates of a Mathematics and Physics program of Queens, Western, Toronto, or McMaster, and had been taught at OCE by Professor Petrie, or one of his predecessors — Lougheed or Workman.

The courses they taught were almost exclusively those leading to the Grade 13 courses of Analytic Geometry, Trigonometry and Statics, and Senior Algebra. The "success" of a teacher (and a school) was to a large part measured by how well the students did on the grade 13 departmental examinations. The shared backgrounds and shared concerns led to very focused discussions on curriculum policy. While different points of view were expressed everyone understood the positions being taken, something that I think is difficult to achieve in our much more complicated educational system of today.

By the late sixties the direction of the system and of the organization had fundamentally changed. The baby boomers had entered secondary school and the number of schools had increased exponentially. The teachers recruited had come from a variety of sources. No longer was physics an assumed second teaching option. The grade 13 courses had changed from three to two (Mathematics A and Mathematics B) with little content in common with the former courses and the departmental examinations were being phased out. The "Robarts Plan" had fundamentally altered the focus of the secondary schools with much concern on the part of mathematics teachers as to what were appropriate content and teaching strategies for the non-university bound student.

The organization had responded to these changes in a variety of ways. It was now the Ontario Association of Teachers of Mathematics. The annual meeting was held in a hotel to accommodate the 500 or more in attendance and Don Fox had introduced the radical proposal of holding an annual meeting outside of Toronto in Ottawa! Programs included topics aimed at attracting elementary teachers as well as secondary. While the organization was providing an excellent forum for in-service development it had lost its role as a medium for various constituents to discuss curriculum development. Now the Ontario Mathematics Commission (OMC) rather than the OATM provided for discussion of curriculum by elementary teachers, secondary teachers, and representative of the CAATs, faculties of educations, university mathematics department, and the Ministry of Education.

In the early seventies it became clear that the two organizations could no longer go their separate ways. The increasing monopoly of OISE in research and development had drastically reduced the funds available to the OMC and the OMC was increasingly looking toward sponsoring in-service activities such as the Leadership Seminars rather than development activities which were now being undertaken by the Ministry. The result was the formation of the Ontario Association for Mathematics Education, formed in the hope that it could maintain the strengths of both the founding organizations. It has succeeded in many ways. The annual meetings continue to provide in-service opportunities among the best of their type in North America. The *Gazette* and the *Abacus* are excellent publications which seem to be better satisfying the varied needs of their readers. The formation of chapters seems to be providing the forum for local initiatives in in-service work and curriculum development to take place, if somewhat sporadically. Unfortunately, the organization has not found a way of recreating the atmosphere of excitement and influence that was part of the discussions of curriculum in the smaller OATMP and the OMC.

As we move toward the 21st century I believe that the Ontario mathematics education community must find a way once again to involve all the players in the discussion of curriculum change. Some of the matters for concern are listed below.

- How are the interests of mathematics education to be best served in the debate around teaching generic thinking skills rather than subject discipline skills?
- How should the mathematics curriculum be structured to best respond to the needs of all learners?
- How should the mathematics curriculum respond to the availability of graphic and symbolic manipulator calculators?

While the current council and committees of OAME / AOEM provide an excellent representation from different regions of the province they do not provide the mix of representation from elementary, secondary, and post-secondary institutions that I believe is necessary for these difficult questions to be adequately discussed. The Ministry of Education appears to be moving away from the model that preserved a voice for a subject specialist in ongoing curriculum policy development. If the OAME / AOEM does not speak for mathematics education who will?

Editor: Dave holds a unique position in Mathematics Education since he is involved with the Faculty of Education (U of T), and the Ministry. In each of these places he continues to amaze and impress people with his grasp of the issues, his capacity to juggle his heavy and important responsibilities, his approachability and his sense of humour. He was the charter president of OAME .

RECOLLECTIONS OF A JOYFUL RETIREE

J. R. MACLEAN

My experience as an educator spans parts of five decades, 1948 to 1983. This was a period of dramatic change in every aspect of the school system but particularly in mathematics. My 'reformation' began with a meeting in Penetanguishene with Mr. Frank Kinlin outlining changes in the courses of study known as I 12A and I 12B and ended with the struggle to produce the Ontario Assessment Instrument Pool for mathematics. The request of the editors of this special edition of the *Gazette* to prepare "a personal view of my time" is not easily met considering the dimness of my memory but their invitation was flattering enough to spark this effort.

Serious study of mathematics curricula began in the 1950's. Generously funded projects in the United States, notably the School Mathematics Study Group, the Madison Project, the Greater Cleveland Mathematics Program, and others, resulted in a rash of new textbooks that found their way into Ontario and influenced the reforms taking place here. These 'new' programs consisted of arithmetic generalized and formalized by the introduction of sets and emphasis on laws and properties. Precision of language, early introduction of inequalities, numeration systems with bases other than ten were characteristics common to most of the text series. Where geometry was studied it was relegated to a minor role associated with measurement and in the few cases where it received more attention the emphasis was still on the traditional preparation for Euclidean plane geometry. The authors of the new texts in Ontario adopted a similar philosophy although the topics generally appeared later and the approach to many of them was much more traditional. It was the Ontario Mathematics Commission and the Ontario Association of Teachers of Mathematics that drew attention to the reforms in Europe, particularly in England, which were in marked contrast to those of the USA. Being a member of both these organizations at the time I will outline the events which led to the uniquely Ontario mathematics program. As the first elementary school teacher to be invited to serve the Ontario Association of Teachers of Mathematics and Physics as councillor, it was with considerable anxiety that I set out from Barrie for my initial meeting. It was to be held in that sombre shrine of the S.S. (secondary schools) known as OCE. Fortunately another neophyte councillor from Barrie acted as mentor and guide, which served to reduce my apprehension considerably. His name was Jack LeSage. The year was 1964. The first meeting was not without trauma. The Council wanted to expand the membership of OATMP into the elementary schools and the program for the Easter Meeting in 1965 was to have elements that would entice teachers of younger children to attend. Jack and I were appointed as co-chairmen of the seminar committee. After an enormous amount of work; getting advice on topics, choosing presenters and recorders, arranging for equipment and supplies, even securing advance registration to keep the groups small and ensure that each teacher's preferred topic would be available, we learned an important lesson. Teachers of mathematics behave in a way that they wouldn't tolerate for their students. They forgot their chosen topics, ignored instructions and chose to join friends in whatever session was immediately appealing. So much for precise planning and preparation! The annual business meeting saw the acceptance of a new constitution which included dropping the "and Physics" from our title and the election of Mrs. Jean Leppard as the first president of the new OATM

The association's rather fragile ties to the Ontario Educational Association were stretched even further with the decision to move the annual meeting of OATM to the Inn on the Park for 1966. Despite dire prophecies of financial ruin from some councillors, the move was an unqualified success. Who could have foreseen that it would lead to regional conferences and the rotation of the annual meeting around the province? More people became involved and the Association's activities influenced more and more teachers. A larger membership meant a greater budget and better programs. Who can forget the dramatic presentation of Miss Edith Biggs at the 1987 Conference? Her performance resulted in the Department of Education arranging her secondment from England to Ontario for a period of four months beginning in September 1967.

As an Assistant Superintendent of Curriculum I was given the job of organizing what came to be known as the 'Biggs' Workshops' throughout Ontario. This was the first large scale in-service program jointly underwritten by the Department, school boards, and colleges and universities. It was also unique in that each board was represented by elementary and secondary school teachers, a department head, a principal, and a superintendent. In an attempt to provide leadership at the local level after the workshop ended panels of 'tutors' were trained to help in the workshop and to carry on the work. One of the 'stars' to emerge and give yeoman service to mathematics education in the province was the late Morley MacGregor. Another first in Ontario was the active participation of school book publishers in the program. This involvement of Department personnel, teacher educators, supervisory officials, principals, teachers from all divisions and publishers was intended to provide a broad range of support for individuals to undertake rather dramatic changes in classroom organization, teaching techniques, and choice of learning materials. Few can deny the impact this initiative has had on mathematics education. And to think that it's origins could be traced to the decision of OATM to move to the Inn on the Park from OCE.

In 1965 a sub committee of the Ontario Mathematics Commission began a study of various experimental programs for teaching mathematics to young children. Recognizing the futility of a spare time ad hoc approach the committee recommended the formation of summer study group to investigate mathematics teaching from kindergarten to grade six. With funding from the Ontario Curriculum Institute (the forerunner of OISE) the Math Commission appointed ten teachers to work during the summer at the Royal Military College in Kingston. With Joe Ryan as chairman and Dr. Andy Elliott as host and mentor we waded through literally hundreds of texts, workbooks, and other materials. There was a great deal of uniformity in the materials originating in the United States. In contrast, the materials from Europe, especially the Nuffield Project and the Schools Council in England, developed number concepts and operations through the use of concrete materials and visual patterns. Geometry occupied a major place in the program and

emphasized topological and non- metric concepts as well as symmetries and transformations. Acknowledging the great influence American publications have on Canada yet believing that the British approach offered more for Ontario students the committee produced a report which attempted a balance between the two viewpoints. Coinciding as it did with the publication of the Interim Revision Mathematics P1J1 by the Department of Education it marked the beginning of substantial changes in elementary school mathematics programs. More detailed and specific materials were subsequently developed by teams of teachers working out of OISE with Dr. Chester Carlow as project director and Eldon Pipher as field supervisor.

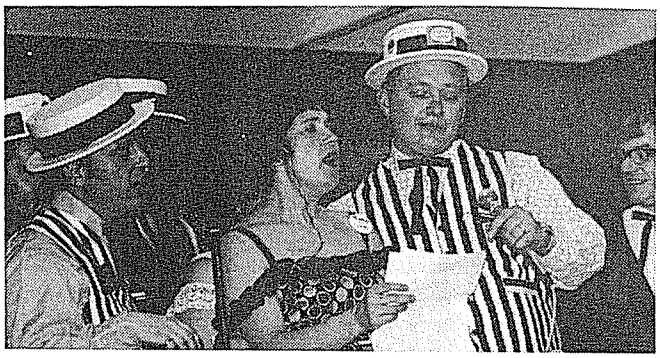
As educators in Ontario became more aware of the developments in England, especially in the Primary Schools, there was a dramatic increase in the number of Canadians studying overseas and in the number of British experts invited here. The working visits of people like Dr. Edith Biggs, Mrs. Dora Whittaker, Miss Doris Nash, Miss Eleanor Duckworth and others would lead one to believe that all British experts were female. Education in Ontario did benefit from the work of expatriate Brits like Dr. Andy Elliott, W. W. Sawyer, Dr. Griff Morgan, Dr. Doug Crawford, Alf Hanwell and others.

In January 1971 the P1J1 Curriculum Revision Committee was formed by the Ministry of Education to review existing guidelines, to examine the data collected throughout the province as a result of Cyclic Review activities, to study current research on child development for the purpose of recommending revisions to the Curriculum Guidelines for the Primary and Junior Divisions. It was the largest and most representative curriculum committee ever established by the Ministry. My job as chairman was to focus the enormous and diverse talents of over 60 educators and parents on the task of preparing a report that would reflect a consensus. To say that the outcome was controversial would be an understatement. The Ministry undertook a validation procedure never before applied to a committee report. The outcome was the publication of two documents: The Formative Years [outlining policy] and Education in the Primary and Junior Divisions [giving good advice]. Only the latter contained elements of the committee's recommendations. Those three years of work were both exhilarating and frustrating. They also provided the richest learning experience of my life.

My transfer from the Curriculum Branch to the newly expanded Research Branch in 1975 offered new challenges. Accountability was in vogue and the public was demanding evidence that "standards" were being maintained. Various schemes were put forward to collect data that would assure the Minister that teachers were doing a good job. It was our good fortune to be able to participate in two international assessment activities designed by the International Association for the Evaluation of Educational Achievement [IEA]. The Association had acquired the services of absolutely the top brains in educational evaluation in the entire world. Knowledge gained from those experiences led the Research Branch to embark on the project known as the Ontario Assessment Instrument Pool and to do provincial evaluations by testing a sample of students using instruments from the Pool. Removing the threat of a return to 'Departmentals' and making evaluation an integral part of the teaching-learning process and providing quality test instruments for the purpose was the most positive policy to come from the Ministry in a long time. The involvement of classroom teachers, supervisors, and experts in evaluation in the creation of banks of test instruments helped ensure that the items were relevant to the curriculum and actually measured the skills for which they were designed. As with any initiative of this magnitude mistakes were made and will continue to plague ongoing development. However as teachers and others gain experience in the process the product will get better and better.

It is immensely satisfying to read the latest NCTM publication Curriculum and Evaluation Standards for School Mathematics. This report, endorsed by an impressive list of professional organizations, embodies much of the work initiated by the OMC and OATM in 1964-65. Perhaps now that the same ideas can be imported they will gain wider acceptance. What goes around — comes around, although it may take twenty-five years.

Editor: In my view Jim was one of the leading curriculum thinkers of the mid-sixties and seventies. I figuratively sat at his feet for many years and am the better for it. He was the first President from the elementary panel (1968). People such as Jim MacLean and Joan Routledge convinced elementary educators that we had something to offer them and convinced the Association that elementary people had much to offer it.



FROM THE GALLERY: WALTER SOKOLUK AND FRIENDS

FROM THE ARCHIVES

PRESIDENT'S REPORT

WALTER SOKOLUK

... Lest the foregoing quotation be misleading, I hasten to add that Mr. H.E. Totton compiled an excellent manuscript from the records of the Association. In fact, after reading it I was so proud of the past accomplishments of our organization that I was moved to formulate the slogan which I shall recommend later to the incoming Executive Council. During this past year in office as President of the OATM, I have examined activities of the past as well as tried to forecast the future in an attempt to determine the best means of fulfilling our role for the current and future years. In this regard, I invite you to add your appreciation to my personal thanks to all members of the Executive Council for their support and sincere efforts during the past year. Our organization this year has required that they not only attend meetings in Toronto but assume a leadership role in their geographical region as well as to be active members of committees, in liaison with other organization or special projects ...

VOLUME 10, NUMBER 1, SEPTEMBER 1971

THE FATE OF THE ART: CENTENNIAL REMARKS ON THE MATHEMATICS EDUCATION ENTERPRISE IN ONTARIO

WILLIAM HIGGINSON

Anniversaries are invitations to reflection. Located, as we always are, between the immediacy of the recent past and the fog of the sometime future, anniversaries are arbitrarily, and usually mathematically, designated times to celebrate, to acknowledge, and to wonder. Temporal markers on the landscapes of lives and communities we can conceptualize them as peaks (or perhaps as plains or valleys) where we can conveniently pause to remember from whence we have come and to speculate when we might be bound. And hence, this gathering of anniversarial articles. The community is that of "Ontario Mathematics Educators", a collection of boundary contingencies — political/geographical, academic and social — which suffices to identify a moderately well-defined set. The anniversary is that august double-digital, the centenary.

Some 36,500 days ago one Fred F. Manley, wrote (OATMP History, 1962) from the Collegiate Institute on Jarvis Street in Toronto to a number of our predecessors:

Dear Sir, Several meetings of gentlemen in Toronto, who are interested in the formation of a Mathematical and Physical Association for the Province, have been held, and I am directed to forward you a Draft Constitution, and also to request you to become a member."

The Constitution in Question had nine sections of which the first was that:

"The Association shall be known as the Mathematical and Physical Association of Ontario",

The second was that:

"The objects of the Association shall be the promotion of the study and teaching of Mathematics and Physics"

The eighth was that:

"The annual fee shall be 50 cents".

The rest, as the saying goes, is (our) history.

And so, toward the invited indulgence — personal, and consciously subjective perspective on the current state of the community art. (These remarks are, for the most part, limited to the elementary and secondary levels of education. The tertiary level has many of the same problems of these areas plus a few quite knotty ones of its own.) But first, a note on process. Commenting publicly on one's colleagues, self or family is never a particularly comfortable task. Evaluation from without is invariably cleaner and almost always easier, but can very often miss the essence. The grand chimera of objectivity has been largely put to rest in recent decades by all but the most recalcitrant of neo-positivists, but going against the powerful folk-wisdom of maternal ("if you can't say something nice ... ") and bureaucratic ("Cover your vulnerabilities") advice is something that requires a certain screwing of one's courage to the sticking point. The most important issues in educational evaluation are often not considered explicitly. Indeed, in many cases one might suspect that examiners are not even conscious of them. They have to do with awareness of the context and purpose of evaluation, the sets of assumptions about what is worth examining and the ways in which one might get worthwhile insights about important educational goals. Assessment is a function of criteria and criteria are often rather more arbitrary than we might care to admit.

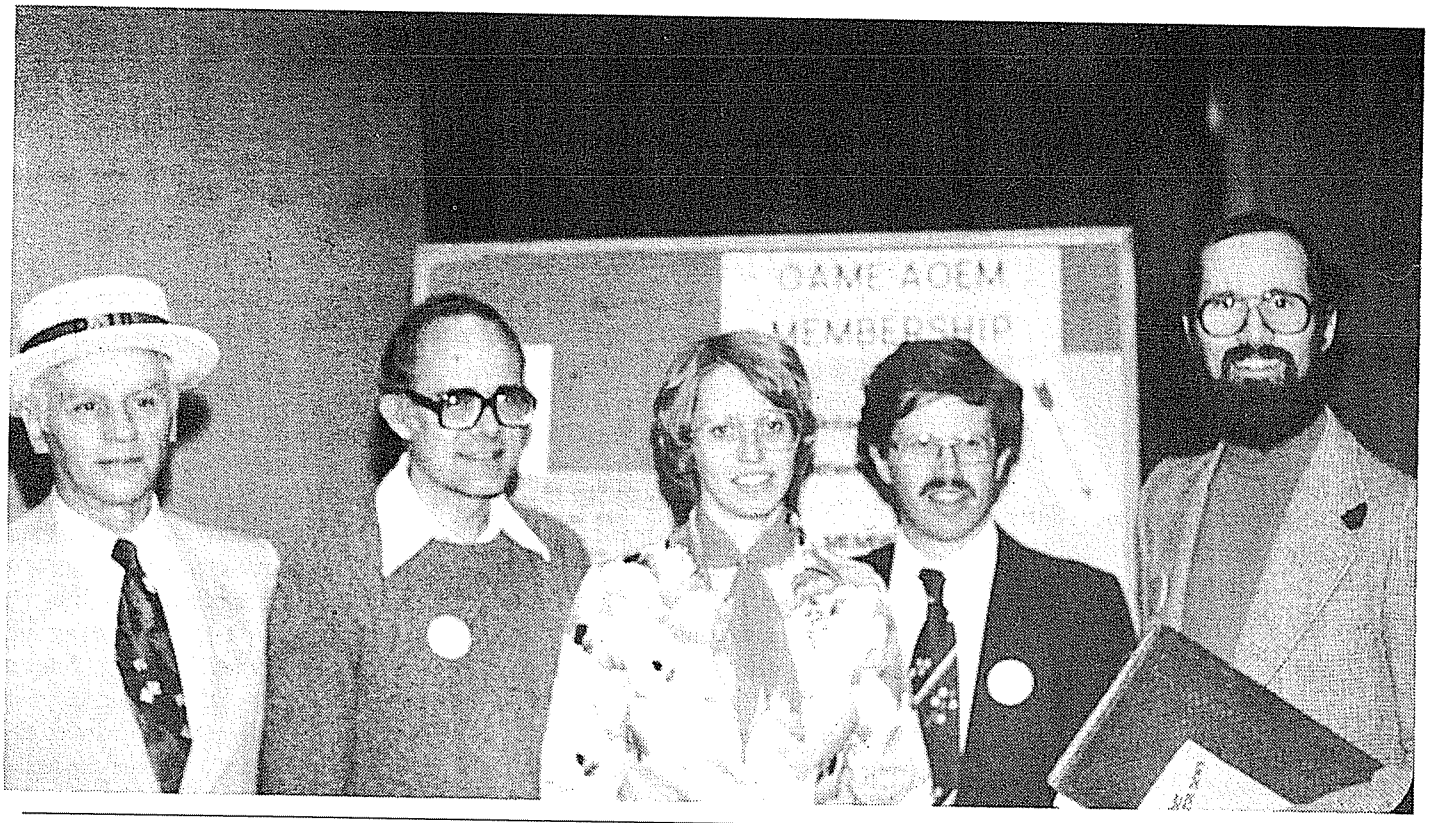
A BROAD PERSPECTIVE

With the reader suitably warned, we begin with a broad, geographical perspective. Compared to other political entities, be they provinces, states, or countries, what are the outstanding aspects of Ontario mathematics education? It seems likely that this is one of the most positive perspectives from which to consider our activities, for there are many features of our professional lives of which we can, justifiably, be proud. We would appear to have maintained a high level of public support and confidence. Our enrolments have stayed relatively high. We are very well paid and teaching as a career seems to be appealing to increasing numbers of young (and not so young) graduates as evidenced by the fierce competition for places in teacher education programmes. These are characteristics which jurisdictions in most other parts of the world can only envy. Administrators in the United States and Great Britain, for instance, have a much harder time finding qualified mathematics teachers than do their Ontario counterparts. Our best students and our strongest institutions have shown clear evidence that they can hold their own on national and international stages.

A CLOSER LOOK

Once we leave this broad-brush, distanced, relativistic perspective for a closer look at what is going on, however, the situation becomes fuzzier, and in many ways less positive. From any significant examination of the enterprise in question, three fundamental features of the Ontario mathematics education world would seem likely to emerge. These are: extreme variability in quality, sharp bimodality with respect to practice and problems between elementary and secondary levels, and the inadequacy of teacher education programmes. We begin with an elaboration of the third feature since it is a central contributor to the other two areas. Stated bluntly, Ontario teacher education practices in mathematics are at best satisfactory and at worst scandalously weak. The gap between the strengths of the Ontario system — in particular, the range and quality of resources to which it has access, the general quality of its teachers, and the priority, at least in theory, which it accords mathematics and the major structural weaknesses inherent in its feeble support for classroom teachers is extremely large. The best of a mediocre lot is probably the pre-service secondary level. Here the chance of finding a well-qualified and motivated candidate engaged in a course of intellectual and practical substance is fairly high.

The same cannot be said of his or her peers enrolled at the elementary level. Here the norm is more closely approximated by anxiety, brevity, fragmentation and incoherence and if one looks on the dark side, cynicism and raw incompetence. (While we have noted the frenzy for admittance to Primary-Junior B Ed programmes, it needs to be recognized that there is, on the part of an unfortunately large percentage of applicants, no corresponding enthusiasm for teaching mathematics.) That it is



FROM THE GALLERY: A MATHEMATICS-TEACHING FAMILY — PAUL SHERK, JOHN STOUFFER (MATH HEAD), BETTY SHERK (GRADE TWO TEACHER), JOHN SHERK (MATH TEACHER), AND BOB SHERK (MATH & PHYSICS TEACHER) — OAME ANNUAL CONFERENCE, 1980

possible in the last decade of the twentieth century to become qualified to teach elementary mathematics for up to forty years by surviving a twenty-hour course of dubious quality is not defensible by any set of criteria worthy of the name, be they pedagogical, economic, social, or philosophical. At the graduate level the situation is equally dismal. Ontario must be the largest educational jurisdiction in the eastern world where there is no opportunity for the vast majority of teachers to pursue directly a graduate programme in mathematics education. The contrasts with most American states, and provinces such as Alberta and Quebec are particularly pronounced in this area. The in-service domain has, until recently, been quite bleak as well. We can hope that the era of 'One-Day-Wonder' Workshops and 'Primary' and 'Junior' additional qualification courses with minimal mathematical content are over, but it is probably too early to come to that conclusion.

One could expect with some justification, given the size of the population in question, considerable diversity from classroom to classroom in the quality of mathematics instruction in the province. It is not hard to find examples of the whole gamut from 'outstanding', through 'good', 'satisfactory', and 'marginal' to 'unacceptable'. What most classical theoretical models might not suggest would be the very high percentage of teachers who would fall into the satisfactory and marginal categories. (As support of a type for this claim note our performance on recent large-scale evaluation projects both 'internal' (as for instance, McLean (1982) and the ongoing Provincial Reviews at several levels) and 'external' (McLean et al (1986); Lapointe et al (1989) *(Editor: Second International Mathematics Study)* where the "gentleperson's C" is about the strongest overall grade we could assign ourselves.)

There would seem to be two different sorts of reasons for this. At the elementary level the contributing factory is academic. The majority of primary and junior level teachers do not feel comfortable with mathematics and in most cases operate with a constrained and increasingly inappropriate conception of the nature of the discipline. At the secondary level technical competence is not so much of a problem as is a certain staleness and narrowness in methodology. Like jaded spouses or proprietors of uncompetitive businesses, too many secondary mathematics teachers seem to have lost touch with their clientele. The processes of yesteryear slog on unabated in small, isolated and ineffectual worlds dominated by texts and quizzes and frequent references to needing this for "future-purpose-x". As a community we acknowledge the fact that many students fail to cope in any effective manner with secondary school math (focusing, perhaps, on the relatively positive fact that this happens to fewer students and later than it does in most other parts of the world). What we tend to shy away from is the reality that for many of our "successful" students mathematics is a meaningless and not particularly pleasant set of techniques and rituals.

And to the extent that this analysis is valid, what might the future bring to our community? Can we look forward with any degree of realism to improvements in this situation? If so, what actions would assist this process? First we must acknowledge some quite powerful forces which will become increasingly strong in the near future. The most significant of these will be major changes in social and economic pat-

terns as the world grapples with the implications of the "world problematique" — environmental degradation, population pressures, climatic change and the like. To the extent that mathematics will be seen to be central to understanding and attempting to remedy these problems (and perhaps questioned for the role it played in getting us in to them in the first place) we are going to see even more public pressure for increased and improved mathematics education. (See, for instance, documents such as Corporate-Higher Education Forum (1991), Premier's Council (1990) and Mathematical Sciences Education Board (1990) which states on page 1, "What is required is a complete redesign of the content of school mathematics and the way it is taught".) Second, and closely related to the previous factor, we will see a demand from at least part of our constituency to reshape schooling in general and perhaps mathematics in particular to reflect the values, experiences and research findings of some two decades of research by feminist scholars (see, among others, Allen (1991), Bateson (1990) and Franklin (1990)). Third, as the tools of new information technology become even more powerful there will be increasing pressure to teach more for meaning (why and when) and less for technique (which these machines will be more than capable of carrying out).

THE NEXT DECADE

We will, therefore, not want for challenges in the next decade, let alone the next century. Organizations like OAME / AOEM and those individuals who contribute to its existence have a central leadership role to play. One task where we must show dramatic improvement is in learning from our best practitioners. We are not very good at celebrating excellence in our midst. While we may have many reservations about the practices of our southern cousins we must acknowledge their willingness to highlight excellence as they see it (the accuracy of their "excellence sensors" would seem to be questionable at times. The case of Jaime Escalante, the Los Angeles secondary mathematics teacher who became, within a period of about three years, the subject of a Hollywood movie (*Stand and Deliver*), a book (*Escalante: The Best Teacher in America*) and a video series ("Futures"), is only the most obvious example. Even in those few cases where we have recognized exemplary practice (as for instance with the University of Waterloo's very admirable Descartes Medals and OAME's own Father Faught award and the K.D. Fryer award) we have not made it at all easy for other teachers to learn from those examples. And when we begin to look for excellence in our midst it is surprising to find how often if appears. Take for example the cases of two of the best contemporary popularizers of mathematical ideas. Ivars Peterson of *Science News* and the author of *Islands of Truth: A Mathematical Mystery Cruise* (1990) is a University of Toronto graduate and a former Ontario secondary school teacher of mathematics and science. A.K. Dewdney (1990), of the University of Western Ontario has been a regular columnist writing about computing and mathematics in *Scientific American* for more than five years.

It is often the case that periods of economic difficulty are ones where human values and creativity become particularly highly valued. We might hope that this will be the case in the next few years for there seems little doubt at the time of writing (late 1990) that we are set for a period of economic hardship of indeterminate duration. We have many strong dimensions to our community and numerous initiatives which seem to be on the right track (as, for instance, the belated but none-the-less welcome series of additional qualification mathematics courses at the primary-junior level and the very promising experiments with group learning in a number of schools). The prospect of learning from and with each other in an attempt to grapple with the very significant problems which face us as a species is one which should excite and hopefully will invite all of us.

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Editor: Bill is one of the thinkers in North American Mathematics Education today. When Bill speaks, we listen!

REFLECTIONS ON THE HUNDREDTH ANNIVERSARY OF THE FIRST ONTARIO MATHEMATICS ASSOCIATION

JOHN C. EGSGARD

It was in the fall of 1949 that I first heard about the OATMP — the Ontario Association of Teachers of Mathematics and Physics. The Association was 58 years old. I was at the Ontario College of Education, now called the Faculty of Education of the U of T. All mathematics specialists were given free membership in OATMP during their OCE year. Meetings of the OATMP took place during the Easter vacation week in room 8 at University College of the University of Toronto. In fact, all subject area groups met during that week under the auspices of the Ontario Educational Association. (Teachers at that time did not have enough money to take vacations during the Easter break.) This room was well known to me as I took several mathematics classes in it as an undergraduate. It was ten years later in the year 1959, while I was teaching at St. Michael's College School, that Professor Petrie of OCE invited me to become a member of the council of OATMP. At my first meeting of the council a volunteer was needed to chair the local arrangements committee for the 21st summer meeting of the NCTM which was to be held at the U of T in August of 1961. The other members of the council "volunteered" me. This was a big undertaking for the OATMP as the NCTM had never before met outside the USA. (Incidentally, the registration fee was $1. The cost for a dorm room was $4, and for a room at the Park Plaza $10.) We had an excellent meeting due largely to the expertise of the chairs of the various committees. These chairs were heads of the mathematics departments of the collegiates in Toronto or of private schools. Among these teachers were Bill Darbyshire, Jack McKnight, Jean Leppard, John Del Grande, and Norm Sharp. Jim Gates, the present Executive Directors of the NCTM, worked for the NCTM for his first time at this Toronto meeting. The speaker at the banquet was John Robarts, the Minister of Education. The success of this meeting led to my involvement in the NCTM with an appointment to their Meetings Committee. This appointment was followed by my membership on other NCTM committees, then by my election to the Board of Directors in 1965 and eventually by my election as NCTM president for the period 1974 to 1976.

Besides the 21st summer meeting of the NCTM, OAME / AOEM has sponsored three other NCTM meetings. The first meeting was an area meeting in the fall of 1973 in Toronto. The second was the 60th annual meeting in April 1982, also in Toronto.

Both these meetings were under the chairmanship of Dave Alexander. The third meeting, chaired by Bob Robinson and George Knill, took place in May, 1990 in Hamilton.

The Ontario mathematics teachers organizations have always had a close relationship with the NCTM. Three of our members, Don Hazell, Joan Routledge, and Bob Robinson, have been chosen as the Canadian liaison with NCTM through membership on the Committee on Affiliated Groups and its successor. Bob Robinson has also been a member of the NCTM Board of Directors. Among others who have served on NCTM committees are Dave Alexander and Ralph Connelly. Several members have written for NCTM publications while others have spoken at NCTM meetings throughout Canada and the United States. For a few years George Knill produced a section in the Mathematics Teacher on applications in mathematics.

In 1959, Howard Mulligan persuaded the OTF to finance a meeting of mathematics educators to see what changes might be made in the Ontario mathematics curriculum. About 30 of us met at Lakefield School in August 1959. That meeting was the beginning of the reform in the mathematics curriculum. The formation of the Ontario Mathematics Commission was a result of this meeting. After that meeting many teachers wrote experimental material and/or taught this material. I can remember the frequent all day Saturday meetings during which we discussed ways of improving the material. The dedication of the teachers involved towards mathematics education was exceptional. Eventually the Ministry adopted the curriculum recommended by OMC. Publishers were anxious to produce the experimental material as commercial texts. The experimental material author group led by John Coleman wanted that group to act anonymously like an Ontario Bourbaki group with all royalties going back into mathematics education. But this idea did not find favour with the OMC because some members feared that teachers would buy the "Bourbaki" books because of this arrangement even if other texts were superior texts.

In the year 1962 I was elected president of the OATMP. I can still recall the council meetings where our major work involved making decisions about the next annual meeting. By this time OATMP meetings had switched from room 8 of UC to a large room at OCE. I have fond memories of Edward Kasner telling us how his nine year old nephew invented the name googol for a specific very large number; of Max Beberman explaining the difference between a number and a numeral for the new math; of Morris Kline warning us of the dangers inherent in the new math because of its abstract nature; of W.W. Sawyer explaining how to help children understand the meaning of the term "variable" by solving equations using a bag containing an unknown number of marbles.

In 1964, the OATMP dropped its reference to physics and became the Ontario Association of Teachers of Mathematics.

A major move for the OATM took place in 1966 under the presidency of Jean Leppard when the annual meeting moved from OCE to a hotel — the Inn on the Park. Jean had a great style in running the council meetings. Instead of asking for volunteers to do tasks she decided ahead of time who would be best for a certain job. Then she asked that person to volunteer. No one refused.

It was during Jean's presidency that we celebrated the 75th anniversary of the first meeting of an Ontario mathematics teachers association. The NCTM Board, of which I was a member, was meeting at the same time in New York City. The NCTM was so impressed by the age of our Association that the Board sent me from New York to Toronto to give congratulations to our Association at the Diamond Anniversary banquet. Incidentally, it was at this meeting that I heard Mary Dolciani



FROM THE GALLERY: PAUL SHERK, JOHN DEL GRANDE, LORNA MORROW, JOHN EGSGARD, LYNN EGSGARD, DAVE ALEXANDER

speak for the first time. She was a wonderfully inspiring speaker who entertained us both mathematically and humorously with her mixture of Irish brogue and Italian style.

In the late 1960's the OATM, along with the other provincial mathematics teachers organizations, formed a national organization of mathematics teachers called the Canadian Association of Mathematics Teachers (CAMT). I was the first president. In its first year CAMT, under the leadership of Frank Ebos, held a national meeting in Toronto on the use of TV in the mathematics classroom. Unfortunately CAMT lasted only a few years because provincial organizations were unwilling to commit the funds necessary to hold cross Canada meetings. Organizations found it less expensive and easier to send representatives to NCTM meetings in the USA.

I had been inactive in the OATM for a few years when in 1972 the OATM and the OMC decided to merge into one organization to be called the Ontario Association for Mathematics Education (OAME). I had left St. Michael's College School in Toronto and taken a position with Bob Mitchell at Twin Lakes Secondary School in Orillia. Don Attridge asked several past presidents of OATM and OMC to run for office in the new organization. At the first meeting of OAME in the spring of 1973 in North Bay, Dave Alexander was elected president while I was chosen as president-elect. During the formation years we all relied heavily on M and M, Mona and Morley MacGregor. Until Morley's death in the spring of 1990, he and Mona were the backbones of the OAME.

In its 18 years of existence the OAME / AOEM, like its several predecessors, has been a major force in mathematics education in Ontario. The total influence of all of these organizations has stretched throughout 100 years. It is the magnificent achievement of these organizations that we are celebrating in this year 1991. I have been a part of this organization for 42 years. I am grateful for all of the wonderful things our organization has given to me. May it flourish for another century!

Editor: As you can tell from John's reflections, he wasn't born yesterday! However he continues to bring the same sense of talent, commitment and enthusiasm that you see reflected here to his present classes. He is an inspiration to all who know him.

SCARBOROUGH ASSOCIATION FOR MATHEMATICS EDUCATION: A SHORT HISTORY

STEVE MARTIN

On April 29, 1981, Jim Fencott, the coordinator of Mathematics, convened a meeting of interested Scarborough mathematics teachers (elementary and secondary) to explore the idea of forming a mathematics association in Scarborough. The new chapter would replace the Scarborough — East York Mathematics Association (SEYMA) which disbanded in January, 1981. At the meeting of the steering committee, the decision was made to proceed with an application for chapter status at the OAME / AOEM Annual Meeting in Sarnia on May 8, 1981. The steering committee also prepared a survey which was sent to Scarborough teachers to determine the level of interest and the topics that teachers would be interested in exploring.

A memo from Jim Fencott dated July 8, 1981 outlined the first slate of officers for the new chapter. The decision was made during the first year to hold a mini-conference in the fall and to organize P.A. Day programs in February in co-operation with the Scarborough Board of Education. This is a tradition which has continued to the present.

Our first Mini-Conference was held on December 1, 1981 from 4:00 to 7:30 PM at Tabor Park Vocational School in Scarborough. Along with a series of workshops for teachers from primary to senior, dinner was provided followed by an after-dinner address by Alex Norrie.

The organization has continued to grow through the years from the 16-member steering committee in the beginning to the 175-250 members who attend the mini-conferences.



FROM THE GALLERY: PAUL ZOLIS

The highlight of our association was the successful 1987 Annual OAME / AOEM Conference held at Centennial College in Scarborough. Our intriguing theme "Of Mice & Math" captured the imagination of all who attended.

Unfortunately, our founder, Jim Fencott passed away in January 1987 and was unable to witness the fruition of his efforts in founding our chapter. The conference was dedicated to his memory. His memory also lives on in the "Jim Fencott Award" which is presented annually to a graduating student in Scarborough who has made a significant improvement in mathematics achievement.

SAME HAS PROSPERED UNDER THE LEADERSHIP OF THE FOLLOWING PRESIDENTS

Year	President
1981-82	Jeanette Jones
1982-84	Iris Brown
1984-86	Steve Martin
1986-88	Arnie Carefoote
1988-90	Shirley Fairfield
1990-91	Bill Haehnel

As we enter our second decade, we look forward with continued optimism to our efforts to stimulate interest in mathematics and to promote the practice of good mathematics teaching techniques.

A HISTORY OF THE GOLDEN SECTION

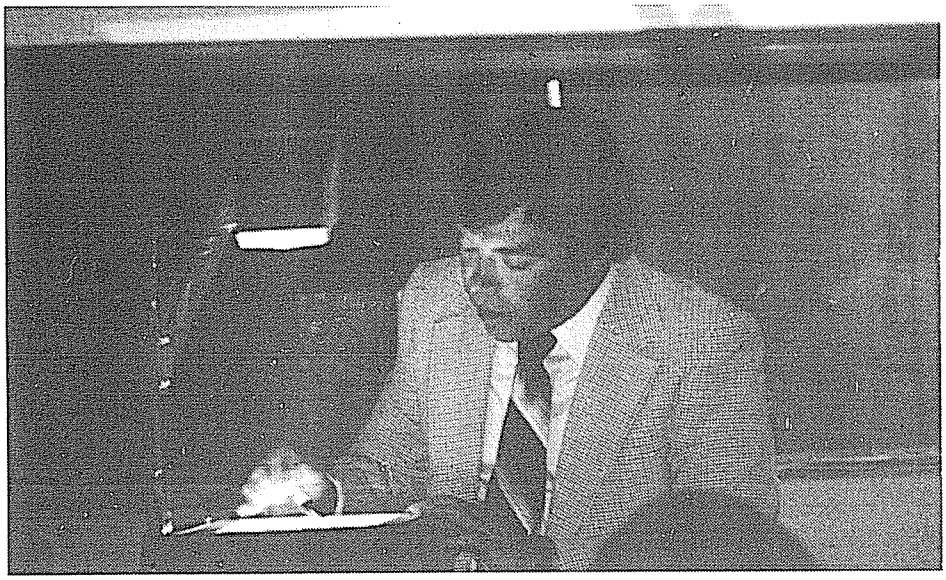
DON ROBERTS

Prior to OAME's birth in North Bay, the Mathematics Heads in the Hamilton, Niagara, Norfolk, Haldimand area along with staff at the local Ministry of Education Office, had an affiliation that planned and ran seminars for teachers in our different regions. We shared the expertise we had in our local boards. When Chapters were initiated as part of the OAME organization structure, the pre-existing group gave itself a new name. Geographically we were part of the Golden Horseshoe, so it was obvious (geometrically) that our new name would be the Golden Section!

At least once a year (sometimes more often), mathematics seminars are held in the region for our teachers. There is usually something planned for both elementary and secondary people. The seminars in the first part of the late afternoon are followed by a catered dinner that is informal and allows for a sharing of ideas among individuals. In the past, except when the annual OAME / AOEM conference is hosted, the Golden Section has not asked for money from OAME / AOEM's general fund. Each individual programme is financed by the fee charged for that particular event. The speakers for our sessions have come from across the province. The increased networking provided by our affiliation as a chapter of OAME / AOEM has paid off well over the years and we thank those people that have come out of their way to be with us.

We have served the province well by hosting the Annual OAME / AOEM Conference in St. Catharines, Niagara Falls and Hamilton. Elementary, secondary, post secondary personnel have worked together along with their various school boards to help us achieve our local and provincial objectives. Our Chapter representatives to the OAME / AOEM Council have contributed their time and efforts to OAME / AOEM projects. In addition, many Golden Section members have been on council and served in executive positions.

Our organizational structure is not as formal as some other Chapters but there has always been a core of people from each division that have made themselves available and provided leadership. If we can continue as in the past to keep open the lines of communication between our own different divisions, the OAME/AOEM Council, and other chapters, the staff at the Ministry of Education and our Federations, then we will be able to serve each other well in the future.



FROM THE GALLERY: GEORGE KNILL

MCMASTER SCHOLARSHIP

Following the Hamilton Annual Conference (1978) an arrangement was made by OAME / AOEM to set aside $3000 to be given in scholarship to McMaster University. McMaster set up the requirements needed to be an applicant for this scholarship.

THE WINNERS

YEAR	WINNER
▶ 1980	George Tolomiczenki, Etobicoke Collegiate Institute. Awarded by reversion to Hingnam Seto, Harbord. Collegiate Institute, Toronto.
▶ 1981	Stephen Worotynec, University of Toronto Schools
▶ 1982	Todd Cardno, Cardinal Newman High School, Hamilton. Awarded by reversion to Jimmy Lam, Columbia Secondary School, Hamilton.
▶ 1983	Antony Davies, Nelson High School, Burlington. Awarded by reversion to Tracy Gardiner Waterford District High School, Waterford.
▶ 1984	Peter Cheong and Kam Cheong. (School and Town not Mentioned!)

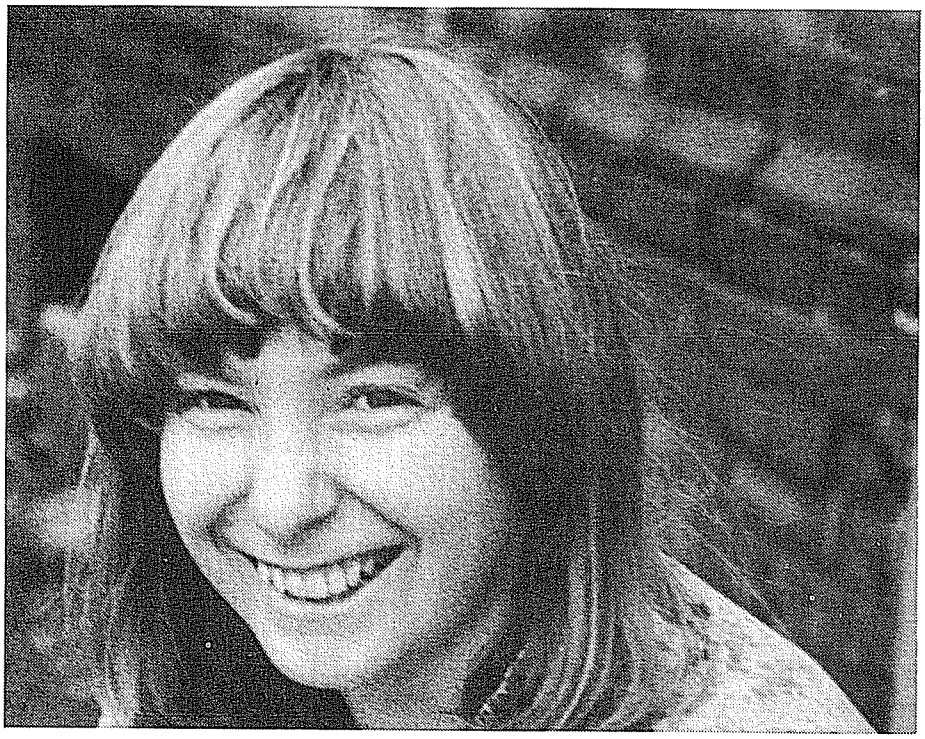
CREDIT HUMBER ASSOCIATION FOR MATHEMATICS PROMOTION

LIS HENRY

During 1984, Bob Jones discussed with Alex Norrie and Claire Zeller the fact that there was no local chapter of OAME in such a large area. There was no forum for K-13 math teachers to share their ideas and expertise. Thus the concept of the Peel Association for Mathematics Education had been initiated!

In June, 1985, the first meeting was held at Gordon Graydon Memorial Secondary School to investigate the formation of a local chapter. Ten people, including secondary personnel and elementary resource people, attended. Following the meeting Bob Jones wrote to Morley MacGregor to request the recognition of PAME, the Peel Association for Mathematics Education. However he responded that it was necessary to wait until OAME '86.

Informal meetings were held in 1985 with Bob Jones, secondary, and Helen Baker, elementary, as the executive. A mini-conference was planned and held at Brampton Centennial Secondary School for a February Professional Development Day. At that conference 42 people became members of PAME. In March 1985 John Hawkins designed a logo and a new executive was formed consisting of Bob Jones, Helen Baker, Janet Mitchell and Jeff Irvine. PAME became officially recognized at OAME '86. Our first official event was held on May 21 at Sheridan College. Following a wine and cheese social, Brendan Kelly spoke on "Promoting Excellence in Mathematics K-13". PAME kept growing and, as of June, 1986, there were 97 members.



FROM THE GALLERY: MARY LOU KESTELL

PAME's first mini-conference, entitled "Mathfest", was held October 20, 1986. 190 people attended, participating in workshops, dinner and a publishers display. Mathfest has since become an annual event enjoyed by many, along with our spring events, math contests for grades 8-11 and the elementary problem solving package. By November 1986 the membership was up to 123.

During the fall of 1988, PAME was joined by Chris Dearling of Halton, Jeff Martin of Etobicoke and Walter Curran of Dufferin-Peel. It then became necessary to change the name of the chapter as PAME was no longer applicable. After a contest in the spring of 1989 the Peel Association for Mathematics Education became the Credit Humber Association for Mathematics Promotion (CHAMP).

A decision was made then to request sponsorship of OAME / AOEM '91 and a presentation was made to council by Donna Del Re and Marg Warren. The CHAMP proposal was accepted with Bob Jones and Jeff Martin becoming the co-chairs. During the fall of 1990 an impressive new logo was designed by Halton for CHAMP, a growing successful chapter for math teachers K-13.



FROM THE GALLERY: ALEX NORRIE

THE FOUR YORKS MATHEMATICS ASSOCIATION

MIRIAM PEARLMAN

The roots of the Four Yorks Mathematics Association (Y4MA) were planted by OAME / AOEM members in North York and York Region who felt the need to have a local chapter. North York, York Region and York Region Roman Catholic Separate became likely partners, partly because of networks that were already established, and partly because of their geographic proximity. York University seemed like a partner that could make a unique contribution and already had active OAME / AOEM members on staff who were interested in showing leadership in the teaching and learning of mathematics.

Invitations were sent out to the coordinators of the three Boards and a professor at the university to meet with two elementary and two secondary teachers. This inaugural meeting was held on June 4, 1987 at Peckham Centre in North York. The inaugural group was led by J. Symington and Don Attridge (Mathematics Consultants, York Region) and Bill Nimigon (Program Leader), and Hugh Beattie (Mathematics Coordinator, later replaced by John Havercroft) of North York. The energy present in this meeting was the driving force behind the agreement to pursue the vision of forming a new chapter that would represent the four new partners and show leadership in mathematics education. In September, 1987, the group reconvened with some additional staff who expressed full commitment to go ahead and plan an inaugural reception.

The inaugural reception of Y4MA was a wine and cheese held at York University in November 19, 1987 with guest speaker Brendan Kelly. Each of the representatives from the four jurisdictions were encouraged to invite people who would be interested in not only the evening's events but also in joining a new local chapter of OAME/AOEM. Since that successful first event, the chapter has continued to grow and succeed. The simple reason for its success is twofold: strong and talented leadership and a hunger for professional development opportunities in each of the four jurisdictions.



FROM THE GALLERY: NEIL WILLIAMSON, J. SYMINGTON, AND FRIENDS

By the fall of 1989, a full council was formally in place. The executive consisted of Bill Nimigon (President, North York), Jan Scully (President-elect, York Region), J. Symington (Past President, York Region), Mary Lynn Jeffries (Treasurer, York Separate), Bob McRoberts (Secretary, York Region). Each of the four jurisdictions have two councillors. North York was represented by Miriam Pearlman and Jackie Marrocco, York Region by John Havercroft and Margaret Roberts, York Separate by Paul Nichol and York University by Pat Rogers and Olive Fullerton. In 1990, the current executive consists of Jan Scully (President), Miram Pearlman (President-elect), Bill Nimigon (Past President), Mary Lynn Jeffries (Treasurer), Jackie Marrocco (Secretary). The councillors at present are Olive Fullerton (York University), Dave Simpson and Phil Feldman (North York), John Havercroft and Margaret Roberts (York Region) and Paul Nichol (York Separate). In addition, by the fall of 1989, committees had been formed to carry out specified tasks: write a constitution, plan a membership drive, create a newsletter, and plan a conference.

The newly formed chapter was energetic and enthusiastic. An annual Fall Mini-Conference was initiated on October 4, 1988 with the theme Problem Solving. The following years had a Mini-Conference with workshops and a featured keynote speaker: on November 14, 1989, with theme *Mathematical Investigations* and keynote speaker Dr. Pat Rogers, York University and on November 13, 1990, with theme *New Directions in Mathematics* and keynote speaker Veronica Lacey, the Director of the North York Board of Education.

The annual conference was a success from the very first. Each year the evening has been wait-listed with maximum capacity of 250 registrants attending the dinner and workshops. An annual spring event and social has been held with guest speakers including Mary Lou Kestell, President of OAME / AOEM and Ron Lancaster, award winning teacher. Special events are being planned for the coming winter, including an evening dedicated to York University Faculty of Education student teachers.

The membership has grown to include approximately 200 registered members. Membership in the parent organization is encouraged by having teachers join the parent OAME / AOEM and then identifying Y4MA as the chapter with which they wish to be affiliated. The membership fees are paid for joining the parent organization. Y4MA is committed to supporting OAME / AOEM in every way possible including sharing its aims and objectives.

The chapter looks forward to growing ever larger and being able to reach more and more teachers of mathematics. It also looks forward to supporting OAME / AOEM activities including exploring the possibility of hosting an Annual OAME / AOEM Conference in the future. There is wonderful expertise and leadership in these four jurisdictions among the people that give so generously of their time and energy. The driving force is their mutual vision of excellence in Mathematics Education.

A BRIEF HISTORY OF NWOAME

MARILYN HURRELL

Mathematics and Science teachers in Northwestern Ontario (the area of Ontario bounded on the East by Sault Ste. Marie and on the West by the Manitoba border) have had association with their counterparts in the rest of the province for many years. As well as I can trace back, persons such as Bill and Martha Gartrell, Len Clendenning, Gerry Vervoort, Brooks Rapley, among others, belonged to the OATMP, and travelled to meetings in the 50's and 60's.

In the early 1970's Gerry Vervoort, Brooks Rapley and the mathematics staff of the Lakehead College of education organized a well-attended Mathematics Conference. In 1987 a local group of teachers organized "Math Northwest", the first conference for Math teachers from across NWO. It was held at the Valhalla Inn in Thunder Bay and such a success that a need was evident for an association for Mathematics teachers, centred in this part of the Province. Joe Hall, on behalf of the Steering committee for NWOAME, in February, 1988, invited all educational institutions and Boards across NWO to support such an Association. Other members of the steering committee included Russ Garrett, Gerry Vervoort and Brooks Rapley.

Response was favourable and on December 3, 1988, the First Annual NWOAME Conference was held at Lakehead University. Fifty-one Mathematics teachers attended Saturday sessions. Morley and Mona MacGregor travelled to Thunder Bay for this occasion to represent OAME. Morley was very supportive of our effort, both morally and financially. We in NWOAME remember him fondly.

The first Executive consisted of Chairperson, Marilyn Hurrell, Vice-Chair, Bill Otto, and Secretary-Treasurer, Greg Giddings. Wayne Fletcher, Carolyn Carlson, Lakehead Board of Education, Gerry Vervoort, Lakehead University and Doug Cole, Confederation College, rounded out the Executive. Communication is obviously very important since we deal with such a large area, so we elected some councillors to help us "spread the word" across NWO. These included Paul Sveinson, Fort Frances, Chris Frank and David Ross, Kenora, Barry Sampson, Dryden, Dale Cooper and Holly Stortini, east to Marathon, and Bill McKay, Geraldton.

NWOAME '89 and '90 have been held in September at Confederation College for the past two years. The Executive remains largely unchanged, but for a new Treasurer, Doug Martin, and Councillors Wilf Durham and Linda Horton. These Conferences have been extended to Friday afternoon, dinner and Saturday morning sessions. About 100 teachers, both elementary and secondary from east and west as well as in-town, have attended. This past year, several of our speakers were from OAME.

NWOAME submitted materials for the *Gazette*/Abacus for December 1990.

Although we are a relatively young Association, I feel that the past three years have done a great deal to introduce teachers in NWO to OAME, and perhaps more importantly, to let OAME and Southern Ontario to know that there is a very active Mathematics community in NWO!



FROM THE GALLERY: MORLEY MACGREGOR

FROM THE ARCHIVES

EDITORIAL

RALPH STANTON

... And now to change the subject for a while. You have probably noticed that there is now a change on our front cover. The Samuel Beatty Fund has been added to the list of sponsors of the *Ontario Mathematics Gazette*...

VOLUME 2, NUMBER 3, DECEMBER 1963

WESTERN ONTARIO MATHEMATICS ASSOCIATION: A BRIEF HISTORY OF ITS BRIEF HISTORY

TOM GRIFFITHS

The geographic regions surrounding the cities of London and Sarnia was served by the original South Western Ontario Mathematics Association in the 1970's, but with the demise of that organization there was no chapter of OAME / AOEM in the region. Many of the educators involved in mathematics became members of GVMA, and later the new SWOAME when it was formed in 1987-88.

In 1989, the organizing group responsible for the fall mathematics conference at Althouse College decided that it was time the area was served by a chapter of OAME / AOEM and on March 2, 1990, a group of interested people gathered at Ron Reesor's house to get the organization under-way. A pro tem executive was elected comprising Tom Griffiths, president; Wally Webster, vice-president; Kay Appelby, treasurer; Ron Reesor, secretary; Rudy Neufeld, communications and computers. Others present at this meeting were George Allan, John Clarke, Mike Dawes, Doug Edge, Mike Elsie, Ele Gibling, Duncan Isaksson, Barb Kaiser, Murray Kucherawy, Ken Mason, Mike Mitchell, Bob Newman, Barry Onslow, Allan Pitman, Janine Pitman, Walker Schofield and Peter Weygang. This group represented most areas of mathematics education in the region, both geographically and by educational interest (elementary, secondary, university, college of education, community college, administration and ministry).

It was decided that the main role of the organization was communication. The major methods used to serve this objective are a newsletter, mail network, computer network, conferences and other meetings. It was decided that a fall conference would be the annual gathering of the organization. For the initial year however, since the Althouse College group were already organizing a conference in October, it was decided to hold an inaugural dinner in November and a spring conference in April.



FROM THE GALLERY: BOB SMITH, KEN CARSON, BROCK RACHAR — LONDON 1975

From the first meeting in April, monthly meetings have been held to effect the organization of the dinner and conference.

Ele Gibling and Janine Pitman took the responsibility for organizing the inaugural dinner, which was held on Tuesday, November 13 at the London Art Gallery. The guest speaker was Dr. Robert Thirsk, one of the Canadian astronauts. The occasion was a very successful gathering, with nearly 100 attending and sharing a delightful evening.

At the time of writing this history, the organization of the spring conference is underway and planned for April 4th. The fall conference in 1991 will be held at Althouse College and will be organized in co-operation with the Althouse mathematics department, all of for whom are involved in WOMA. Also at time of writing our membership has just surpassed 100 (the key number for this centennial issue in this centennial year of mathematics associations in Ontario).

THE MORLEY MACGREGOR MEMORIAL AWARD

This annual award, to commence in 1991, is administered by OAME / AOEM but the setting of criteria, naming award winner, etc., are to be responsibility of WOMA. The award pays the registration and banquet fee for a "Junior to 8 teacher in Lambton county."

FROM THE ARCHIVES

EDITORIAL

RALPH STANTON

... This first issue of the *Ontario Mathematics Gazette* is made possible through the financial assistance of the Ontario Mathematics Commission (through its Advisory Committee on Research and Publications) and the Ontario Association of Teachers of Mathematics and Physics. Indeed, the *Gazette* includes among its functions those previously performed by the OAMP Newsletter; it can be considered as a successor, in amplified form, of the Newsletter.

Among the aims of the *Gazette* will be that of increasing the liaison between secondary school teachers and students on the one hand and university professors on the other hand. It is hoped that portions of the *Gazette* will attract student readers; perhaps this aim could best be achieved if mathematics teachers would influence their boards to buy bulk lots of future Gazettes, since most boards probably have funds set aside for purchase of educational literature and materials...

VOLUME 1, NUMBER 1, FEBRUARY 1962

HOW IT ALL STARTED

Collegiate Institute, Jarvis St.

Toronto, July 2nd, 1891.

Dear Sir,

Several meetings of gentlemen in Toronto, who are interested in the formation of a Mathematical and Physical Association for the Province, have been held, and I am directed to forward you a Draft Constitution, and also to request you to become a member.

It is intended that this Association shall hold its first meeting and complete its organization at the same time and place as the Ontario Teachers' Association.

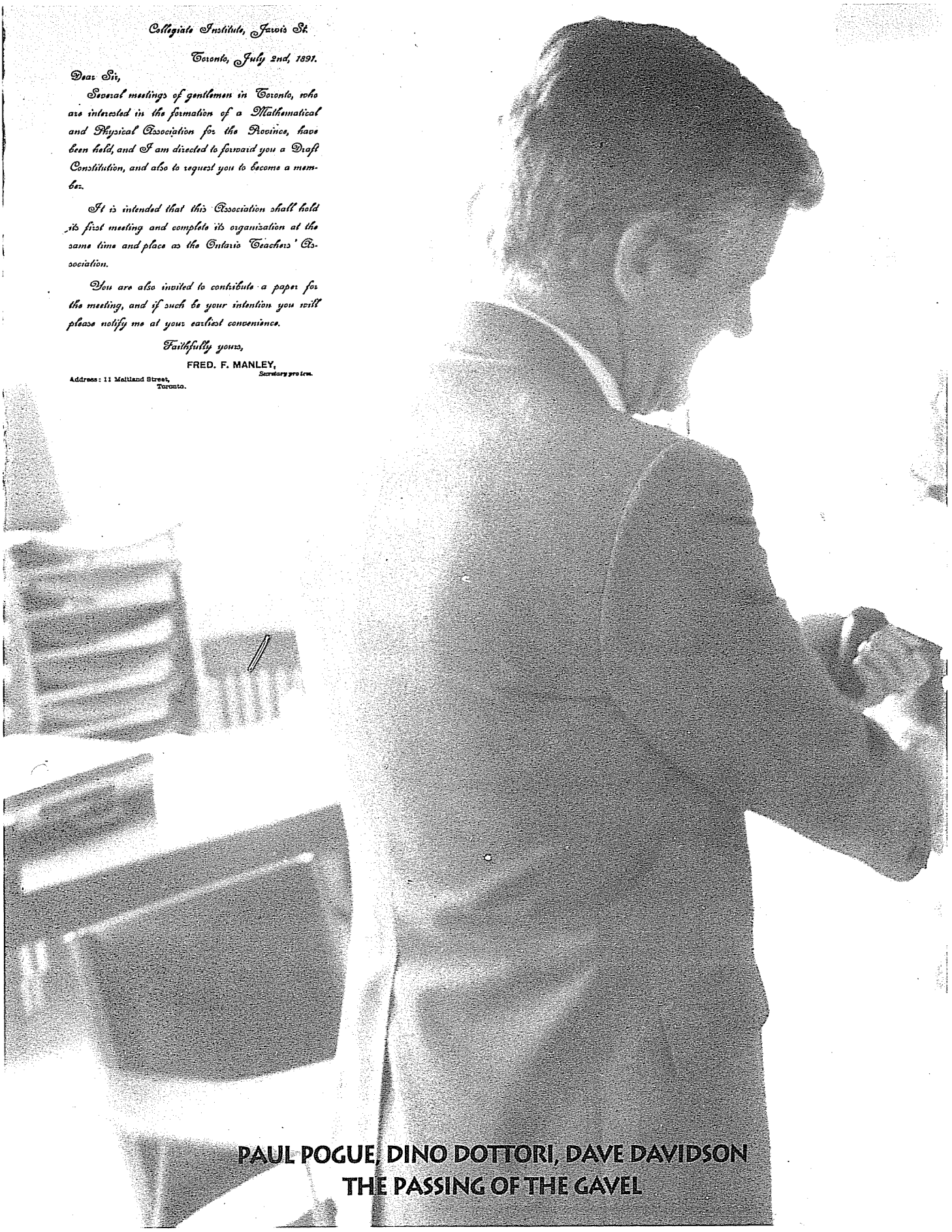
You are also invited to contribute a paper for the meeting, and if such be your intention you will please notify me at your earliest convenience.

Faithfully yours,

FRED. F. MANLEY,

Secretary pro tem.

Address : 11 Maitland Street,
Toronto.



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FRED. F. MANLEY,
Secretary pro tem.

Address: 11 Maitland Street, Toronto.

PAUL POGUE, DINO DOTTORI, DAVE DAVIDSON
THE PASSING OF THE GAVEL